Challenges of implementing sustainable facilities management in higher institutions of learning

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Abstract. The paper investigates the barriers to the implementation of sustainable facilities management practice in higher institutions of learning. An integrative literature review was conducted to identify the barriers associated with the implementation of sustainable facilities management practice in higher institutions of learning. Findings from the literature reviewed thus far indicate that the lack of knowledge, senior management commitment, time and financial constraints, and lack of capability are major barriers to adopting and implementing sustainable facilities management. However, there is acute scarcity of relevant information for the local context. There is a need to address the barriers of implementing sustainable facilities management principles in higher institutions of learning. Especially in the local context, there is a need for empirical studies for adequate comparison and specificity of results. The paper will be informative on the current barriers of implementing sustainable facilities management practice in higher institutions of learning, and provide a strong basis for empirical research in this area.

Keywords: Institutions, Facilities, Higher learning, Management, Sustainable

1. Introduction

Built environment activities have indicated the impact of building operation in the deterioration of the natural environment. According to Buser et al., [8] the built environment accounts for one-third of energy use, forty per cent 40% of materials and produces 40-50% of greenhouse gas emissions globally. Buildings have a significant impact on climate change and approximately 80% of this effect comes from the operation phase [23].

Alshuwaikhat and Abubakar [2], state that higher institutions of learning are considered as “small cities” due to their large scope, populace and numerous campus activities which have significant impacts on the natural environment directly and indirectly. This is in line with Hasim [13], who argue that higher institutions of learning consist of multiple buildings, manage substantial assets, consume and generate large amounts of energy and waste due to their population sizes. Given their role as agents of change in society, higher institutions of learning have been challenged to take up a leading role in promoting and implementing sustainable development ([9]; [35]). These institutions
have responded positively to this challenge. This is evident from the initiative taken by some institutions in signing the Talloires Declaration. The Talloires Declaration is a commitment made by these universities to incorporate sustainability initiatives in their systems through teaching and research, operation and also become leaders in driving the sustainability agenda in societies. According to Alshuwaikhat and Abubakar [2], there is lack of an approach that is more systematic and sustainable to the reduction of adverse environmental impacts of university campuses.

The management of facilities within higher institutions of learning has been identified as one of the departments where sustainability could be integrated and implemented in their operations [19]. Facilities managers have the potential to influence and drive sustainability initiatives in organizations [10]. The facilities management industry supports this by stating that facilities managers can significantly influence sustainability outcomes in higher institutions of learning through various operational activities such as campus planning and design, environmental management etc. [36]. Nielsen et al., [23] argue that climate change and natural resource efficiency are societal encounters for which the facilities management professionals can aid and provide solutions in various organisational and societal levels.

According to Elmualim et al., [12], universities in developing countries are lagging in terms of adopting and implementing sustainability initiatives and also have lower performance in their sustainable facilities management practices. However, regardless of the stated importance of sustainability driver role of facilities managers in higher institutions of learning, there is a dearth of studies exploring the existence of this role playing, especially in developing countries. More importantly, there is a scarcity of studies investigating the possible inhibitors of sustainable facilities management practice in such institutions. The key extant literature relevant to the study aim is by Hasim [13], which is limited to Australia and Malaysia. Thus an organised theoretical basis for empirical studies is also limited in extant literature. This paper therefore seeks to examine the barriers to successful implementation of sustainable facilities management in higher institutions of learning, starting from a theoretical perspective.

2. Methodology

The study aims to ascertain the barriers to the successful implementation of sustainable facilities management in higher institutions of learning through an integrative literature review [28]. According to Lee and Jang [18], “an integrative literature review is defined as a non-experimental design in which the researchers objectively critique, summarise and make deductions about a subject matter”. The review is done through a systematic search, categorization and thematic analysis [18].

Russel [28] argues that integrative review is a study in which a deduction is drawn from the existing body of knowledge within the subject area. The purpose of this integrative literature review is mainly to integrate and make deductions on the various studies that have been taken on the barriers of implementing sustainability within the higher institutions of learning and with particular focus on the facilities management departments. Below are the proposed stages or framework of an integrative literature review [28]:

1. “Formulate problem.
2. Search literature and extract
3. Evaluate the studies included
4. Analyse data
5. Interpret result and disseminate findings”

Various computer databases such as Scopus, science direct, emerald, google scholar, and research gate were used as search engines to select papers. Books and journal articles were also used to access some information. The keywords used during the search were sustainability, facilities
management, sustainable facilities management, higher institutions of learning, sustainable
facilities management barriers. The main focus was on sustainability and facilities management
practice in higher institutions of learning. These two main knowledge areas were integrated to get
an outlook of the barriers to the implementation of sustainable facilities management practice.

The frequency analysis technique was used in the data analysis process to measure the occurrence
in which each of the barriers appears within the literature. Key themes were developed under which
the barriers are classified and a conclusion is thereafter drawn regarding the most significant
barriers.

3. Results and Discussion

The study identified key concepts under which the review was conducted. A literature review was
conducted to give an overview of these concepts with a particular focus on the barriers to implementing
sustainable facilities management. The results are presented and discussed according to emergent themes.

3.1 Sustainability and Sustainable Development

Sustainability is one of the most significant societal challenges, and it needs to be taken into account in all
sectors and level of organisations. The concerns for the future are on the current generation’s management
and consumption rate of natural resources.

Barlet and Chase [5] define sustainability as “an ultimate continuous process of ensuring
environmental protection and uplifting the quality of life for the present and future generations”. Sustainable
development is defined as “the development that meets the needs of the present without
compromising the ability of future generations to meet their own needs” [7]. This definition
emphasizes the interdependence of the environment, humans and economic systems, and it also
indicates the huge continuous responsibility that the present generation has in preserving the
planet's resources for the welfare of future generations [31].

There seems to be confusion between sustainability and sustainable development in that these terms
are more often used interchangeably. According to Hasim [13], sustainability is an objective for a
quality of life whereas sustainable development is a process of achieving this objective. Therefore
it can be argued that sustainability is a result of a process of sustainable development. The
integration of sustainable development into the daily functions of facilities management is not new.
Globally, it has been observed that the business world has also seen that sustainability adds a
competitive edge to the market [39]. The exertions towards a sustainable built environment have
driven facilities managers to adopt sustainability initiatives into their practice [33].

3.2 Sustainable Facilities Management

Facilities Management is one of the fastest-growing professions in developed countries and is still in its
infancy but yet gradually emerging in developing countries, like South Africa [25]. This study adopted
Barret and Baldry [6] definition of facilities management. According to the authors, facilities
management is an “integrated approach to maintaining, improving, and adapting the building and
infrastructure of an organization to create an environment that strongly supports the primary objectives of
the organization”. Information from facilities managers helps fit buildings to users’ needs, increases
competitiveness, and enhances environmental performance by reducing waste in energy and resources.

According to Tucker [37], Sustainable Facilities Management is defined as “being able to manage,
implement and deliver an organization’s non-core business services that contribute to the
improvement of the economic, social, and physical environment, and, in turn, to the greater
environmental sustainability on an organization’s core business objectives”. Application of
sustainable facilities management practice is not only crucial for the management of new buildings and infrastructure but is also vital to the management of existing infrastructure and buildings [13].

According to Nielsen et al., [23], sustainable facilities management of the existing infrastructure and buildings is very vital in aiding societies to become more sustainable because of a large number of square metres possessed by the existing building stock and infrastructure relative to new buildings. This indicates the importance of sustainable facilities management practice in institutions of higher learning due to the extensive infrastructure and building stocks that exist in these institutions.

3.3 The Need for Sustainable Facilities Management in Higher Institutions of Learning

According to Hodges [14], and Lee and Kang [18], the practice of sustainable facilities management can provide a wide range of benefits such as efficient resource consumption in buildings i.e. energy and water, minimisation of operating and maintenance costs, value for money, reduction of greenhouse gas emissions, improving health and safety in the built environment, improving human comfort in buildings, and minimising sick building syndrome. The inclusion of facilities managers in the design process can result in more cost-effective buildings, respond better to needs of the occupants and organisations, easier to operate and maintain and also buildings that are more attractive to clients [15].

The significance of facilities management in higher institutions of learning has been studied by Price et al., [27] wherein they identified the potential role of FM in impacting the choice of students on a higher institution of learning through infrastructure. However, given their significant role in providing a sustainable built environment, facilities managers are faced with barriers to implementing sustainability principles within their institutions.

3.4 Barriers to implementing sustainability and sustainable facilities management practice in higher institutions of learning

Alshuwaikhat and Abubakar [2] argue that there is a lack of a more systematic and sustainable approach to reducing the negative environmental impacts of universities. Hasim [13] found that the institutions in developing countries are lagging in terms of adopting and implementing sustainable facilities management practice due to several significant barriers. This is further supported by Alshuwaikhat et al., [3] in their study, which reviewed spatial distribution of campus sustainability awards at national and international levels. Saudi Arabia was used as local context for developing countries in examining the impacts of sustainable campus awards. The study found that there is minimal participation of universities in developing countries in the sustainability awards relative to universities from developed countries.

Ugbaja [38] studied the incorporation of sustainability in the following African universities: Kafrelsheikh University, American University in Cairo, Covenant University, Ota, University of Kwazulu Natal, South Valley University, Minia University, University of Education Winneba, University Cadi Ayyad, Polytechnic of Namibia, University of South Africa, and the University of Tlemcen. Findings suggest that African universities ought to improve their commitment to incorporation of sustainability practices in their operations. It can be argued therefore, that developing countries are lagging in the adoption and implementation of sustainability in their operations.

Avila et al., [4] studied the barriers to innovation and sustainability in universities in the following countries: Australia, Colombia, Ghana, South Africa, Austria, Cote d’Ivoire, Guatemala, Spain, Ecuador, Japan, Sweden, Brazil, England, Nigeria, Uganda, Chile, Finland, Philippines, United States, China, Germany, Portugal and Philippine. Their findings suggest that many universities have not yet advanced in the full implementation of sustainable development principles. The main barriers identified in this study are associated with the management such as the university
administration, policies, support of management systems etc. Other barriers identified are related to technology, availability of resource and organisational culture. Senior management support was identified as the main barrier in this study. Hasim [13] identified a lack of knowledge and understanding; financial constraints; organisational culture; lack of top management commitment; and lack of resources as the fundamental barriers to the adoption of sustainable facilities management practice within the higher institutions of learning respectively.

From the categorization and thematic analysis of selected literature, Table 1 was derived to show the emergent themes in terms of barriers and details of the sources.

Table 1. Thematic analysis of extant literature on barriers to sustainable facilities management.

| Identified Barrier     | Cited In                                                                 |
|------------------------|--------------------------------------------------------------------------|
| Knowledge              | Hasim [13]; Hodges [14]; Lai and Yik [17]; Shah [33]; Elmualim et al., [11]; Nielsen et al., [23]; Elmualim et al., [12]; Adewumni et al., [1]; Sarpin and Yang [30]; Sarpin [31]; Avila et al., [4]; Store-Valen and Buser [34]; Store-Valen and Buser [35] |
| Senior Management Commitment | Hasim [13]; Hodges [14]; Nielsen et al., [23]; Elmualim et al., [11]; Adewumni et al., [1]; Avila et al., [4]; Store-Valen and Buser [34]; Store-Valen and Buser [35] |
| Finance/ Budget        | Hodges [14]; Shah [33]; Elmualim et al., [11]; Store-Valen and Buser [34] |
| Capability             | Hasim [13]; Hodges [14]; Shafili [32]; Shah [33]; Sarpin and Yang [30]; Avila et al., [4]; Store-Valen and Buser [34] |
| Time                   | Shah [34]; Elmualim et al., [12]; |

Following the presentation of identified themes under barriers in Table 1, they are discussed from the integrative of literature in the next section.

3.4.1 The lack of knowledge
The lack of knowledge is the most significant barrier to sustainable facilities management implementation and adoption both in private practice and in higher institutions of learning. Without the necessary skill sets and competencies of sustainability, the facilities managers will not be able to drive and deliver these initiatives such as green buildings and sustainable procurement.

Lack of knowledge directly influences the commitment of senior management with regards to adopting and implementing sustainability initiatives within their organisations. When senior management is knowledgeable about sustainability principles, they will use their authorities to
influence and drive the sustainability agenda within their organisations. That is, they will prioritise the sustainability agenda, which means there will be time and funds made available for implementing and delivering sustainability initiatives within their organisations.

3.4.2 The lack of senior management commitment
Senior management plays a vital role in organisations as they drive the direction for the organisation, therefore they willingness and unwillingness to commit to the sustainability agenda will determine the position of the organisation with regards to sustainability practice. If the senior management is committed to the sustainability agenda, the organisation will have various sustainability initiatives within their practice, and if they are not committed, the opposite will happen. Time and financial constraints are barriers in almost every aspect of the organisation.

3.4.3 Time and financial constraints
With regards to implementing sustainable facilities management practice, time might be a factor due to organisation’s priorities and since facilities managers provide an environment that will enable organisations to achieve their primary objectives, their deliverables are based on the organisation’s objectives and their order of priority. Therefore if organisations do not prioritise sustainability practice in their operations, facilities managers will not have time to drive the sustainability agenda within the organisation.

The same applies to finances, that is, if the organisation does not prioritise sustainability practices within their operations, there will be insufficient funds available for implementation of these initiatives as funds are released based on the order of priority. Also, due to the costs associated with going green, most organisations tend to be reluctant to adopt and implement sustainability initiatives.

3.4.4 Lack of capability
Capability is also one of the main identified barriers to the implementation of sustainable facilities management. Capability in this context refers to capacity. Senior management can commit to implementing sustainability initiatives within their organisations, however, if the facilities managers and other various professionals do not have the capacity to deliver these initiatives, their implementation will cease to exist and subsequently fail. Therefore, capacity is a vital aspect in the implementation of sustainability within the higher institutions of learning and in particular the facilities management departments.

Therefore it can be argued that lack of knowledge is the most significant barrier as it directly impacts all the other barriers as mentioned before. Thus various professionals, senior management and other stakeholders within organisations need to be knowledgeable and aware about sustainability.

4. Conclusion
The study investigated barriers to adoption and implementation of sustainable facilities management within higher institutions of learning. The research gap was identified through the review of the literature on the current status of sustainable facilities management in the higher institutions of learning in developing countries and the attendant barriers. Findings suggest that the most highlighted barriers as knowledge, senior management commitment, financial constraints and capacity. However extant literature is still limited in terms of empirical strength, scope and coverage, especially in relation to the developing country context. Therefore, the overarching implication of the current study is the need to further investigate, empirically, the barriers and drivers to the practice of sustainable facilities management in institutions of higher learning, in other developing country contexts such as South Africa.
It would be beneficial to clarify the degree to which these findings are generalizable. There is appreciable scarcity of relevant information in this regard.

This study is on-going and as such this paper presents preliminary findings from the theoretical study, which will be further explored through empirical studies.

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