

Bankole Awuzie

Dr Bankole Awuzie, Senior Lecturer, Department of Built Environment, Central University of Technology, Private Bag X20539, Bloemfontein, South Africa. Phone: +27(0)51 507-3532, email: <bawuzie@cut.ac.za>

Rasheed Isa

Dr Rasheed Isa, Lecturer, Department of Building Technology, Federal University of Technology, Minna, Nigeria. Phone: +23 4805114689, email:<batunde@futminna.edu.ng>

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Stakeholders' perception of critical success factors for sustainable facilities management practice in universities in sub-Saharan Africa

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Abstract

The development of an optimal sustainable facilities management (SFM) strategy for university-built assets in sub-Saharan Africa (SSA) is desired. However, this requires an in-depth understanding of the perspectives of different stakeholders on the probable success factors. The elicitation of such perspective is considered imperative, as it allows Facilities Managers to engage with effective SFM planning in a manner that caters to the interest of these stakeholder groups. This study seeks to identify and, subsequently, assess these success factors, according to stakeholders' perspectives.

A sequential mixed method research design is utilised wherein 29 semi-structured interviews were conducted initially, followed by a questionnaire survey conducted with 113 respondents, in the second stage. Interviewees were purposively selected from a university of technology (UT) in South Africa, whilst respondents were drawn from universities within SSA. Data from the first stage was analysed, using qualitative content analysis, and subsequently applied towards questionnaire development. The questionnaires appraised stakeholder perceptions of the criticality of success factors identified during the interviews. The Mean Item Score (MIS) was used to rank the responses.

Results from the analysis indicate that 'presence of a well-articulated FM plan for a specified interval' and 'adherence to the tenets of the SD agenda (supply chain)' were selected as most critical of the success factors identified.

It is expected that the study's findings will contribute to the development of a viable SFM strategy in SSA universities.

Keywords: Facilities management, sub-Saharan Africa, success factors, sustainable development, universities

Abstrak

Die ontwikkeling van 'n optimale volhoubare fasiliteitsbestuur (VFB)-strategie vir universiteitsgeboude bates in sub-Sahara-Afrika (SSA) word benodig. Dit vereis egter 'n grondige begrip van die perspektiewe van verskillende belanghebbendes oor die waarskynlike suksesfaktore. Hierdie perspektiewe word as noodsaaklik beskou, aangesien dit Fasiliteitsbestuurders in staat stel om effektiewe VFB-beplanning te kan doen op 'n wyse wat omsien na die behoeftes van hierdie belangegroep. Hierdie studie poog om hierdie suksesfaktore te identifiseer en te evalueer, volgens belanghebbendes se perspektiewe.

'n Opeenvolgende gemengde metode navorsingsontwerp word gebruik waar 29 semi-gestruktureerde onderhoude aanvanklik uitgevoer is, terwyl 'n vraelys-opname met 113 respondente in die tweede fase gedoen is. Onderhoudvoerders is doelbewus gekies uit 'n universiteit van tegnologie (UT) in Suid-Afrika, terwyl respondente van universiteite binne SSA getrek is. Data uit die eerste fase is geanaliseer met behulp van kwalitatiewe inhoudsanalise en daarna op die ontwikkeling van vraelyste toegepas. Die vraelyste het belanghebbendes se persepsies van die kritisiteit van suksesfaktore wat tydens die onderhoude geïdentifiseer is, beoordeel. Die gemiddelde item telling (MIS) is gebruik om die antwoorde te rangskik.

Resultate uit die analise dui aan dat 'n teenwoordigheid van 'n goed-geartikuleerde FM-plan vir 'n bepaalde interval 'en' nakoming van die beginsels van die SD-agenda (toevoerketting) gekies is as die mees kritiese van die geïdentifiseerde suksesfaktore.

Daar word verwag dat die studie se bevindings sal bydra tot die ontwikkeling van 'n lewensvatbare VFB-strategie in SSA-universiteite.

Sleutelwoorde: Afrika suid van die Sahara, fasiliteitsbestuur, suksesfaktore, volhoubare ontwikkeling, universiteite

1. Introduction

Recent developmental patterns depict a quest for transformation from consumption patterns, hitherto described as unsustainable, towards sustainability. Noticeably, society's quest to attain sustainable development (SD) has continued to gain momentum (Sarpin & Yang, 2012: 602). The increasing nature of the advocacy is buttressed by the rise in the number of publications on sustainability science (Bettencourt & Kaur, 2011: 19541). Organisations have concerned themselves with (re)designing their business models to contribute towards this aspiration. Considering their reputation as societal change agents, universities are assuming a pivotal role in SD implementation (Cortese, 2003: 16; Stephens, Hernandez, Román, Graham & Scholz, 2008: 320). Extant studies highlight the role of universities in mainstreaming SD ethos into their core activities and

within the broader societal context (Ferrer-Balas, Lozano, Huisingh, Buckland, Ysern & Zilahy, 2010: 607-610). These activities are usually embedded within the teaching and learning, research, and operations facets, respectively.

Universities have been admonished to do more concerning the systemic integration of sustainability ethos across every facet of their endeavour (McMillin & Dyball, 2009: 57). Literature points out that the majority of universities are concerned with attaining SU status through the embodiment of SD ethos not only in teaching, learning and research aspects, but also across the operational facets of which FM forms an integral part (Swearingen, 2014: 235). However, whereas appreciable efforts by universities in developing countries have been observed in the integration of SD into their curriculum and research activities, not a great deal has been reported about the operational aspects. This is particularly the case in sub-Saharan Africa (SSA). This deficiency deters the quest by these universities to achieve SU status. Efforts towards the attainment of SU status will be successful if these universities achieve a systemic integration of SD ethos across their organisational facets (Ferrer-Balas *et al.*, 2010: 608).

Facilities management (FM) bodes immense potentials for the attainment of sustainability gains in organisations (Elmualim, Shockley, Valle, Ludlow & Shah, 2010: 58). This is due to its vast scope which usually transcends the boundary of property management within organisations such as universities. Despite the recognition of FM's significance, a paucity of studies exploring its role in the attainment of SU status for universities has been observed. Such paucity is quite pronounced within SSA, hence necessitating this study.

In its contribution towards resolving this impasse, this study seeks to identify and assess the success factors for sustainable FM (SFM) practice in universities from a stakeholder's perspective. It is expected that the findings will contribute to extant literature by highlighting how different stakeholders understand and assess SFM performance in SSA universities. Furthermore, it will provide a platform for the design of a robust SFM strategy by facilities managers working in universities which will cater to the needs of the stakeholders.

2. Theoretical perspective

2.1 Sustainability, sustainable development and universities

In acceptance of the leadership role in society (Cortese, 2003: 15), universities have, over the past three decades, committed themselves towards making significant contributions towards society's SD aspirations. Accordingly, they have signed onto various declarations, charters and initiatives (DCIs), adopting SD as a significant aspect of their institutional strategy (Lozano, Lukman, Lozano, Huisingsh, & Lambrechts, 2013: 11). Universities within the SSA context have not been left out of these DCIs. A commendable number of these universities have signed up to DCIs at regional, national and international levels. Yet, Lozano, Ceulemans, Alonso-Almeida, Huisingsh, Lozano, Waas, Lambrechts, Lukman & Hugé (2015: 2) admit that being signatories to such DCIs does not automatically guarantee attainment of SU status and subsequent contribution to the attainment of SD aspirations in the wider society, reiterating that only optimal implementation of the tenets of such DCIs will. The paucity of studies reporting on SD implementation performance of universities within the SSA context further lends credence to this assertion.

2.2 Need for sustainable facilities management practice in universities

Amaratunga and Baldry (2000: 293) describe FM as an integrated approach for engendering the maintenance, improvement, and adaptation of an organisation's buildings in order to create the desired ambience required to support the attainment of the organisation's core mandate. Yim Yiu (2008: 502) reiterates that FM marks a shift from operational services towards strategic resource management, thus distinguishing it from property management. Judging from these strategic roles, FM's significance within organisations cannot be overemphasised. Effective FM practice influences organisational success factors such as profit determination, productivity, management of energy and waste, employee welfare, and public perception (Awang, Mohammad, Sapri & Rahman, 2014: 71-72). Accordingly, these scholars have called for the incorporation of SD ethos into FM practices at organisational level. The incorporation of SD ethos into organisational FM, it has been argued, will contribute to the attainment of the organisation's SD objectives. Such advocacies have resulted from the paradigmatic shift towards SD in organisations such as universities.

Universities are noted for their ability to provide conducive environments for scholarship to thrive (Cortese, 2003: 15; Stephens *et al.*, 2008: 321; Escrigas, Polak & Jegede, 2011: 13). As a result, they invest considerably in campus infrastructure renewal/redevelopment/development programmes. Arguably, there is an increasing need for these universities to showcase their SD credentials through the nature of the built assets procured. Different phases of the life cycle of these built assets are often superintended by the institutions' FM directorates (Wright & Wilton, 2012: 119). This makes the adoption of SFM practice in the management of these assets, imperative.

Ikediashi, Ogunlana, Oladokun & Adewuyi (2012: 169) trace the advancement of the SFM concept to the need to contribute to a reduction of the built environment's debilitating impact on the environment. Over the past few decades, a trend signalling this growing recognition of FM in universities has been observed (Amaratunga & Baldry, 2000: 293-294). Perhaps this recognition can be attributed to the views similar to those espoused by Price, Matzdorf, Smith & Agahi (2003: 213), wherein they observe the potential of the facilities available to a university to considerably impact on student choices. They also add that the nature of the work environment provided by universities can limit their ability to attract the kind of personnel they desire. The aspiration of several SSA universities of assuming an SU status in the not too distant future is significantly dependent on its FM department's ability to apply SD tenets to its entire operations. These operations consist of the four cardinal roles of FM identified by Yim Yiu previously.

Although the significance of SFM has been noted, the corpus of relevant literature appears silent on the success factors required to achieve this feat within the context of universities, especially in SSA. This study seeks to contribute towards bridging this gap.

2.3 Critical success factors for sustainable facilities management

According to Müller and Jugdev (2012: 758), success factors can be described as project elements possessing the likelihood of bringing about successful project outcomes, if managed effectively. They insist that these factors and the success criteria have formed an integral aspect of the project performance debate and should be taken seriously if the desire for project success is to be accomplished. Therefore, critical success factors (CSF), as the name implies, represents project elements that are critical to the success of any project delivery programme (Müller & Jugdev, 2012: 758). As such, the facilities manager's ability to identify these CSFs and assess their

significance from the perspectives of the stakeholders in the university context will contribute to the development of an SFM strategy.

In the absence of relevant literature on CSFs for SFM in universities, this study derives its success factors from a list of barriers (failure factors) to effective SFM in conventional organisations. Based on the description of success factors and the CSFs, it can be deduced, in the absence of established CSFs for SFM in universities, that the CSFs for SFM will be the opposite of the identified barriers (see Table 4). The authors relied on this list of barriers to the implementation of sustainable FM practices in organisations, as compiled by Sarpin and Yang, to derive potential CSFs (Sarpin & Yang, 2012: 604) (see Table 1). This kind of scenarios abound in the literature (see Zhou, Huang & Zhang (2011: 244-246); Babatunde, Akintayo & Akinsiku (2012: 215-222)).

Table 1: Barriers to the implementation of sustainable FM practices in organisations

	Barriers	Past research	Main barriers
1	Knowledge	Elmualim <i>et al.</i> (2010)	Lack of knowledge
		Nielsen <i>et al.</i> (2009)	Limited knowledge regarding environmental themes
		Elmualim <i>et al.</i> (2009)	Knowledge chasm
		Shah (2008)	Management of sustainability knowledge
		Lai and Yik (2006)	Low knowledge level regarding sustainability
		Hodges (2005)	Discrepancy in knowledge
2	Capability	Shah (2008)	Lack of capabilities/skills
		Hodges (2005)	Lack of capabilities/skills
		Elmualim <i>et al.</i> (2010)	Time constraint, lack of senior management commitment, diversity of FM roles, undervaluation of contribution to organisation success
3	Management	Nielsen <i>et al.</i> (2009)	Lack of incentives to create routines on environment issue
		Nielsen <i>et al.</i> (2009)	Too little time and few resources to implement
		Shah (2008)	Awareness on whole-life value, increasing liability
		Hodges (2005)	Unwillingness to implement sustainability, lack of financial support
		Nielsen <i>et al.</i> (2009)	Limited data on local consumption of energy, water
4	Authority	Shah (2008)	Performance indicators
		Bosch & Pearce (2003)	Lack of guidance documents

Source: Sarpin & Yang, 2012: 604

3. Research methodology

The objective of this study is twofold, namely to identify CSFs for SFM and to assess the significance of these so-identified CSFs from the stakeholders' perspectives. This provides veritable information and a platform upon which the development of an SFM strategy in SSA universities will be predicated.

3.1 Research design

To achieve the aforementioned objectives, this study adopts a sequential mixed method research design. Mixed method research designs are renowned for their ability to enable a juxtaposition of data collection and analysis instruments in the conduct of a particular research project (Leech & Onwuegbuzie, 2009: 266). Furthermore, proponents of the research design opine that it allows the shortcomings of the data collection and analysis instruments, belonging to either the qualitative or quantitative genres, to be overcome by the strengths of the other genre being applied therein (Hesse-Biber & Johnson, 2015: 10). The mixed method design in this study is considered sequential, due to the utilisation of different data-collection and analysis techniques belonging to each of the two major genres at two distinct, but interlinked phases of the study (Hesse-Biber & Johnson, 2015: 10).

3.2 Sampling method and sample size

A mixture of purposive, snowballing and convenience sampling techniques was adopted in the selection of 29 interviewees from a South African UT (Denscombe, 2014: 46). Such sampling techniques enabled the authors to select only stakeholders who had some knowledge concerning FM, SFM and SD at the university. In all, 29 individuals were successfully recruited for the interview sessions held in the first stage (see Table 2).

Table 2: Interviewee demographics

<i>Stakeholder group</i>	<i>Position/Job description</i>	<i>Code</i>
Management	Sustainability manager	SM
Support	Director of maintenance	DFM
Support	Clerk of works	CoW
Support	Assistant clerk of works	ACoW
Contractor/Consultants/Suppliers	Consultant	CIDP

<i>Stakeholder group</i>	<i>Position/Job description</i>	<i>Code</i>
Contractor/Consultants/Suppliers	Project manager	PM
Academic staff	Lecturer	LAS1-4
Academic staff	Senior lecturer	SLAS1-2
Contractor/Consultants/Suppliers	Subcontractors	SCC
Student	Postgraduate	PGS1-7
Student	Undergraduate	US1-10
Total		29

Source: Authors' field work (2016)

In what may seem to be a limitation, these interviewees were recruited from a UT in South Africa based on convenience sampling. Further, the students were selected from the Department of Built Environment's B.Tech. class, whereas the postgraduate students were selected from a cohort carrying out sustainability-themed research at Masters and Doctoral degree levels in the Faculty of Engineering and Information Technology at the UT. Therefore, these interview sessions can be considered at best, exploratory.

For the second phase, respondents were recruited through the participating universities mentioned in the GUNi, IAU and AAU joint survey report on "the promotion of sustainable development in Higher Education Institutions in Sub-Saharan Africa" (Escrigas *et al.*, 2011: 99-101). Universities, which posted questionnaire completion and response rates surpassing 80%, were selected. It was expected that completion rates beyond 80% implied a reasonable level of awareness among various stakeholders within such institutions on the sustainability theme. Of the universities, 41 met this criterion. In addition, it was noted that some of the institutions were situated within French-speaking parts of the SSA, hence the need to adopt English and French in the preparation of the questionnaires.

Gatekeepers were identified and approached in 32 out of 41 universities through the use of snowballing sampling technique. But, after a prolonged duration of engagement and discussions, only gatekeepers from 21 universities were recruited to not only participate, but also assist in the identification of individuals to be issued with the questionnaire alongside their email addresses. Based on a subsisting agreement pertaining to confidentiality, the names of the universities, from which the respondents were recruited, cannot be mentioned. However, the number of questionnaires issued was dependent upon the availability of email addresses. A total of 215

questionnaires were administered electronically with the aid of SurveyMonkey, a software package that allows a researcher to administer a survey exercise to a vast majority of respondents via email. Care was taken to ensure that respondents were sourced from various stakeholder groups present in the universities, namely management staff, academic staff, support staff (comprising of non-academic staff and staff of the facilities/works department, where possible), students, and contractors/suppliers. An interval of two months was given for the collation of responses. However, reminders were sent to the respondents at the end of the first month on the need to complete and submit the completed questionnaires. In total, 113 respondents were drawn from universities in Ghana, Kenya, Nigeria, and South Africa, respectively (see Table 3).

Table 3: Distribution of respondents per stakeholder group

<i>Stakeholder group</i>	<i>Number of respondents</i>
Management	16
Academic	23
Support	21
Student	26
Contractors/Suppliers	27
Total	113

Source: Authors' compilations (2017)

3.3 Data collection

In the first phase, semi-structured interview sessions were conducted with interviewees, individually, at different times. This phase was conducted as a pilot study to identify the CFSs for SFM practice in a university context, hence the suitability of the utilisation of the number of interviewees. Interview sessions were stopped upon attainment of theoretical saturation (Fusch & Ness, 2015: 1409-1410; Guest, Bunce & Johnson, 2006: 60-62).

Questions asked during these interview sessions focused on the elicitation of interviewees' perception concerning the success factors against which SFM practice performance in the university can be benchmarked. These interviews lasted for an average of between 30 and 45 minutes each. With the permission of interviewees, the sessions were recorded and subsequently transcribed. For reasons

bordering on confidentiality, the names of the interviewees were anonymised using relevant codes.

The second phase of this study was predicated on the findings of the thematic analysis of the results generated from the first phase (see Table 4). In this phase, the need to obtain perspectives of a larger sample of stakeholders within the SSA region prompted the decision of the authors to develop a structured questionnaire for conducting a survey of stakeholders within the study context.

In preparing the questionnaire, the guidelines presented by Choi and Pwak (2005) were adopted to eliminate respondents' bias. These guidelines indicate how the researcher can prevent respondent bias through proper question and questionnaire design as well as during the administration of the questionnaire (Choi & Pwak, 2005: 1-13). The questionnaire consisted of four parts. The first section contained a bio-data section with questions pertaining to the respondent's attributes. Questions in the second section dwelt on establishing the respondent's level of understanding of sustainability, sustainable development, facilities management and sustainable facilities management. The third section covered questions regarding the respondent's perception of sustainable facilities management implementation performance. Lastly, section four encompassed a list of success factors identified from interview sessions conducted in the preliminary study. However, it should be noted that only data from sections 1 and 4 was utilised for this study. The questionnaire was intended for the wider study. In section 4, the respondents were expected to indicate the success factors that were critical to optimal SFM performance, based on a 5-point Likert scale measurement ranging from 1 to 5.

3.4 Response rate

A total number of 141 responses were collated. This represented a response rate of 65.58%. Although this number was unevenly spread among the stakeholder groups present within universities (see Table 3), it was deemed sufficient for the study. Thereafter, returned questionnaires were checked for completeness. It was discovered that 28 questionnaires were not completed and did not add value to the objective of the data-collection exercise. This left the authors with a balance of 113 usable questionnaires.

3.5 Data analysis

In analysing the qualitative data, the authors relied on the pre-set themes deduced from the list of barriers mentioned in Table 1. The transcripts were read and re-read severally by the authors, independently. Consequently, they coded aspects of the manuscripts and jointly compared the codes. Emergent themes surfaced during the comparing of notes between them. This led to the determination of CSFs for SFM practice in universities. This speaks to the benefits accruable from multi-investigator triangulation, as espoused by Patton (1999: 1192-1193).

In the second phase, the responses obtained from the questionnaires were analysed using descriptive statistics approach - the mean item score (MIS). This approach was deemed appropriate for achieving the study's objective which was to assess and rank the perceptions of university stakeholders on the various CSFs for SFM practice identified previously.

According to Audu and Kolo (2007: 124), MIS entails the process of assigning numerical values to respondents' ratings of variable's importance, for example very high influence (5 points), high influence (4 points), in this order. The MIS of every importance was computed using equation (1)

$$MS = \sum \frac{(fxS)}{N} \quad 1 \leq MS \leq 5 \quad \dots\dots\dots (1)$$

Where:

S = the score assigned to each factor by the respondents, it ranges in dependent on the ordinal scale in use (in this case 1-5)

F = frequency of responses to each rating (1-5)

N = total number of responses in the respective score.

Table 4 presents the MIS ranking, based on stakeholders' perceptions, as reflected on a 5-point Likert scale measurement where 1 indicates not important, 2 indicates rarely important, 3 indicates neutral, 4 indicates important, and 5 indicates very important.

4. Presentation of findings

The findings from the first phase of the study are presented in Table 4, and the findings from the second phase of the study are presented in Table 5.

Table 4: List of CSFs identified from the interviews

<i>CSF category</i>	<i>CSFs identified</i>	<i>Interviewees (codes)</i>
Knowledge-related/ Authority-related	Establishment of proper framework for sharing SD-based knowledge between various stakeholders within the university	CIDP, SLAS, LAS, ACoW, SM
Knowledge-related/ Management-related	Consultative forums to debate new developments and for the development of SD-based knowledge within the university	CIDP, SLAS, LAS, PGS, SM
Knowledge-related	Improved face-to-face communication about the use of facilities	US, PGS, SLAS, SM, ACoW
Knowledge-related	Effective information systems to provide up-to-date information on the use of existing and new structures	SLAS, DFM, CIDP, LAS
Knowledge-related/ Management-related	Proper communication of the university's SD Policy guidelines, if any, to various stakeholders within the university	CIDP, SLAS, SM, CoW, DFM, US, PGS
Knowledge-related/ Capability-related	Constant site meetings with contractors and FM department to share lessons learnt as it pertains to SD in their respective projects	DFM, CIDP, CoW, FC, SCC,
Knowledge-related/ Management-related	Presence of a well-articulated FM plan for specified intervals	CIDP, SLAS, LAS, SM
Authority-related/ Management-related	Integration of smart and sustainable FM principles into planning stages for the procurement of new infrastructure projects as well as maintenance at the university	DFM, CIDP
Knowledge-related	Development and dissemination of a set of clear SD policy guidelines to be adopted in the maintenance and delivery of infrastructure projects.	CIDP, SLAS, SM
Management-related/ Authority-related	Provision of incentives for proper use of workspaces and other types of building stock	SLAS, LAS, SM, CIDP
Authority-related/ Capability-related.	Demand for adherence to the tenets of the SD agenda in the selection of supply chain members (sustainable procurement)	CIDP, DFM, FC, SCC
Capability-related CSFs	Provision of financial and organisational support for knowledge and capability development workshops on SD within the FM department	SM, SLAS

<i>CSF category</i>	<i>CSFs identified</i>	<i>Interviewees (codes)</i>
Capability-related	Presence of required competencies for delivering on smart and sustainable FM	CIDP, SLAS, LAS,
Capability-related/ Authority-related/ Management-related	Presence of a sustainability champion	CIDP
Capability-related	Use of appropriate contracting strategy for project delivery and maintenance	CIDP, DFM
Capability-related/ Authority-related	Adoption of a set of standards to ensure compliance by end users and contractors alike.	CIDP
Authority-related/ Capability-related	Early engagement of contractors during the procurement of new infrastructure or during the planned phased maintenance of existing building stock	CIDP, DFM
Capability-related	Development of a skills database for the institution's supply chain	CoW, CIDP, DFM
Management-related	Adequate timespan for the budget implementation	DFM, CIDP
Management-related	Adequate funding	DFM, CIDP, SLAS

Source: Authors' compilation (2016)

Based on the findings from the interview sessions, a list of 20 CSFs for SFM practice in universities was identified (see Table 4). Some CSFs, which did not form part of the initial pre-set themes identified prior to the commencement of the interview sessions, were also realised from the data. Whilst efforts were made to group these CSFs as mentioned previously, it was discovered that the majority of CSFs identified, overlapped.

Going by the CSFs listed therein, the absence of a consensus among all stakeholders on what the CSFs for SFM entailed, was observed. From the data, it was obvious that stakeholders were only interested in CSFs from which they were able to derive benefits. This culminated in the decision of the authors to assess and rank these identified CSFs from the viewpoints of an enlarged stakeholder audience. The results from this exercise are reported in Table 5.

Table 5: Ranking of critical success factors for sustainable facilities management by stakeholders

Critical success factors	Management		Academic staff		Support staff		Student		Contractor (Supplier)		Summary	
	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	
Well-articulated FM plan for specified interval	3.81	10	3.74	10	4.67	1	3.50	11	4.22	4	3.98	1
Adherence to the tenets of the SD agenda (supply chain)	4.13	2	3.26	18	4.38	3	4.08	5	4.11	6	3.98	1
Clear SD policy for delivery and maintenance of projects	4.37	1	3.09	19	4.38	3	3.69	9	4.33	2	3.95	3
Effective communication system on new facilities/built assets	3.06	18	4.74	1	3.00	18	4.04	6	4.15	5	3.93	4
Presence of a sustainability champion	4.13	2	3.83	8	3.76	11	4.27	2	3.59	14	3.90	5
Development of a skills database for supply chain	3.94	7	3.30	17	4.48	2	3.88	8	3.89	10	3.88	6
Competencies for delivering on smart and sustainable FM	4.00	6	3.83	8	3.95	7	3.58	10	4.07	8	3.83	7
Adequate funding	3.88	8	4.22	3	3.24	17	3.12	18	4.63	1	3.83	7
Improved communication on facilities	3.50	12	3.52	14	4.14	6	3.92	7	3.33	17	3.77	9
Support for knowledge and capacity development on SD	4.13	2	4.17	4	3.43	15	3.31	15	3.70	13	3.72	10
Early integrated smart and sustainable principle	3.44	13	3.65	11	3.57	12	3.42	12	4.33	2	3.70	11
Appropriate contracting strategy for project delivery	3.44	13	3.65	11	3.57	12	3.42	12	4.11	6	3.66	12
Incentive for proper use of work space	3.13	17	4.00	5	3.33	16	4.12	4	3.48	15	3.65	13
Adoption of a set of standards to ensure compliance	3.44	13	3.48	15	3.86	8	3.27	16	3.96	9	3.61	14
Proper communication of SD policy	3.88	8	3.91	6	2.71	20	4.54	1	2.89	19	3.58	15
Adequate timespan for the budget implementation	3.31	16	3.39	16	3.81	10	3.19	17	3.85	12	3.52	16
Consultative forum for new development debate	4.06	5	3.91	6	2.71	19	4.23	3	2.70	20	3.50	17
Framework for knowledge sharing	2.88	19	4.65	2	3.86	8	2.88	20	2.93	18	3.43	18
Early engagement of contractors during the procurement	2.75	20	3.00	20	4.38	3	2.96	19	3.89	10	3.42	18
Constant site meeting with contractors and FM staff	3.63	11	3.61	13	3.52	14	3.38	14	3.41	16	3.37	20

Source: Authors' own compilation (2017)

Table 5 is self-explanatory and details the various mean item scores ascribed to each of the 20 CSFs, as ranked by respondents. The first column provides the list of CSFs, whereas the succeeding columns present both the mean item scores and ranks given by respondents from each stakeholder group for these CSFs. The last columns, entitled Summary, provide an aggregation of the entire MIS and ranking of the CSFs as carried out by the various stakeholder groups surveyed. From the rankings, the presence of a well-articulated FM plan for a particular duration was deemed as the most significant CSF for engendering SFM practice in universities in the SSA region, whereas constant site meetings with contractors and FM staff was ranked as the least CSF by the stakeholders.

5. Discussion of findings

Discussions will seek to focus on the perceptions and the ranking accorded to the CSFs by the respective stakeholder groups involved in the study. It is expected that the discussions therein will provide readers with an insight into the rationale behind the ranking of the CSFs.

5.1 Management staff perspective

In the study, management staff are considered to consist of staff members who carry out administrative responsibilities in the university system. They can be situated at any position between the middle management and the strategic management ends of the continuum. This cadre of staff are responsible for the daily running of the university and the formulation of policy. Such policies will usually consist of the SD plan and the associated implementation framework.

Studies have shown that this category of stakeholder was pivotal to the success or otherwise of the SFM practice in organisations such as universities (Elmualim *et al.*, 2010: 57). The position of these scholars was further alluded to by several interviewees during the interview process, as presented in Table 4. However, when asked to assess and rank the identified CSFs, the respondents from the management stakeholder group ranked the presence of clear SD policy for delivery and maintenance of projects, the presence of a sustainability champion in strategic management cadre, and support for knowledge and capacity development on SD in first and joint second positions, respectively. They also ranked the early engagement of contractors as the least CSF for ensuring SFM practice in their universities.

Yet a closer observation of the operational structure of the majority of the universities, from which the respondents were sourced, indicates the absence of the position of sustainability managers or champions at the strategic level. Whilst some institutions have closed down the position as a result of cost-containment measures, others have not allowed such a position to thrive. In addition, the absence of clear and explicit SD-oriented policy guidelines was observed in a majority of these institutions. A cursory review of documents made available to the authors and commentaries from the interviewees showed a clear lack of such policies at the university level. The development and dissemination of this document happens to be the exclusive preserve of the management staff. Whilst it is good to note that the respondents consider these CSFs as central to optimal SFM practice, it behoves them to carry on with the development of these policies and guidelines, as this will not only assist the institution of SFM practice, but also engender enhanced institutional contribution towards SD.

5.2 Academic staff perspective

The core activity of universities worldwide revolves around knowledge creation and dissemination through teaching and learning as well as research activities (Lukman & Glavič, 2007: 107-110). Therefore, for this category of stakeholders, their interest lies in the provision of a conducive environment for them to function along these enunciated roles. They will also expect their research outcomes to be implemented in the university's drive for SU status through improved SFM practice. Therefore, it is not surprising that respondents in this category will ascribe the first and second position to 'effective communication system on new structure' and 'the presence of a framework for knowledge sharing' among constituents of the university community. This was the case in this study.

Furthermore, their non-involvement in the procurement processes in the university is observed from their ranking of the CSFs bothering on procurement of built assets and their subsequent maintenance. For instance, they ranked 'clear SD policy for delivery and maintenance of projects' and 'early engagement of contractors during the procurement' in position 19 and 20, respectively. Accordingly, the ranking of the CSFs for SFM from an academic staff perspective, as presented in the findings, appears justifiable.

5.3 Support staff perspective

As mentioned in the preceding section, the provision of support for the conduct of core activities in organisations such as universities through the management of non-core activities is not only imperative, but also viewed as the central role of FM and SFM (Amaratunga & Baldry, 2000: 293). Stakeholders grouped under this category participate in the provision of these non-core activities. Accordingly, their views are critical to the enthronement of optimal SFM in the university. As part of the facilities and services delivery team in a university's operational apparatus, they interface with suppliers and contractors during the project-delivery and maintenance cycle. Apparently, this justifies their proclivity to ranking CSFs pertaining to maintenance of assets higher than others. Based on the available data sets and the MIS computed and highlighted in Table 5, respondents within this stakeholder group ranked CSFs 'well-articulated FM plan for specified interval', 'development of a skills database for supply chain' and 'early engagement of contractors during the procurement' in the first, second and third positions.

Interestingly, the CSF pertaining to the 'choice of an appropriate contracting strategy' ranked a dismal 12th position despite being within the purview of the support staff. Perhaps, this may have resulted from the manner in which the procurement of projects is alleged to have been carried out, wherein the management staff have full control over the choice of contracting strategy without input from the designated support staff. This much was obtained during the interview sessions. Yet, much of the perspectives espoused through the ranking by this stakeholder group seem to be valid.

5.4 Student perspective

Students make up a significant proportion of the university community population (Nejati & Nejati, 2013: 102). Besides this, this era of increasing cost of education at the tertiary level and attendant degree of unaffordability among many of the urban populace make the provision of facilities that are apt for scholarship in these institutions, essential. Views held by students cannot be overlooked (Price *et al.*, 2003: 213). Although an effort was made to get across to a larger sample of the student population during the respondent recruitment exercise, the respective gatekeepers reported a lack of interest on the part of the students to complete the questionnaires. Whilst this apathy can be attributed to the low levels of awareness concerning sustainability and SD among these students, as reported

in the findings made by Escrigas *et al.* (2011: 67), it is beyond the remit of this study to proceed with an investigation along this route.

Unsurprisingly, the students ranked 'efficient communication of SD policy within their institutions' as being cardinal to the successful implementation of SFM practice in their institutions. Obviously, this cannot be farther from the truth, as these sets of individuals require information concerning what sustainability and SD connotes in order to be able to contribute to its attainment during their interaction with the built assets, waste disposal systems and green areas in their respective campuses. Yet, it is befuddling to observe from the ranking that the students who have so highly rated the need for effective communication will turn around to rate the presence of a knowledge-sharing framework as the least ranked CSF. It is expected that this aspect will be investigated further.

5.5 Contractors/supplier perspective

Contractors and suppliers play a significant role in the delivery of FM-related services in universities, hence their inclusion in the interviews and surveys thereafter. It goes without saying that any attempt at securing a transformation towards SFM practice and, eventually, an SU status will entail the transformation of the FM supply chain towards SD-oriented tenets. According to the responses obtained from respondents from this stakeholder group, 'adequate funding' was ranked in the first position. This is typical of the contractors and suppliers, as the issue of funding remains critical to them. The ranking of CSFs such as 'clear SD policy for delivery and maintenance of projects' and 'early integrated smart and sustainable principle' in joint second position does not come as a surprise, as this group of stakeholders usually seek clarity of specifications at an early stage as well as certainty of workflow over a defined period to enable them to plan accordingly.

Yet, the poor ranks allotted to CSFs such as 'presence of an SD knowledge-sharing framework', 'proper communication of SD strategy' and 'the establishment of a consultative forum for debate on new development' by these respondents leaves room for more in-depth studies into the probable causes of such perceptions.

It is obvious that, with the exception of a few cases, a significant number of respondents promoted aspects of SFM CSFs which they considered to be critical to their performance or success. This is not unexpected. However, the aggregation of these perceptions vis-à-vis the ranking indicated in the last two columns provides a veritable platform for the development of an SFM implementation framework

in universities in the sub-Saharan Africa context. The reason for this is that the ranks accorded to the various CSFs will enable strategic facilities managers operating within this context to prioritise during the development of this framework for optimal SFM performance, directly, and the attainment of SU status in their respective universities, indirectly.

6. Concluding remarks

The potential of universities to contribute towards the actualisation of society's SD aspirations has been observed. The adoption of SFM practice has been identified as capable of making significant contributions towards achieving this feat. But, a review of relevant literature also revealed that this aspect was being undermined by universities worldwide in comparison to the aspects of teaching and learning as well as research. Opinions had been expressed concerning this deficiency, wherein several commentators have sought to blame the absence of success factors and criteria for assessing the integration of SD ethos into operational aspects of university activities, particularly, facilities management.

Buoyed by this observation and associated commentaries, this study set out to contribute towards bridging this gap by identifying and assessing the CSFs for engendering SFM in these universities from the perspectives of relevant stakeholders. The study achieved its objective through an overt reliance on a sequential mixed method research design. Whereas semi-structured interviews were used to elicit data in the first phase, the use of email-based questionnaires was utilised in the second phase. Data resulting from the first phase was used to develop questionnaires for the second phase, thus indicating complementarity. Data sets from the second phase were categorised according to the perceptions of the individual stakeholder groups initially, prior to the subsequent aggregation of the perceptions of these stakeholder groups into a unified set of CSFs with their associated ranking. The 'presence of a well-articulated FM plan for a specified interval' and 'adherence to the tenets of the SD agenda (supply chain)' ranked as joint 1st CSFs for SFM, whereas 'constant site meeting with contractors and FM staff' ranked the least.

Summarily, this study provides a platform for further studies into the concept of SFM in universities. Such studies may explore the possibility of determining probable reasons behind the ranks ascribed to the CSFs by different stakeholder groups and perhaps, determine any latent relationships therein. In addition, the information provided

can support the development of an SFM implementation framework within these universities by their strategic facilities managers.

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