

A Gap Analysis Survey on Areas of Education and Development for FMs in Africa

AFRICA FACILITIES MANAGEMENT ASSOCIATION | NOVEMBER 2021

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Introduction

1. INTRODUCTION

The Africa Facilities Management Association (AFM) has as its core mission to facilitate collaboration, research and learning within the Facilities Management (FM) community in Africa. Specifically, it's purpose is to promote acceptance and grow the FM industry as a major contributor to the African economy through development of competent and qualified professionals, collaboration among practitioners and the development of standards for Africa. To date AFM has documented all current FM training programs available for FMs in Africa, including degrees, professional certification, and more. In addition, AFM has now begun the work to develop a gap analysis on areas of education and development for FMs in Africa.

To accomplish this important analysis work, a survey was released on 1 June 2021 to FM practitioners in Africa through various associations such as IFMA, RICS, EuroFM, and national FM bodies in Africa including APFMN. The goal of the survey was to identify the gap in skills and training within the existing and future African FM community. This survey was undertaken in order to determine the available competencies and skills of FM practitioners within African enterprises.



Methodology

2. METHODOLOGY

To achieve the study objectives, an electronic survey questionnaire was sent to active facilities managers in both industry and academia across different regions of Africa. The survey was distributed in English, French, Portuguese and Arabic.

In total the 445 FM's participated in the survey. However, only 374 completed the survey i.e., 71 participants either did not finish the survey or skipped the critical questions. For consistency and accuracy, these have been removed from the analysis. Hence, the total number of completed responses to the survey that were analysed was 374. The questionnaire comprised two parts directed at the project objectives. The questions in the first part focused on the respondents' general background information, including the location of the company and region/s that the company is participating in, gender, level of education, experience and affiliation of participants.

The second part of the questionnaire used the Likert scale to obtain information on the level of adoption of different competencies by facilities managers in the performance of their scope of responsibilities under 12 competency groups, namely: Leadership and Strategy; Operations and Maintenance; Project Management; Finance and Business; Communication; Occupancy and Human Factors; Performance and Quality; Facility Information and Technology Management; Real Estate and Property Management; Emergency Planning and Business Continuity; Environmental Stewardship and Sustainability; and lastly, Contextual Socio-environment Crises Response and Management. Descriptive statistics and inferential statistics were used to analyse the collected data and test the study's hypotheses.

Prior to the analysis of data, the reliability (internal consistency) of collected data was evaluated using the Cronbach Alpha test.

Cronbach's Alpha	RELIABILITY STATISTICS	N of Items
	Cronbach's Alpha Based on Standardized Items	
.938	.939	40

Table 1: Cronbach Alpha test

The overall Cronbach's Alpha of collected data is 0.938 which proves the reliability of the collected data is excellent ($>0.94\alpha>0.93$). Furthermore, the value of Cronbach's Alpha if "Item Deleted" indicates that the removal of any question would not have a significant impact on the overall reliability of data. Hence, all collected data was considered for further analysis.



Results

3. RESULTS | 3.1 Descriptive analysis

3.1.1 Region of participants

The majority of participants are from Western Africa region (63.6%) follow by Southern Africa (16.8%), Eastern Africa (10.4%), Northern Africa (7.0%) and Middle Africa (2.1%).

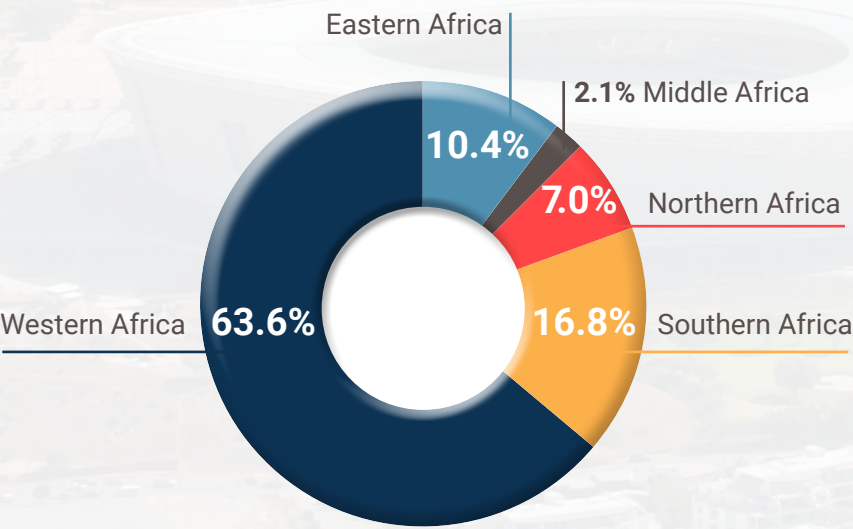


Table 2: Regional response rate

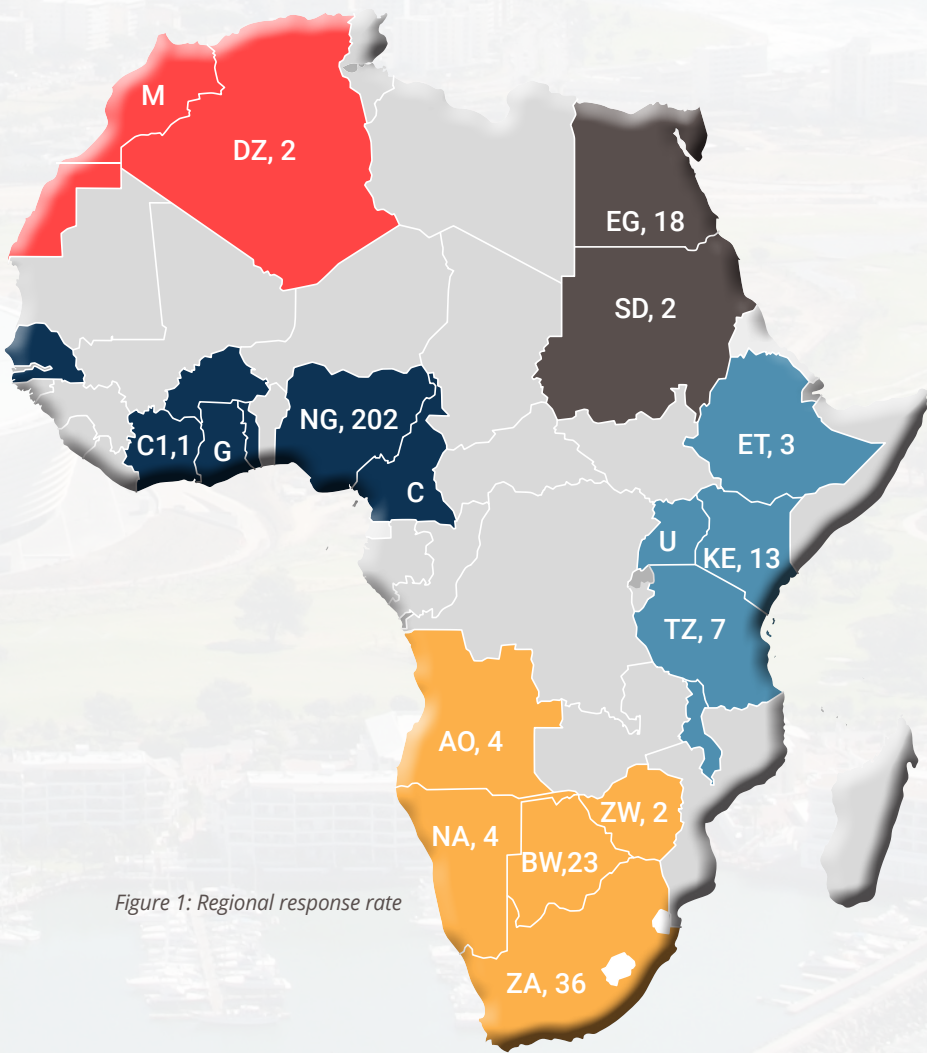


Figure 1: Regional response rate

3. RESULTS | 3.1 Descriptive analysis

3.1.2 Services provided by participants

61% of participants provide a hybrid FM service which is seen as a combination of in-house and out-sourced services. While only 39% of participants provide either in-house or out-sourced services.

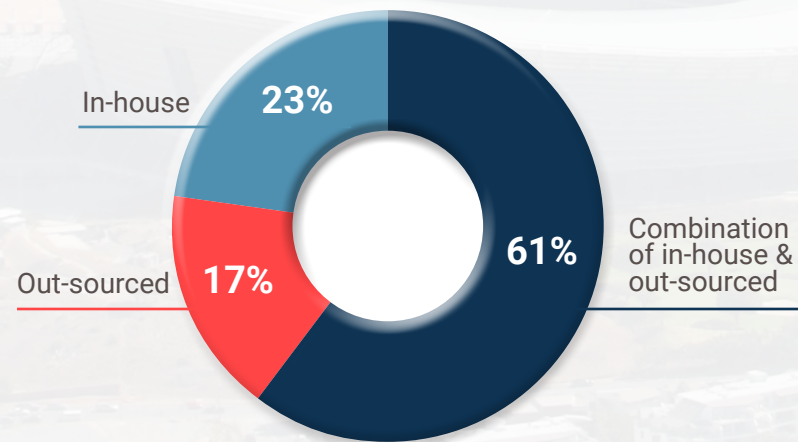


Figure 2: Participant Services offered

3.1.3 Participant's experience

The majority of the participants (68%) have less than 10 years of experience in FM. 37% of participants have relatively limited experience (less than 5 years), 30% have 6 to 10 years of experience and only 32% of participants are highly experienced (more than 10 years).

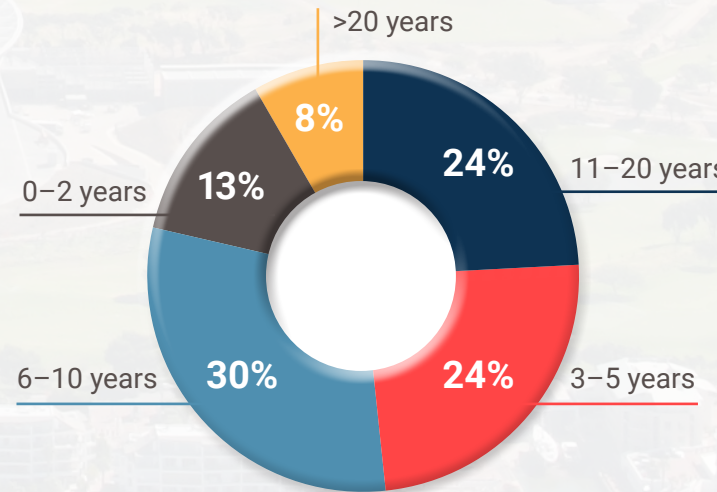


Figure 3: Participant experience

3. RESULTS | 3.1 Descriptive analysis

3.1.4 Participant's work designation

The majority of participants are facilities operations managers (55%).

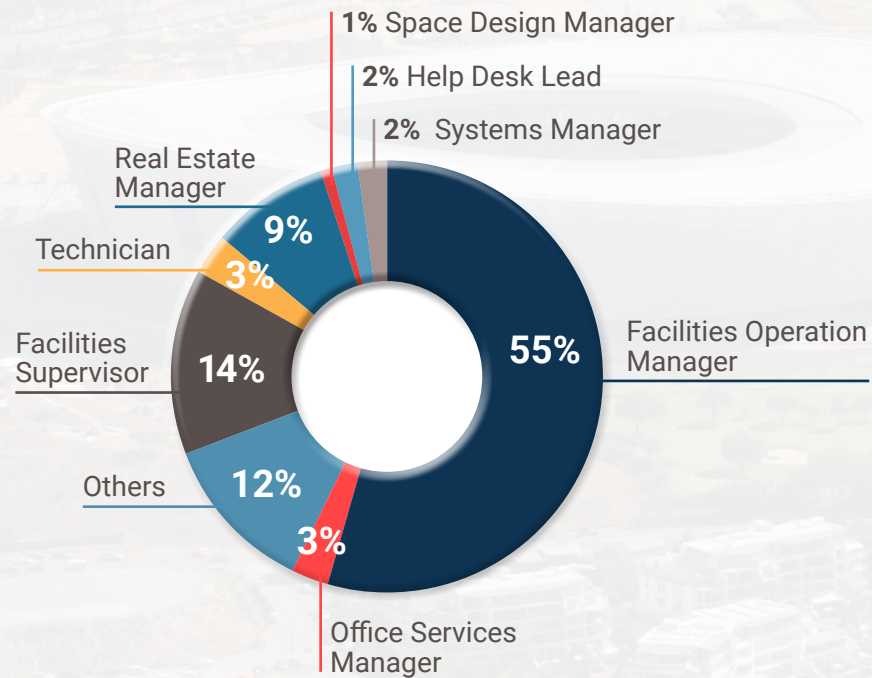


Figure 4: Participant work designation

3.1.5 Participant level of education

81% of participants have a tertiary education, while 16% hold a diploma (or its equivalent) and 4% just graduated from secondary school.

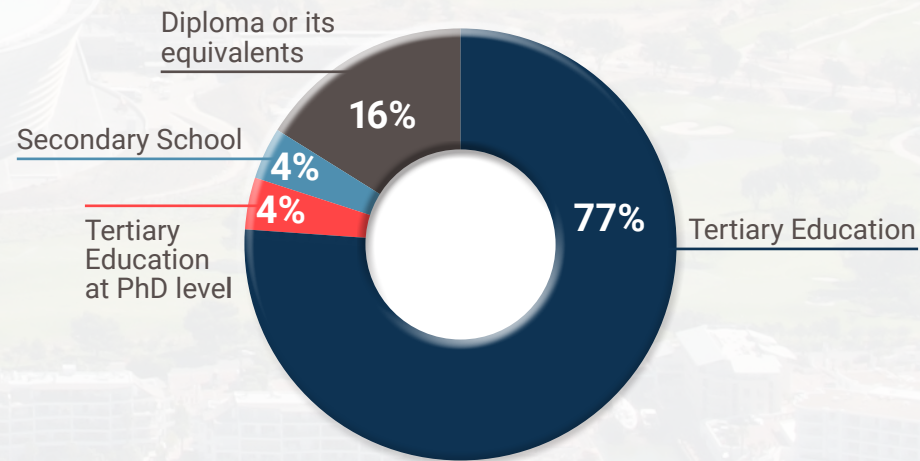


Figure 5: Participant level of education

3. RESULTS | 3.1 Descriptive analysis

3.1.6 Participant's gender

84% of participants are male and only 16% of participants are female.

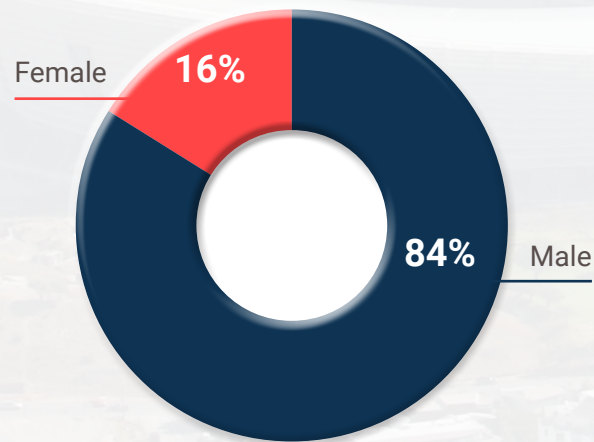


Figure 6: Participant by gender

3.1.7 Participant's profession

31% of participants are Engineers, 18% are Estate Surveyors and Valuer/Chartered Surveyor and 12% are Business Administration, and Building Construction and or Technology respectively.

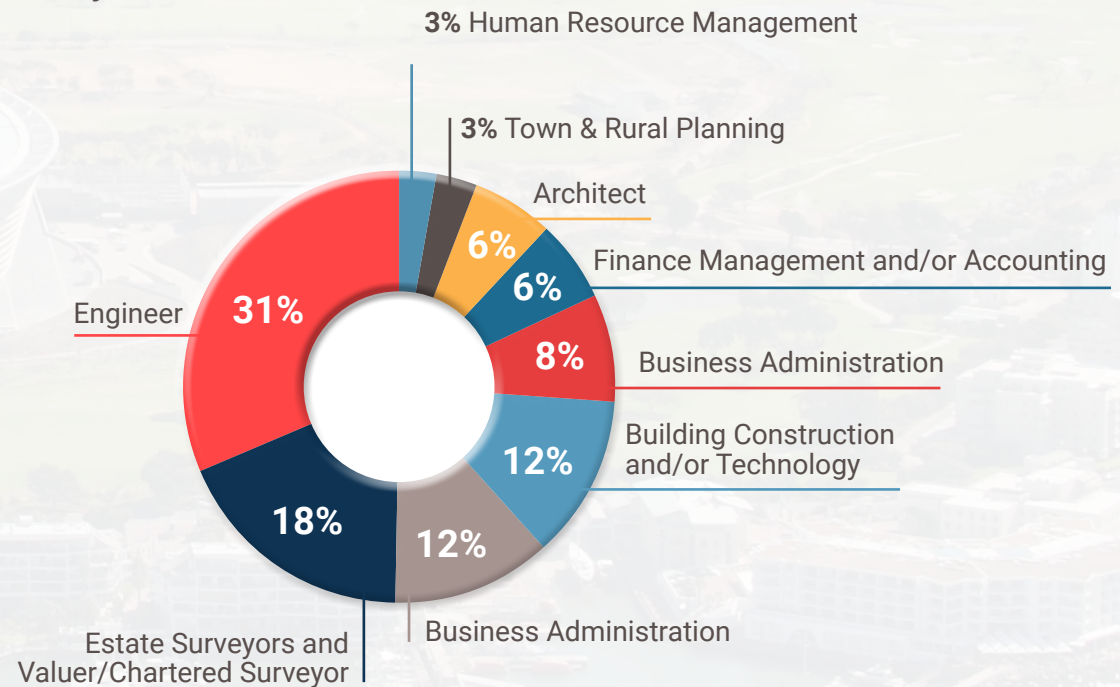


Figure 7: Participant Profession

3. RESULTS | 3.1 Descriptive analysis

3.1.8 Participant's affiliation (professional body)

35% of participants are affiliated with local FM bodies, 31% are affiliated with one of the International FM Associations, 12% affiliated with other professional bodies and noticeably 25% of participants are not affiliated with any professional bodies.

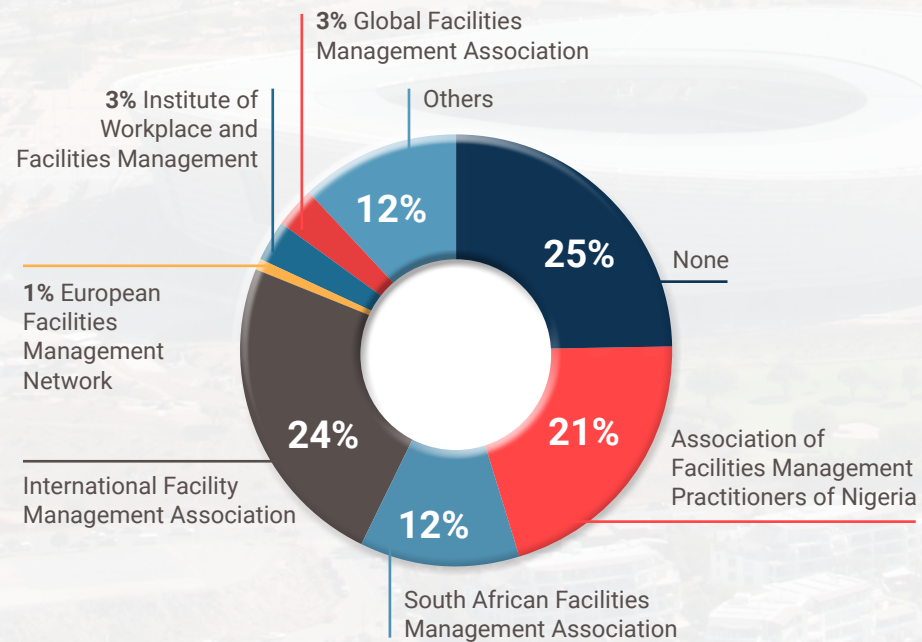


Figure 8: Participant by professional affiliation

3.1.9 Participant's age

40% of participants are middle-aged (36-45 years), 30% young (26-35 years) and 23% of participants in the 46-55 years age category.

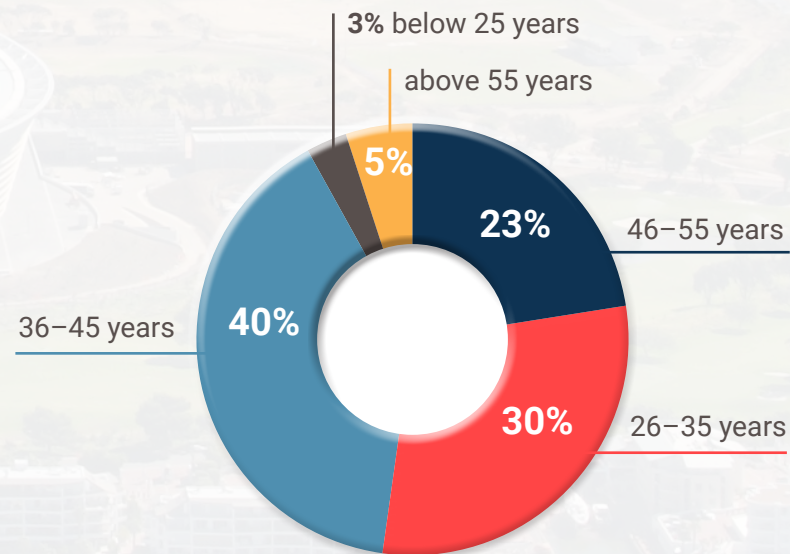


Figure 9: Participant experience profile



Level of importance of
competencies and their
sub-competencies

4. LEVEL OF IMPORTANCE OF COMPETENCIES AND THEIR SUB-COMPETENCIES

To determine the importance of different competencies required in FM practice, the participants have been asked to rate the level of adoption of 12 key competencies in performance of their scope of responsibilities

using a five point Likert scale (never, seldomly, sometimes, often and all the time). The Relative Importance Index (RII) was used to quantify the importance of each competency in the sample size of the study.

3.1 Group of competencies adopted in the performance of the facilities managers' scope of responsibilities

	Never	Seldomly	Sometimes	Often	All the time	RII	Rank
Occupancy & Human factors	2%	3%	10%	23%	63%	0.89	1
Operations & Maintenance	1%	3%	11%	24%	60%	0.88	2
Project Management	2%	3%	14%	29%	52%	0.85	3
Performance & Quality	2%	5%	12%	28%	53%	0.85	3
Environmental Stewardship & Sustainability	3%	4%	13%	27%	53%	0.84	5
Leadership & Strategy	3%	5%	15%	26%	51%	0.83	6
Communication	2%	6%	14%	32%	46%	0.83	7
Emergency Planning & Business Continuity	5%	6%	13%	26%	49%	0.82	8
Finance & Business	4%	7%	16%	27%	46%	0.81	9
Facility Information & Technology Management	8%	9%	18%	29%	35%	0.75	10
Contextual Socio-environment Crises Response & Management	10%	10%	19%	25%	37%	0.74	11
Real Estate & Property Management	13%	11%	16%	25%	35%	0.72	12

Table 3: Ranking of FM's scope of responsibilities

As ranked in Table 3 above the Occupancy and Human group factors are the most important sets of competencies. This is mainly due to the importance of all three factors in the Occupancy and Human group: (i) Workplace environment: Management of the Work Environment (RII=0.904); (ii) Occupancy: Management of the Built or Natural Environment for Habitation (RII=0.878); and (iii) Occupant Services: Management of Occupant Services (RII=0.877).

The other most important group of competencies for facilities managers are Operations and Maintenance, Project Management and Performance and Quality groups respectively. On the other hand, Real Estate and Property Management competencies ranked lower in importance since the participants rate the importance of all four factors in this group (Real Estate Strategies, Real Estate Assessment, Acquisition and Disposal, Real Estate Asset Management and Space Management) very low and low.

4. LEVEL OF IMPORTANCE OF COMPETENCIES AND THEIR SUB-COMPETENCIES

3.2 Leadership and Strategy sub-Competencies

Sub-competency	Never	Seldomly	Sometimes	Often	All the time	RII	Rank
Manage individuals and teams	0.8%	0.0%	7.2%	16.8%	75.1%	0.931	1
Lead and influence individuals and teams	0.8%	1.1%	6.4%	21.1%	70.6%	0.919	2
Manage stakeholder relationships including staff and contractors	1.9%	0.5%	8.8%	23.3%	65.5%	0.900	3
Strategic planning and alignment with corporate goals	1.1%	1.6%	7.8%	27.3%	62.3%	0.896	4
Develop policies, procedures and compliance support for performance of staff and contractors	1.3%	2.4%	12.6%	30.7%	52.9%	0.863	5
Manage change and transitions to redirect the use of resources to reshape the company	2.7%	3.2%	16.3%	36.4%	41.4%	0.821	6
Corporate social responsibility to the community and the environment	5.9%	12.6%	32.9%	29.4%	19.3%	0.687	7
Manage political, social, economic and industry factors affecting facility management outside the business	12.8%	16.0%	26.2%	21.9%	23.0%	0.652	8

Table 4: Ranking of Leadership and Strategy sub-Competencies

The Leadership and Strategy competency contains eight sub-competencies as listed in Table 4 above. Manage Individuals and Teams, Lead and Influence Individuals and Teams, and Manage Stakeholder Relationships including Staff and Contractors are the most important Leadership and Strategy sub-competencies in performance of the facility manager.

Moreover, Manage Individuals and Teams and Lead and Influence Individuals and Teams are the most important sub-competencies across all sub-competencies in 12 categories. In contrast the Leadership and Strategy competency also contains the two lesser sub-competencies, namely: Corporate Social Responsibility to the Community and the Environment; and Manage Political, Social, Economic and Industry Factors affecting FM outside the Business amongst the 65 sub-competencies in the 12 competency categories.

4. LEVEL OF IMPORTANCE OF COMPETENCIES AND THEIR SUB-COMPETENCIES

3.3 Operations and Maintenance sub-Competencies

Sub-competency	Never	Seldomly	Sometimes	Often	All the time	RII	Rank
Maintenance of building structures	0.5%	1.6%	10.2%	16.0%	71.7%	0.913	1
Maintenance of building systems and infrastructure	1.3%	1.6%	7.5%	20.6%	69.0%	0.909	2
Work management systems including estimating, planning, coordinating, scheduling, execution and tracking of works	0.5%	1.6%	8.6%	24.6%	64.7%	0.903	3
Managing maintenance of all elements and infrastructure through recognised strategies	0.8%	2.1%	10.7%	28.3%	58.0%	0.881	4
Management of building grounds and other external elements	1.6%	4.0%	10.2%	24.9%	59.4%	0.873	5
Restoration and renewal of a facility asset to good condition	0.8%	3.5%	10.2%	32.4%	53.2%	0.867	6
Directing of physical safety and security activities	1.6%	5.3%	12.0%	22.5%	58.6%	0.862	7
Management of furniture, fixtures, fittings and equipment	1.3%	6.1%	12.8%	22.2%	57.5%	0.857	8
Management of operational activities including procurement	2.1%	2.7%	15.5%	28.3%	51.3%	0.848	9

Table 5: Ranking of Operations and Maintenance sub-Competencies

The Operation and Maintenance competency is the largest group containing nine sub-competencies.

As shown in Table 5 above Maintenance of Building Structures, Maintenance of Building Systems and Infrastructure and Work Management Systems including estimating, planning, coordinating, scheduling, execution and tracking of works are the most significant sub-competencies in the Operation and Maintenance competency group. Moreover, Maintenance of Building Structures is the third most important sub-competency facilities managers require amongst all considered sub-competencies observed in this study.

4. LEVEL OF IMPORTANCE OF COMPETENCIES AND THEIR SUB-COMPETENCIES

3.4 Project Management sub-Competencies

Sub-competency	Never	Seldomly	Sometimes	Often	All the time	RII	Rank
Planning	0.8%	0.8%	7.2%	26.7%	64.4%	0.906	1
Execution and delivery	2.1%	2.9%	12.3%	28.6%	54.0%	0.859	2
Evaluation	1.3%	3.5%	13.1%	31.8%	50.3%	0.852	3
Designing	2.9%	6.7%	23.0%	27.8%	39.6%	0.789	4

Table 6: Ranking of Project Management sub-Competencies

As the third most crucial competency, Project Management contains four sub-competencies of Planning, Execution and Delivery, Evaluation and Designing, which respectively were ranked of importance by study participants.

3.5 Finance & Business sub-Competencies

Sub-competency	Never	Seldomly	Sometimes	Often	All the time	RII	Rank
Evidence-based decision-making process	1.6%	5.1%	14.4%	28.6%	50.3%	0.842	1
Business	2.4%	9.1%	13.9%	25.9%	48.7%	0.819	2
Finance	4.3%	7.5%	16.6%	19.3%	52.4%	0.816	3
Procurement	3.7%	5.9%	15.0%	30.2%	45.2%	0.814	4
Operational and capital budgeting	5.3%	7.0%	12.8%	25.1%	49.7%	0.814	5
Contracting	4.5%	5.6%	21.1%	30.5%	38.2%	0.784	6
Financial analysis and reporting	6.4%	9.4%	15.0%	28.3%	40.9%	0.776	7

Table 7: Ranking of Finance & Business sub-Competencies

The Finance and Business competency group has seven sub-competencies. Evidence-Based Decision-Making Process and Business and Finance are the most important sub-competencies in this group.

4. LEVEL OF IMPORTANCE OF COMPETENCIES AND THEIR SUB-COMPETENCIES

3.6 Communication sub-Competencies

Sub-competency	Never	Seldomly	Sometimes	Often	All the time	RII	Rank
Planning	1.3%	4.3%	13.6%	32.6%	48.1%	0.844	1
Delivery	1.9%	5.3%	13.1%	33.4%	46.3%	0.834	2
Evaluation	3.5%	7.8%	13.9%	30.7%	44.1%	0.809	3

Table 8: Ranking of Communication sub-Competencies

Communication is the smallest competency group with three sub-competencies, namely: Planning, Delivery and Evaluation. In this competency group Planning is the highest ranked sub-competency.

3.7 Performance and Quality sub-Competencies

Sub-competency	Never	Seldomly	Sometimes	Often	All the time	RII	Rank
Compliance with Regulations	1.6%	3.5%	8.6%	24.3%	62.0%	0.883	1
Improvements	1.9%	4.0%	13.4%	31.0%	49.7%	0.845	2
Measurement	1.3%	5.6%	12.8%	30.2%	50.0%	0.844	3
Standards	2.9%	5.1%	13.9%	28.3%	49.7%	0.834	4

Table 9: Ranking of Performance and Quality sub-Competencies

Compliance with Regulations, Improvements, Measurement and Standards are the sub-competencies of the Performance and Quality group. In this competency group Compliance with Regulations ranks the highest.

4. LEVEL OF IMPORTANCE OF COMPETENCIES AND THEIR SUB-COMPETENCIES

3.8 Occupancy and Human Factors sub-Competencies

Sub-competency	Never	Seldomly	Sometimes	Often	All the time	RII	Rank
Workplace environment	1.3%	2.1%	6.7%	23.0%	66.8%	0.904	1
Occupancy	2.1%	2.4%	11.8%	21.9%	61.8%	0.878	2
Occupant services	1.3%	4.0%	10.7%	22.7%	61.2%	0.877	3

Table 10: Ranking of Occupancy and Human Factors sub-Competencies

Occupancy and Human factors are the most important competency for facilities managers. Relatively this is the smallest group containing three sub-competencies of Workplace Environment, Occupancy and Occupant services .

3.9 Facility Information & Technology Management sub-Competencies

Sub-competency	Never	Seldomly	Sometimes	Often	All the time	RII	Rank
Needs assessment	4.5%	8.6%	17.4%	32.4%	37.2%	0.778	1
Information system	8.3%	7.8%	14.7%	26.2%	43.0%	0.776	2
Data collection	6.7%	9.1%	19.3%	29.9%	35.0%	0.755	3
Technology implementation	6.7%	9.9%	22.5%	28.1%	32.9%	0.741	4
Information security	12.3%	8.0%	16.0%	27.5%	36.1%	0.734	5
Maintenance and upgrade of technology	9.4%	13.4%	20.3%	31.0%	25.9%	0.702	6

Table 11: Ranking of Facility Information & Technology Management sub-Competencies

The Facility Information and Technology contains six sub-competencies. Needs Assessment, Information System and Data Collection are the top three sub-competencies of this group. However, the importance of all sub-competencies in Facility Information and Technology competency grouping are relatively low and close to each other.

4. LEVEL OF IMPORTANCE OF COMPETENCIES AND THEIR SUB-COMPETENCIES

3.10 Real Estate and Property Management sub-Competencies

Sub-competency	Never	Seldomly	Sometimes	Often	All the time	RII	Rank
Space management	7.8%	8.0%	14.7%	26.7%	42.8%	0.778	1
Real estate asset management	12.8%	9.9%	15.2%	22.2%	39.0%	0.725	2
Real estate strategies	13.4%	11.2%	14.4%	27.8%	33.2%	0.712	3
Real estate assessment, acquisition and disposal	16.6%	14.4%	21.4%	21.4%	26.2%	0.652	4

Table 12: Ranking of Real Estate and Property Management sub-Competencies

The Real Estate and Property Management has the lowest importance competency ranking and has four sub-competencies. All four sub-competency are ranked low and, for instance Real Estate Assessment, Acquisition and Disposal is the least important sub-competency among all 62 sub-competencies considered in this study.

3.11 Emergency Planning and Business Continuity sub-Competencies

Sub-competency	Never	Seldomly	Sometimes	Often	All the time	RII	Rank
Health and safety	3.5%	4.8%	7.0%	20.6%	64.2%	0.874	1
Risk management	3.7%	6.1%	16.0%	25.7%	48.4%	0.818	2
Emergency preparedness, response and recovery	5.9%	6.1%	13.9%	29.1%	44.9%	0.802	3
Risk management planning	6.4%	6.7%	15.0%	27.0%	44.9%	0.795	4
Facility resilience and business continuity	6.7%	6.7%	15.0%	29.4%	42.2%	0.788	5

Table 13: Ranking of Emergency Planning and Business Continuity sub-Competencies

Health and Safety, Risk Management and Emergency Preparedness, Response and Recovery are the top three sub-competencies in the Emergency Planning and Business Continuity competency group.

4. LEVEL OF IMPORTANCE OF COMPETENCIES AND THEIR SUB-COMPETENCIES

3.12 Environmental Stewardship and Sustainability sub-Competencies

Sub-competency	Never	Seldomly	Sometimes	Often	All the time	RII	Rank
Workplace and site management	2.1%	1.6%	14.4%	28.3%	53.5%	0.859	1
Energy management	2.4%	4.5%	10.2%	29.4%	53.5%	0.854	2
Waste management	2.9%	4.3%	14.2%	25.1%	53.5%	0.844	3
Water management	2.1%	5.3%	15.0%	26.7%	50.8%	0.837	4
Materials and consumable management	5.3%	3.7%	13.1%	23.3%	54.5%	0.836	5
Energy efficiency	5.3%	4.3%	12.6%	28.1%	49.7%	0.825	6

Table 14: Ranking of Environmental Stewardship and Sustainability sub-Competencies

Environmental Stewardship and Sustainability contains six sub-competencies. Workplace and Site Management, Energy Management and Waste Management are the most important sub-competencies in this group.

3.13 Contextual Socio-environment Crises Response and Management sub-Competencies

Sub-competency	Never	Seldomly	Sometimes	Often	All the time	RII	Rank
Managing regular mains electricity power failure/failure of alternative power source	6.7%	7.2%	17.4%	24.6%	44.1%	0.784	1
Response to regular breakdown of fittings and equipment resulting from poor standardisation	8.3%	9.1%	19.8%	20.6%	42.2%	0.759	2
Procuring skilled artisan service amidst preponderance of unskilled artisans.	10.4%	7.0%	13.6%	30.7%	38.2%	0.759	2
Identifying and procuring standardised facilities and components among uncertified products.	10.2%	8.6%	21.4%	26.2%	33.7%	0.729	4
Managing regular failure in public mains water and portable water supply	12.6%	11.5%	17.4%	24.6%	34.0%	0.712	5
Action towards procurement of equipment spare parts, facility components and scarce supplies from foreign nations	11.2%	15.5%	21.9%	21.1%	30.2%	0.687	6

Table 15: Ranking of Contextual Socio-environment Crises Response and Management sub-Competencies

Contextual Socio-Environment Crises Response and Management competency group contains six sub-competencies. Managing Regular Mains Electricity Power Failure / Failure of Alternative Power Source; Response to Regular Breakdown of Fittings and Equipment resulting from Poor Standardisation; and Procuring Skilled Artisan Service amidst preponderance of Unskilled Artisans are the top three important sub-competencies of this group.

4. LEVEL OF IMPORTANCE OF COMPETENCIES AND THEIR SUB-COMPETENCIES

3.14 Top 10 most important sub-Competencies in FM

The top 10 key sub-competencies are listed in Table 16 below. Among these most important sub-competencies, four are associated with Leadership competency, three belong to Operation and one sub-competency related to each Project management, Occupancy and Performance.

Competency	Sub-competency	Never	Seldomly	Sometimes	Often	All the time	RII	Rank
Leadership	Manage individuals and teams	0.80%	0.00%	7.20%	16.80%	75.10%	0.931	1
Leadership	Lead and influence individuals and teams	0.80%	1.10%	6.40%	21.10%	70.60%	0.919	2
Operation	Maintenance of building structures	0.50%	1.60%	10.20%	16.00%	71.70%	0.913	3
Operation	Maintenance of building systems and infrastructure	1.30%	1.60%	7.50%	20.60%	69.00%	0.909	4
Project Management	Planning	0.80%	0.80%	7.20%	26.70%	64.40%	0.906	5
Occupancy	Workplace environment	1.30%	2.10%	6.70%	23.00%	66.80%	0.904	6
Operation	Work management systems including estimating, planning, coordinating, scheduling, execution and tracking of works	0.50%	1.60%	8.60%	24.60%	64.70%	0.903	7
Leadership	Manage stakeholder relationships including staff and contractors	1.90%	0.50%	8.80%	23.30%	65.50%	0.9	8
Leadership	Strategic planning and alignment with corporate goals	1.10%	1.60%	7.80%	27.30%	62.30%	0.896	9
Performance	Compliance with Regulations	1.60%	3.50%	8.60%	24.30%	62.00%	0.883	10

The seventh key sub-competency is Work Management Systems including estimating, planning, coordinating, scheduling, execution and tracking of works, while other two leadership sub-competencies, namely: Manage Stakeholder Relationships including staff and contractors, Strategic Planning and Alignment with Corporate Goals and Compliance with Regulations both are ranked as eighth and ninth most critical sub-competencies. Finally, Compliance with Regulations is the tenth key sub-competency that FMs need to adopt in the performance of their scope of responsibilities.

Table 16: Top 10 Ranked sub-competencies

Managing Individuals and Teams and Lead and Influence Individuals and Teams are not only the most important factor in the Leadership and Strategy group but also the most important among all other sub-competencies.

Maintenance of Building Structures and Maintenance of Building Systems and Infrastructure are the next (third and fourth) most important sub-competencies associated with Operation, follow by Planning and Workplace environment.



Hypothesis Test

Martyr's Monument, Ouagadougou, Burkina Faso

5. HYPOTHESIS TEST (DIFFERENCE BETWEEN GROUPS)

Based on the research questions, the research is designed to test the following hypotheses:

H1: *There is no significant difference on importance of FM competencies across the regions*

H2: *There is no significant association between the importance of FM competencies and level of education of FM*

H3: *There is no significant difference on importance of FM competencies across various FM affiliations*

H4: *There is no significant association between the importance of FM competencies and gender FM*

H5: *There is no significant different on importance of FM competencies across various FM level of experiences*

To select the appropriate statistical method for testing the research hypotheses, the normality of data was evaluated. Both Kolmogorov-Smirnov and Shapiro-Wilk test revealed that the collected data did not meet the criteria for normality ($df=371$, $\text{sig}<0.05$). Therefore, non-parametric statistic tests was used for inferential analysis.

5. HYPOTHESIS TEST (DIFFERENCE BETWEEN GROUPS)

4.1 Kruskal-Wallis H Test on Region

Kruskal-Wallis H test was utilised to determine if the required FM sub-competencies are different between various region of the study. The result of the test (see Table 17) proves the following 23 sub-competencies out of total 65 are statistically significant in their differences across the region of study.

Among these sub-competencies the level of importance of all seven sub-competencies in the Finance and Business group and all four sub-competencies in Real Estate and Property Management are significantly different across the regions.

Table 17: Hypothesis test by region

Null Hypothesis	Test	Sig.a,b	Decision
The distribution of Management individuals and teams is the same across categories of Region.	Independent-Samples Kruskal-Wallis Test	.006	Reject the null hypothesis.
The distribution of Lead and influence individuals and teams is the same across categories of Region.	Independent-Samples Kruskal-Wallis Test	.045	Reject the null hypothesis.
The distribution of Management political, social, economic and industry factors affecting facility management outside the business is the same across categories of Region.	Independent-Samples Kruskal-Wallis Test	.019	Reject the null hypothesis.
The distribution of Management of furniture, fixtures, fittings and equipment is the same across categories of Region.	Independent-Samples Kruskal-Wallis Test	.019	Reject the null hypothesis.
The distribution of Finance: Control of finances relating to the FM services is the same across categories of Region.	Independent-Samples Kruskal-Wallis Test	.002	Reject the null hypothesis.
The distribution of Business: Management and analysis of contracts and financial information is the same across categories of Region.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.
The distribution of Operational and capital budgeting is the same across categories of Region.	Independent-Samples Kruskal-Wallis Test	.015	Reject the null hypothesis.

5. HYPOTHESIS TEST (DIFFERENCE BETWEEN GROUPS)

4.1 Kruskal-Wallis H Test on Region, continued

Null Hypothesis	Test	Sig.a,b	Decision
The distribution of Evidence-based decision-making process is the same across categories of Region.	Independent-Samples Kruskal-Wallis Test	.023	Reject the null hypothesis.
The distribution of Procurement: Use of systematic process in the purchase of goods and/or services is the same across categories of Region.	Independent-Samples Kruskal-Wallis Test	.034	Reject the null hypothesis.
The distribution of Contracting is the same across categories of Region.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.
The distribution of Financial analysis and reporting is the same across categories of Region.	Independent-Samples Kruskal-Wallis Test	.010	Reject the null hypothesis.
The distribution of Compliance with Regulations: Monitoring compliance with regulations, policies and standards. is the same across categories of Region.	Independent-Samples Kruskal-Wallis Test	.033	Reject the null hypothesis.
The distribution of Occupancy: Management of the built or natural environment for habitation is the same across categories of Region.	Independent-Samples Kruskal-Wallis Test	.005	Reject the null hypothesis.
The distribution of Occupant services: Management of occupant services is the same across categories of Region.	Independent-Samples Kruskal-Wallis Test	.012	Reject the null hypothesis.
The distribution of Information security is the same across categories of Region.	Independent-Samples Kruskal-Wallis Test	.006	Reject the null hypothesis.
The distribution of Information system: Upkeep of assets for information handling applications, services components. is the same across categories of Region.	Independent-Samples Kruskal-Wallis Test	.039	Reject the null hypothesis.
The distribution of Real estate strategies: Real estate portfolio strategic objectives and value optimization is the same across categories of Region.	Independent-Samples Kruskal-Wallis Test	.004	Reject the null hypothesis.

5. HYPOTHESIS TEST (DIFFERENCE BETWEEN GROUPS)

4.1 Kruskal-Wallis H Test on Region, continued

Null Hypothesis	Test	Sig.a,b	Decision
The distribution of Real estate asset management is the same across categories of Region.	Independent-Samples Kruskal-Wallis Test	.001	Reject the null hypothesis.
The distribution of Space management is the same across categories of Region.	Independent-Samples Kruskal-Wallis Test	.015	Reject the null hypothesis.
The distribution of Materials and consumable management is the same across categories of Region.	Independent-Samples Kruskal-Wallis Test	.040	Reject the null hypothesis.
The distribution of Managing regular failure in public mains water and portable water supply is the same across categories of Region.	Independent-Samples Kruskal-Wallis Test	.019	Reject the null hypothesis.
The distribution of Procuring skilled artisan service amidst preponderance of unskilled artisans. is the same across categories of Region.	Independent-Samples Kruskal-Wallis Test	.046	Reject the null hypothesis.

Further analysis of the above sub-competencies revealed the importance of these sub-competencies are higher in the Southern, Eastern and Western Africa region respectively compared to Northern and particularly Middle Africa region.

5. HYPOTHESIS TEST (DIFFERENCE BETWEEN GROUPS)

4.2 Kruskal-Wallis H Test on Education

The required FM sub-competencies were tested to determine if these sub-competencies are associated with the level of education of the facilities manager. The results of the Kruskal-Wallis H Test, depicted in Table 18 proved that only the following five sub-competencies within the Operations and Maintenance group are associated with the level of education. The importance of the other 60 sub-competencies are independent from the level of education of the facilities manager.

Table 18: Hypothesis test on Education

Null Hypothesis	Test	Sig.a,b	Decision
The distribution of Maintenance of building structures is the same across categories of level of education	Independent-Samples Kruskal-Wallis Test	.032	Reject the null hypothesis.
The distribution of Maintenance of building systems and infrastructure is the same across categories of level of education	Independent-Samples Kruskal-Wallis Test	.005	Reject the null hypothesis.
The distribution of Management of building grounds and other external elements is the same across categories level of education	Independent-Samples Kruskal-Wallis Test	.004	Reject the null hypothesis.
The distribution of Management of furniture, fixtures, fittings and equipment is the same across categories of level of education	Independent-Samples Kruskal-Wallis Test	.014	Reject the null hypothesis.
The distribution of Work management systems including estimating, planning, coordinating, scheduling, execution and tracking of works is the same across categories of level of education	Independent-Samples Kruskal-Wallis Test	.018	Reject the null hypothesis.

Further analysis proved that there is a negative association between the level of education and the importance of the five above sub-competencies. In the other words, by increasing the education level the importance of these five operations and maintenance sub-competencies are significantly reduced.

5. HYPOTHESIS TEST (DIFFERENCE BETWEEN GROUPS)

4.3 Kruskal-Wallis H Test on Affiliated with Professional Bodies

The result of the hypothesis test proved that the importance of the following seven sub-competencies are statistically significant in terms of the affiliation with professional FM bodies.

Among these seven sub-competencies, four belong to Finance & Business and Occupancy and Human factors (2 from each group) and three from Leadership and Strategy, Operations and Maintenance and Real Estate and Property Management (one sub-competency from each group).

Table 19: Hypothesis test on affiliation with professional bodies

Null Hypothesis	Test	Sig.a,b	Decision
The distribution of Manage stakeholder relationships including staff and contractors is the same across categories of professional associations	Independent-Samples Kruskal-Wallis Test	.046	Reject the null hypothesis.
The distribution of Management of building grounds and other external elements is the same across categories of professional associations	Independent-Samples Kruskal-Wallis Test	.018	Reject the null hypothesis.
The distribution of Finance: Control of finances relating to the FM services is the same across categories of professional associations	Independent-Samples Kruskal-Wallis Test	.041	Reject the null hypothesis.
The distribution of Contracting is the same across categories of professional associations	Independent-Samples Kruskal-Wallis Test	.038	Reject the null hypothesis.
The distribution of Occupancy: Management of the built or natural environment for habitation is the same across categories of professional associations	Independent-Samples Kruskal-Wallis Test	.010	Reject the null hypothesis.

5. HYPOTHESIS TEST (DIFFERENCE BETWEEN GROUPS)

4.3 Kruskal-Wallis H Test on Affiliated with Professional Bodies, continued

Null Hypothesis	Test	Sig.a,b	Decision
The distribution of Occupant services: Management of occupant services is the same across categories of professional associations	Independent-Samples Kruskal-Wallis Test	.026	Reject the null hypothesis.
The distribution of Real estate asset management is the same across categories of professional associations	Independent-Samples Kruskal-Wallis Test	.029	Reject the null hypothesis.

Further analysis proved that the above seven sub-competencies are more important among the facilities managers affiliated with the South African Facilities Management Association, the International Facilities Management Association, the European Facilities Management Network and the Institute of Workplace and Facilities Management.

5. HYPOTHESIS TEST (DIFFERENCE BETWEEN GROUPS)

4.4 Kruskal-Wallis H Test on Gender

The result of the Kruskal-Wallis H Test verified the level of importance of the following six sub-competencies as being significantly associated to the gender of the facilities manager (see Table 20). Among these six sub-competencies, four are classed under Environmental Stewardship and Sustainability, and a sub-competency from each Finance & Business and Facility Information & Technology Management group.

Table 20: Hypothesis test on gender

Null Hypothesis	Test	Sig.a,b	Decision
The distribution of Financial analysis and reporting is the same across gender	Independent-Samples Kruskal-Wallis Test	.039	Reject the null hypothesis.
The distribution of Information system: Upkeep of assets for information handling applications, services components is the same across gender	Independent-Samples Kruskal-Wallis Test	.019	Reject the null hypothesis.
The distribution of Energy management is the same across gender	Independent-Samples Kruskal-Wallis Test	.003	Reject the null hypothesis.
The distribution of Energy efficiency is the same across gender	Independent-Samples Kruskal-Wallis Test	.002	Reject the null hypothesis.
The distribution of Water management is the same across gender	Independent-Samples Kruskal-Wallis Test	.005	Reject the null hypothesis.
The distribution of Materials and consumable management is the same across gender	Independent-Samples Kruskal-Wallis Test	.013	Reject the null hypothesis.

Further analysis revealed that the four shown above in the Environmental Stewardship and Sustainability sub-competencies are more important among the female participants when compared to male participants.

5. HYPOTHESIS TEST (DIFFERENCE BETWEEN GROUPS)

4.5 Kruskal-Wallis H Test on Experience

Null Hypothesis	Test	Sig.a,b	Decision
The distribution of Lead and influence individuals and teams is the same across categories of As an individual for how many years have you been a Facilities Management practitioner?.	Independent-Samples Kruskal-Wallis Test	.003	Reject the null hypothesis.
The distribution of Manage stakeholder relationships including staff and contractors is the same across categories of As an individual for how many years have you been a Facilities Management practitioner?.	Independent-Samples Kruskal-Wallis Test	.043	Reject the null hypothesis.
The distribution of Maintenance of building systems and infrastructure is the same across categories of As an individual for how many years have you been a Facilities Management practitioner?.	Independent-Samples Kruskal-Wallis Test	.029	Reject the null hypothesis.
The distribution of Management of building grounds and other external elements is the same across categories of As an individual for how many years have you been a Facilities Management practitioner?.	Independent-Samples Kruskal-Wallis Test	.040	Reject the null hypothesis.
The distribution of Finance: Control of finances relating to the FM services is the same across categories of As an individual for how many years have you been a Facilities Management practitioner?.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.
The distribution of Business: Management and analysis of contracts and financial information is the same across categories of As an individual for how many years have you been a Facilities Management practitioner?.	Independent-Samples Kruskal-Wallis Test	.005	Reject the null hypothesis.
The distribution of Operational and capital budgeting is the same across categories of As an individual for how many years have you been a Facilities Management practitioner?.	Independent-Samples Kruskal-Wallis Test	.005	Reject the null hypothesis.
The distribution of Evidence-based decision-making process is the same across categories of As an individual for how many years have you been a Facilities Management practitioner?.	Independent-Samples Kruskal-Wallis Test	.047	Reject the null hypothesis.

Further analysis proved that the level of importance of these eight sub-competencies are directly associated with the level of the facilities manager's experience, which means the facilities manager with more than 10 years of experience believed these sub-competencies are more important when compared to the facilities manager with less than 10 years of experience.

A wide-angle photograph of the Botswana Innovation Hub in Gaborone, Botswana, during sunset. The building features a modern, curved design with large glass windows and a prominent, cantilevered upper floor. The sky is a mix of orange, yellow, and blue. In the foreground, a paved courtyard is landscaped with several circular and rectangular planters containing various green plants and small trees. An orange semi-transparent banner with the word 'Summary' in white text is positioned in the lower right area of the image.

Summary

6. SUMMARY

The study highlighted the most important competencies for FMs in Africa. These primarily fall within the Leadership competency, Operations competency, Project management and Occupancy and Performance. It is interesting to note that the majority of FMs surveyed hold some form of tertiary qualification. It is also interesting to note the experiential and demographic profile of the survey participants. In terms of the education and development objectives for this study these key findings are important for the Africa Facilities Management Association as they would define the nature, extent and curriculum content of any educational or professional development initiatives for the FM community in Africa.

In conclusion, there is significant opportunity for both growth and development of the FM profession in Africa.

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