

Evaluating the Level of Automated Facilities Management Adoption and It's Major Challenges in Hotels in Awka, Anambra State, Nigeria

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ABSTRACT

Automated Facilities management is the use of computerized system to perform or supplement facilities management functions. Facilities managers can manage multiple facilities from one location by having all data in one place. The study examined the level of adoption of automated facilities management and the factors militating against effective adoption of the process in hotels in Awka. The sample size, which is the total number of registered hotels in Awka, is 101. The study adopted field survey method, using structured questionnaires, personal interviews and observations as tools for data collection. A random sampling technique was used to select the sample size. The data was subjected to descriptive statistical method. Analysis was done using statistical package for social science (SPSS) version 23. Frequency tables, percentages, graphs and charts were used to present the data. The hypotheses were tested using Kruskal Wallis H-test while the objectives were analyzed with the use of Mean and Mean rank. The study revealed the level of application is low and there are certain factors militating against effective adoption of automated facilities management in hotels. It was recommended that the hospitality industry should incorporate automated approaches to enhance facilities management practices in hotels, employ well-trained facilities managers, organize workshops and seminars regarding new technologies and automation and also increase funding to acquire automated facilities that will help streamline their operations and reduce errors and cost.

KEYWORDS: *Automated Facilities Management, Hospitality industry, Automation*

1. INTRODUCTION

The hospitality industry is one of the major sectors that influence the country's economy, it attracts the investment and beneficial application of Facilities Management. This is because hotel is a good driver to the sustainable development of tourism in many countries of the world including Nigeria. Factually, according to Rutherford (2002), the factors that influence the smooth running of other businesses due to economic down turns equally influence hotel. Hotel industry is a competitive business in which customers place great emphasis on reliability and timely service delivery. Hotel is a complex organization with dozens of moving parts that must work seamlessly together to maintain efficiency and customer satisfaction (Mark 2018). Prior to this, the management can create organizational climate

devoted to quality services by engaging a workforce and also establish lasting relationships with customers. People, facilities and systems put in place makes up an organization that is designed to render services in fulfilment of social obligations or in pursuit of money (Olufemi, D., Caleb, A. and Akinjare, O., 2011). According to Cotts, D., Roper, O., and Payant, P. (2010), facility management is defined as a profession that is intertwined with several disciplines to proper functioning of the built environment through the integration of people, processes, places and technology. The British Institute of Facilities Management (BIFM, 2009) defined facilities Management as "The practice of coordinating the physical workplace with the people and work of the organization, integrating planning,

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management and delivery of services to meet people's needs within the living and working environment". Facility management is a management concept that encompassing the seven principles of management which are; planning, organizing, controlling, motivating, coordinating, communicating and directing. Sheynkman, (2020) explained that automated facility management which is the use of computerized system to perform or supplement facility management functions, focuses on putting facility services on auto-pilot. Automated facility management system works through triggers, this means that an action triggers an appropriate reaction, which decreases the manual work required to complete a process. Hotels can retain a larger amount of customers if it had stronger processes and procedures in place. Automation of these processes further simplifies mundane, routine tasks that are done in a process that may not need interaction from an outside force. This creates process improvement, which leads to lower costs, motivated employees, and happier customers (McGregor, 2018).

Facilities managers in hotels face different forms of challenges, ranging from coordinating teams, attending meetings, replying urgent emails, consulting vendors or suppliers, etc are duties facilities managers must handle in hotels.

The need to maintain and manage sophisticated facilities in hotels and the ever-increasing customers' needs have expanded the duties of a hotel facilities manager. Another challenging issue faced by facilities managers is that they are responsible for maintaining the upkeep of hotels and ensuring that guests are well accommodated during their stay. On the back end, these professionals inspect rooms, handle budgets, manage schedules, and monitor staff performance. On the front lines, hotel facilities managers speak directly with guests and address any issues that may come up with customers. Automation can assist the hotel facility manager in carrying out several task such as; Sending automated reports to key stakeholders on a regular basis, notifying facility managers when it's time for scheduled maintenance, notifying facility managers when supplies are running low, assisting with scheduling meetings and reserving rooms, assisting with project management. Therefore, automation is not just beneficial, but essential to the progression and evolution of facility management.

2. LITERATURE REVIEW

2.1. Concept of Automated Facility Management

Facility management automation, which is defined as the use of computerized system to perform or supplement facility management functions, spurs facility management implementation. It also serves as

an integrating factor for people, place and facilities (Lunn, S., and Stephenson, P. 2000). Facility management automation provides the facility manager with the tools and methods that aid control over facility management process, which can be said to be complex in nature. According to Owen, (1995) automation is not a new term in facility management because the term "facility management" originated from the hi-tech world and it was adapted into the built environment by space planners and office manufacturers. It has since evolved in the last four decades from pneumatic and mechanical devices into direct digital controls and then later into electronic devices with microprocessors and communication capabilities (Lunn and Stephenson, 2000).

The use of automation systems presents facility managers innovative ways of ensuring functionality of the built environment through the integration of people, place, process and technology. These systems must however be selected with care and operated with dedication to achieve desired results. Maintenance of building fabric and its services, which is an aspect of facility management during the operation phase of the building, contributes immensely to the sustainable performance of the building. Good maintenance culture is needed for a nation to maintain the value and amenity of its building stock; however the consistent change in the nature and function of building systems coupled with the level of sophistication of users of hotel facilities require that facility managers find innovative ways to control and manage facilities. Hence, facility managers are increasingly striving for better control over resource utilization rates of their facilities for a more economic, environment-friendly and optimized facility management experience through the use of information technology herein referred to as facility management automation (Parasanazhad and Tarandi, 2012).

According to Majumdar, (2021) the use of emerging technologies in facility management systems has been a boon for bringing about better and more precise delivery of service. One key element in the use of these technologies has been to automate the entire system so there is instant data and information transfer between the various units and faster mobilization of resources. How this system works is that an intelligent network of electronic devices is formed and then manipulated by computerized control systems. This control system is designed to manage and monitor all the mechanical and electronic aspects, send signals for plumbing errors and even security breaches. It also control the lighting system and interior temperature, keeps tabs on all devices' functionality and failure, sends immediate

notifications through emails to parties concerned. Automated facility management system is designed in such a way that it can sense and detect hazards whether internal or environmental and send appropriate alarm signals. It enables better customization of services and life-cycle management, which means better return for one's investment. Automated facility management decreases one's liability and brings in better profits and higher level of customer satisfaction. (Majumdar, 2021).

Integrated facility management approach is focused on connecting the on-site and off-site management seamlessly, weaving all services into a cohesive network. This means:

creating and monitoring a database for all services and tools, monitoring work schedules and settling up preventive maintenance, reporting on errors and defects, resourcing expenditures, setting up periodic inspections and quality control sessions, maintain records, tracking and detailing cost, and maintaining documentation. According to Owen (1995), Facilities Management became recognized as an identifiable management concept in the United States at the start of the eighties and has been practiced in the United Kingdom since 1983 with the main growth occurring in the nineties; all the functions, now incorporated under the Facilities Management umbrella existed prior to the recognition of Facilities Management. What Facilities Management has achieved, which is new, is the understanding that a coordinated and integrated approach to a range of business activities adds value to an organization's process. This is in tandem with the definition of Alexander (1996) who defined Facilities Management as "the process by which an organization delivers and sustains support services in a quality environment to meet strategic needs". However, facility management as a profession is faced by certain challenges. According to Bako, (2020) problems of discovering inventive and maintainable method of controlling power usage, waste elimination, resourcefulness and environmental destruction and pollution, accomplishing the decrease, reutilized and reusable command to waste management are major challenges of facility management.

2.2. Application of Automated Facilities in Facility Management

A. Artificial Intelligence (AI)

When connected to your facility management software system, artificial intelligence (AI) allows for real-time notifications, alerts, and solutions to issues that may arise. Maintenance cost tends to take up the majority of a business's facilities management budget. However, uncovering ways to reduce

maintenance costs can be tricky, given a data driven strategy requires extensive analysis and manual spend data analysis often leads to inaccurate, costly conclusions.

B. Internet of Things

In facilities management, IoT devices can range from HVAC systems to lighting controls to elevators, all integrated into a building network. IoT benefits facilities management by fostering communication across equipment systems. This boosts efficiency and provides vast amounts of control over facilities environment. Many facility managers are already using IoT to monitor and control systems in real-time from off-site. Through IoT analytics, facilities managers can gain valuable insight into daily operations and identified areas for improvement, such as energy use or planned maintenance spend.

C. Building automation and monitoring

Smart buildings incorporate an automation system to monitor and manage all aspects of buildings' environments independently, including mechanical, lighting, climate control, and ventilation. These technologically-advanced buildings can help reduce facility management operational costs by keeping building climates at certain ranges when employees are not present, turning lights off when they are not needed, and monitoring systems for performance failures.

2.3. Benefits of Automated Facilities Management in Hotel

A. Service automation

Service automation technology automates workflows to enable quick, easy and efficient repair and maintenance management. When facility managers streamline their processes with intuitive technology like service automation, they can validate work performed in the field, manage risk, keep tracks of all service request, and complete proposals and invoices with ease (Fowler 2017). Service automation and robotic technologies have made their way into the hospitality industry, affecting different areas of hotel operations. Hotels implemented self-service kiosks that enable customers to complete check-in and checkout process automatically without involving front desk agents (Kim and Qu, 2014).

B. Remote Monitoring:

According to Glezer, (2008) round-the-clock fault management requires monitoring of facilities at different frequencies, and triggering of inspection and repair at appropriate times. In some cases, continuous monitoring is required. For example, technical building facilities, including elevators and heating installations need to be working every time, as do hot-water systems, power, ventilation, and air-

conditioning systems. In certain facilities, the air quality and humidity levels need to be checked continuously.

C. Predictive Maintenance:

Problems caused by energy failure in computer centers and technical buildings always involve high costs. Proactive monitoring and predictive maintenance is needed in such environments, in order to minimize faults and maintain high availability of systems. The goal of preventive maintenance is to increase the asset lifetime by preventing excess depreciation and impairment or untimely breakdown. (Glezer, 2008).

D. Security services:

Glezer (2008), opined that round the clock security of hotel facilities and building premises is another aspect of facility management automation that benefits the hospitality industry. This includes access control for critical areas, theft detection and prevention, control, regulation and monitoring of the movement of vehicles, supplies, and goods.

E. Inventory Management:

Inventory taking and data collection are also

important in hotel facilities management, because the quality of information collected impacts the planning accuracy and reliability of decision-making. Hence, all of the reports from the facility management system need to be linked to the data management center according to priority, so that faults can be cleared according to the necessary response time.

3. RESEARCH METHODOLOGY

The study adopted both primary and secondary source of data. Primary data were generated through the use of a well-structured questionnaire designed specifically for the study. The questions in the questionnaire are based on the key variables highlighted in the literature review and the research questions. The questionnaires were distributed to the facilities managers, hotel managers, hotel owners, supervisors, and accountants in the 101 registered hotels in Awka. Secondary data were retrieved through Textbooks, Journals, Internet sources, official publications, periodicals, official gazettes etc. to back up the primary sources. A baseline of MIS 2.5 was used to determine the significance of the effect of the factors. Factors having 2.5 were considered as significant while factors with < 2.3 as insignificant.

Table 4.1: Questionnaire Distribution in the Study Area

Professionals	No. Distributed	No. Returned	Percentage returned (%)	No. not Returned	Percentage not returned (%)
Respondents	101	97	96.04%	4	3.96%
Total	101	97	96.04%	4	3.96%

The results of the distribution of the questionnaire in Table 4.1 revealed that the proportion of the questionnaire returned or valid questionnaire is 97 (96.04%) implying a very high proportion. Mugenda and Mugenda (2003) explained that response rate of 50% is adequate for analysis and reporting. Therefore, the respond rate of this study is adequate as they exceed the average percentage in accordance to Mugenda and Mugenda (2003) postulation.

Table 4.2: Level of adoption of automated facilities management in hotels in Awka

Level of application of automated facilities management in hotels in Awka	Frequency	Percent	Valid Percent	Cumulative Percent
Nil	13	13.4	13.4	13.4
Low	43	44.3	44.3	57.7
Moderate	34	35.1	35.1	92.8
High	7	7.2	7.2	100.0
Very High	0	0.0	0.0	100.0
Total	97	100.0	100.0	

Table 4.2 shows the distribution of respondents based on their responses on the level of application of automated facilities management in hotels in Awka. The distribution shows that 13 (13.4%) respondents say there are no level of application of automated facilities management, 43 (44.3%) say the level of application of automated facilities management in hotels is low, 34 (35.1%) say the level of application of automated facilities management in hotels is moderate, 7 (7.2%) say there is high application of automated facilities management in hotels in Awka, and no respondents said the application of automated facilities management is very high in hotels in Awka.

Table 4.3: Challenges of automated facilities management practices in hotels in Awka

Variables	SA	A	ID	D	SD	Group MIS	Rank
	Mean	Mean	Mean	Mean	Mean		
Low Power Supply	2.00	4.57	4.00	4.00	2.42	3.87	1
Poor funding	1.11	4.79	4.00	2.00	1.58	3.59	2
Challenges for employees	1.22	4.60	3.88	2.22	1.33	3.47	3
Regulatory compliance and traceability	1.22	4.45	3.76	2.11	1.83	3.43	4
Workforce and skills gaps	4.56	4.00	1.40	3.33	4.75	3.41	5
Difficulty in procuring materials	1.44	3.43	4.36	4.00	2.17	3.38	6
Data interpretation	5.00	1.64	4.08	5.00	5.00	3.31	7
Software complexity	4.89	1.86	3.84	4.44	5.00	3.28	8
Environmental factors	4.89	1.62	3.92	4.89	5.00	3.24	9
Lack of Knowledge on automation	5.00	1.69	3.24	5.00	5.00	3.11	10
Mean score							3.38

The mean score in Table 4.12 is 3.38, this implies that any factor militating against the effective adoption of automated facilities management practices in hotels in Awka with mean score less than 3.38 is considered not significant, while a mean score of more than 3.38 is considered significant. The results of Table 4.12 show that Low power supply (mean score = 3.87), Poor funding (mean score = 3.59%), Challenges for employees (mean score = 3.47), Regulatory compliance and traceability (mean score = 3.43), Workforce and skills gaps (mean score = 3.41), and Difficulty in procuring materials (mean score = 3.38), are the significant factors that militate against the effective adoption of automated facilities management practices in hotels in Awka.

Test of Hypothesis

H₀₁: There are no significant factors militating against effective adoption of automated facilities management practices in hotels in Awka.

Table 4.4

Professionals	N	Mean rank	Chi-square	Df	P-value	Rule	Decision
Hotel Owner	10	23.55					
Manager	10	23.40					
Facilities Manager	10	23.70	1.368	4	0.850	P-value > 0.05 accept H ₀₂ hypothesis	Accepted
Accountant	10	28.85					
Supervisor	10	28.00					

Table 4.4 shows the mean rank of Respondents from 5 professionals in Hospitality industry as 23.55, 23.40, 23.70, 28.85, and 28.00 respectively. The table further shows that there is no significant variation among the respondents from the five selected professionals of this study on the factors militating against effective adoption of automated facilities management in hotels as the P-value 0.850 is greater than the critical value 0.05. Thus, the null (H₀₂) hypothesis is accepted. This implies that the Respondents are in agreement with the factors militating against effective adoption of automated facilities management in Awka, Anambra.

4. SUMMARY OF FINDINGS

From the analysis, several inferences were made based on the findings.

- Firstly, it was seen that respondents agreed that automated facilities management practices has a positive effect on hotels in Awka. However, the study shows that the level of application is low. This means that the hotels in Awka are not solely practicing automated facilities management.
- The study shows that apart from reducing maintenance cost, automated facilities management also increases system efficiency and reduces facilities management time through

automated check-in and checkout, automated notifications and reminders, energy management, personnel management, facilities management and customer satisfaction Automation in laundry by use of conveyer belts in the issue process helps in space and time optimization and better customer satisfaction. This is in line with the research carried out by Hameed and Prasad (2020), on the impact of automation in hospitality industry and its application. The study revealed that certain factors such as; cost of acquiring automating system, lack of knowledge of automated facilities management, initial cost of

installation, software complexity, data interpretation, interoperability, challenges for employees, bureaucracy, environmental factors, aging workforce and skills gap, regulatory compliance and traceability, difficulty in procuring materials are the major challenges facing the adoption of automated facilities management in the hospitality industry.

CONCLUSION

Automated facilities management practices enhance facility management services in different areas using various process improvements, thereby reducing cost and save time. Facility management jobs have become simpler, faster and more accurate with the help of automated machines and software. It is significant to note that hotel patronage would increase if automated facilities management is adopted and practice effectively in hotels. Automation promotes efficiency and develops reliability and also provides quality of the services. Therefore the role of automated facilities management practices in the hospitality industry is very significant and useful.

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