

Evaluation of the Impact of Information and Communication Technology in Real Estate Project Management, in South-East, Nigeria

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Abstract: Real estate development has witnessed remarkable growth in recent years, In South East, Nigeria, as the world becomes increasingly interconnected, the impact of information and communication technology (ICT) on various industries is undeniable, the integration of ICT in real estate project management has significantly transformed the industry, enhancing efficiency, speed, and accuracy in various processes. This article evaluates the impact of ICT in real estate project management in South-East, Nigeria, highlighting the benefits it brings to the sector. To conduct this evaluation, a mixed-methods research approach was employed using two different data collection instruments viz: mixture of structured and open-ended questionnaire and semi-structured interviews with the selected project teams which include architects, quantity surveyors, real estate project managers and real estate developers were used to gather information on the study. The collected data were analyzed using appropriate statistical methods for the quantitative survey. The study revealed that real estate project management in the South-East Nigeria has experienced increased transparency and accountability through the use of ICT. Online project tracking systems have made it easier for stakeholders to monitor project progress and ensure compliance with regulations even from afar. Adoption of ICT in real estate project management has resulted in significant cost savings and increased profitability. ICT impacts positively on real estate project management in the South-East Nigeria especially in term of increased efficiency, collaboration to analysis and cost savings, ICT has become an indispensable tool in this industry and has transformed traditional project management practices by streamlining processes, enhancing communication, and providing stakeholders with real-time project information. As the real estate market in Nigeria continues to grow, it is imperative for professionals in the sector to embrace ICT integration to remain competitive and ensure project success.

Keywords: Evaluation, Impact, Information and Communication Technology, Real Estate Project Management.

1. INTRODUCTION

Real estate development has witnessed remarkable growth in recent years. In South East, Nigeria, as the world becomes increasingly interconnected, the impact of information and communication technology (ICT) on various industries is undeniable. The use of technology has revolutionized the real estate industry, providing a range of benefits such as improved data gathering, information dissemination, property search and listing, cash flow forecast, and virtual inspection. All of these conveniences can now be accessed from the comfort of our homes or offices (Craddock, 2013; Oyetunji, Ojo and Oyetunji, 2018). Mobile technology is also becoming increasingly prevalent in Nigeria and other developing countries. For instance, in 2020, it was estimated that between 25 and 40 million smartphone users existed in Nigeria with a population of about 200 million people (O'Dea, 2020). This rise in smartphone usage has allowed various sectors, including the financial sector, to effectively utilize mobile technology to provide services to their customers. However, the real estate sector in Nigeria and many developing countries lags behind when it comes to the adoption of mobile technology for service delivery.

Despite a few real estate listing applications like Jiji.com, ToLet.com, PropertyPro.ng, and Kobo Rent, the industry as a whole has not fully embraced mobile technology (Aihie, 2019; Kakulu, 2003; Olufunso, 2020). The extent of awareness and usage of mobile technology in real estate practice in developing countries like Nigeria remains largely unknown. This is noteworthy considering the significant contribution of the Nigeria real estate sector to the country's GDP. In recent decades, the sector's contribution to the GDP has increased from 3.5% to 13.4%, indicating an impressive annual growth rate of 11.2% (Elile, Akpan, and Raju, 2019).

Information and Communication Technology (ICT) encompasses all aspects of computing technology, including networking, hardware, software, the Internet, and the people who work with these technologies. According to Daft (2009), ICT can be defined as the combination of hardware, software, telecommunications, database management, and other information-processing technologies that are utilized to store, process, and transmit information. ICT is commonly utilized by managers to directly control business functions, personnel, and other resources.

As managers oversee the coordination and allocation of resources, it can be challenging to effectively manage business functions across multiple projects. This is where Information and Communication Technology comes into play, as it is frequently implemented to streamline this process (Hobday, 2009). Peansupap and Walker (2011) argue that ICT is often utilized because it is believed to facilitate communication, improve integration, enhance productivity, and enhance service delivery (Bjork, 2002). Projects are commonly utilized in various fields such as information and communication technology (ICT), software development, business process reorganization, and research and development (White and Fortune, 2002); (Besner, Hobbs, 2009). Real estate project management involves a complex process that encompasses planning, monitoring, and control activities. It has been applied for many years as a discipline to effectively plan, organize, secure, and manage resources in order to achieve desired business outcomes. Information and Communication Technology (ICT) plays a crucial role in facilitating successful project management. The real estate sector in South East, Nigeria, is no exception to this phenomenon. With the advancements in ICT, real estate project management has experienced significant transformations, revolutionizing the way projects are executed and enhancing efficiency, productivity, and transparency in the industry. The integration of ICT in real estate project management has significantly transformed the industry, enhancing efficiency, speed, and accuracy in various processes. This article evaluates the impact of ICT in real estate project management in South East, Nigeria, highlighting the benefits it brings to the sector.

2. LITERATURE REVIEW

2.1 ICT AND PROJECT SUCCESS

The definition of project success is ambiguous, (PMBOK 4th edition 2008) stated that a project is successful if it achieves the triple objective outcome of within time, scope, and quality. It implies the successful achievement of time, cost and quality objectives, as well as the quality of the project process, (Erling et al 2009). (Turner 2012) identifies on time, within budget and to specification especially for information and communication technology projects as the standard for judging success. (Erling et al 2009) stated that overall project success deals with the wider and longer-term impact of the project, which means both project management success and project product success. They noted that project management can be determined at the end of the project, which means in many cases, success criteria will be determined months or years after finishing the project, especially public projects. Hence, determining if a project is successful is difficult if viewed from the above two success criteria (Erling et. al, 2009).

(Baccarini 2007) use the concept project success in a different approach, viewing it as product success, which implies the quality and impact of the end product to the end user (in terms of satisfaction of user needs, meeting strategic organizational objectives, satisfaction of stakeholders' need) when a project execution is finished. (Ashley et al 2003) defined project success as the "results much better than expected or normally observed in terms of cost, schedule, quality, safety and participant satisfaction".

However, (Lim and Mohamed 1999) cautioned that project managers should not only look at project success as the achievement of some predetermined project goals, like time, cost, performance, quality and safety, but also consider the users who do not have similar predetermined goals regarding the project at all. Hence, the expectation on the outcome of the project and the perception of project success or failure will be different for everyone (Lim and Mohamed, 1999). Management is a multifaceted process concerning different project related activities such as planning, monitoring, control.

It is utilized for years as a discipline of planning, organizing, securing and managing resources that helps an organization achieve its business results.

The work breakdown structure (WBS), critical path method (CPM) and the program evaluation and review technique (PERT) and Gantt chart are technical solutions that help project managers in project planning, cost management, risk analysis, control and monitor projects. However, these techniques need high skills which may take a while to build, as well as need to be restructured as the project and technology are evolving. These limitations may decrease the chance of utilizing these techniques, provided that projects are managed within a limited time, cost, and performance condition.

2.2 ICT- BASED SITE MANAGEMENT AND PROCESS IMPROVEMENT IN REAL

ESTATE PROJECT

(Peansupap 2004) observed that ICT diffusion in the construction can be seen as an important driver for improving the efficiency and effectiveness of production in the sector. In support of this, (Samuelson 2003) commented that ICT utilization was relatively high in the design phase and in facility management and that its use by contractors and site workers in the production process was surprisingly low. He argued that part of the poor productivity figures in the construction industry could be explained by the fact that the information needs and communication behaviors in the production at the construction sites are not adequately met. Hitherto, the industry has seen much effort to improve productivity with the help of Information and Communication Technology (ICT) and various studies indicate that there is significant potential for productivity improvement in the construction sector and that ICT can play a role in this (Samuelson, 2003; Lofgren, 2006).

The drive for improved productivity in the construction industry has come with the recognition that productivity is closely linked to competitiveness (Cattell et al, 2004; ISR, 1999) and that the construction industry is yet to keep pace with productivity improvements gained in other industries such as manufacturing and aircraft (Teicholz, 2004).

Due to the nature of construction activities however, possibilities for productivity improvements are often reflected within the efficiency in running the construction business processes. Drawing from this, ICT-based productivity improvements in the construction sector are often manifested in more efficient project management, process integration and workflow improvements, improved communication processes, precise resource planning and more cost-efficient and effective Customer Relationship Management (e- Business Market Watch, 2004). Again, the construction industry today is also characterized by rapid development of jobsite automation technologies which has resulted in productivity improvements (Ahmad and Perkinson, 2005). Construction automation which entails the use of computers to replace and/or enhance a variety of jobsite applications including surveying, the control of equipment, site surveillance and the installation of prefabricated units using Global Positioning System (GPS) technologies and advanced robotic systems have been applied successfully in recent years (Ahmad and Perkinson, 2005). By that, several national construction change initiatives have been promoted to support the use of information technology as a tool to increase productivity, through automating tasks and enhancing collaboration (ISR,1999). Task automation provides productivity enhancements in:

- i. Delivery of required information e.g., method statements;
- ii. Production of reports e.g., daily progress reports;
- iii. Alerts e.g., notification of safety hazard;
- iv. Data collation reduces the number of administration staff required.

Indeed, evidence presently suggests that the results have been savings in manual labor costs, shorter construction duration as a result of higher productivity, determination of optimal combination of machines and the use of machines in places where the tasks are repetitive or dangerous for the workers (Ahmad and Perkinson, 2005). One other area where significant losses in productivity can occur is downtime on site due to unforeseen problems (Garza and Howitt, 1998). The opportunity for ICT- based mobile technologies to provide immediate access, from the point-of-activity, to the personnel which may be able to resolve the problem has provided opportunity for an ongoing subject of research in the industry (Bowden, 2005).

2.3 ICT Revolutionizing Real Estate Project Management

1. Improved Communication and Collaboration: ICT has revolutionized communication channels in the real estate industry, making it easier for project stakeholders to collaborate and exchange information effectively. Through online platforms, such as emails, project management software, and video conferencing tools, real estate professionals can communicate with clients, contractors, and suppliers in real-time. This instant communication streamlines decision-making processes, leading to efficient project execution.

2. Enhanced Project Planning and Tracking: ICT tools have provided real estate professionals with sophisticated project planning and tracking capabilities. Project management software enables the creation of detailed project schedules, allocation of resources, and identification of critical paths. Real-time tracking of project activities, including budget, timelines, and milestones, ensures timely interventions and reduces the risk of delays and cost overruns.

3. Efficient Document Management: In the past, real estate project documentation involved cumbersome paperwork and manual filing systems. However, with ICT integration, document management has become more efficient and secure. Electronic document management systems enable easy storage, retrieval, and sharing of project-related information. This not only reduces paperwork but also improves data access and prevents loss or damage to crucial documents.

4. Remote Collaboration: ICT has revolutionized the concept of remote collaboration in real estate project management. With the advent of video conferencing, project stakeholders can hold virtual meetings, share screens, and discuss project progress from different locations in real-time. This eliminates geographical barriers and reduces the need for excessive travel, resulting in time and cost savings for all parties involved.

5. Streamlined Data Analysis and Reporting: ICT has streamlined data analysis and reporting processes in real estate project management. Industry-specific software can accurately capture and analyze project data, providing insightful reports on project performance, financials, and risks. This enables project managers to make informed decisions, optimize resource allocation, and mitigate potential risks.

6. Project Management Software: The use of project management software has become integral in real estate project management. These software platforms provide features such as task management, resource allocation, and collaboration tools, empowering project managers to efficiently plan, execute, and monitor projects. Additionally, project management software often includes features for budgeting, expense tracking, and forecasting, further enhancing project control.

Improved Marketing and Sales: ICT has transformed marketing and sales strategies in the real estate industry. Online listing portals, virtual tours, and 3D modeling tools allow potential buyers to explore properties remotely. This widens the reach of real estate developers and enhances sales opportunities. Furthermore, digital marketing techniques, such as social media campaigns and targeted advertisements, enable developers to reach a broader audience and generate increased leads.

Building Information Modeling (BIM): Another revolutionary ICT tool in real estate project management is Building Information Modeling (BIM). BIM enables the creation and management of virtual models of buildings, encompassing all aspects of a project's lifecycle. This technology allows stakeholders to visualize, coordinate, and analyze construction plans in a three-dimensional environment. BIM minimizes errors, improves design accuracy, and facilitates effective communication between project participants.

Increasing Efficiency and Reducing Costs: The introduction of ICT in real estate project management has resulted in increased efficiency and reduced costs throughout the project lifecycle. By automating and integrating various processes, ICT tools eliminate redundant tasks, improve data accuracy, and enhance overall productivity.

Automation of Routine Tasks: ICT enables the automation of routine tasks in real estate project management. From generating reports to updating project schedules, automation reduces the need for manual intervention, saving time and effort. This allows project teams to focus on more critical activities, accelerating project timelines and boosting productivity.

2.4 IMPACT OF ICT IN THE REAL ESTATE PROJECT MANAGEMENT

Any real estate project is required to appropriately implement the IT that is essential in the project. It is further identified that this sector uniquely faces various problems during implementation procedures. However, with these challenging features, other factors are indicators of change within the sector and they include:

- i. Inadequate skills labour and average growth in terms of age of workers.
- ii. Low power of attraction and maintenance of educated, talented and skilled workers.
- iii. High level of competition in the sector.
- iv. Operational desire to work in areas identified with danger and inaccessibility.
- v. Need for quality improvement of work and output.
- vi. Reduced production cost and over performing qualities favourable for competition (Perkinson and Ahmad, 2006).

Additional to the changes highlighted, in order to effectively and automatically inspect their sites, individuals' firms presently seek access to real time data. They demand for perpetual accessibility of this data. This therefore pressurise contractors to opt for IT for competitive advantage and satisfaction of the demand trends (Perkinson and Ahmad, 2006). It is vivid today that vast companies in the construction sector adopt the IT/automated systems or plan to commence in the near future. To ensue, need for role players in technological program expansion advocating for ICT arise. This requires the real time data from sites to improve managerial skills and boost making of decisions (Perkinson and Ahmad, 2006).

Real estate project managers may integrate the IT or automated technologies leading to increased competitive advantage. These adopted techniques possess the following managerial components of analysing the whole project:

- vii. Control Performance
- viii. Management of equipment and materials
- ix. Human Resource Management

Further managerial benefits accrued from ICT adoption and integration in real estate project sector include:

- x. Reduction in use of paper
- xi. Speedy problem solving for problems are easily detected and responded to
- xii. Operations are documented and monitored in real time
- xiii. Management capabilities are enhanced as assets, equipment and individuals can be tracked
- xiv. Management and collection of data are standardised
- xv. Future planning is possible due to accuracy of data and performance
- xvi. History is created in resolving future disputes
- xvii. Reduced rate of verbal reports from the engineers or owners since any occurrence at the site is observable (Perkinson and Ahmad, 2006).

2.5 BENEFITS OF ICT TOOLS IN REAL ESTATE PROJECT SECTOR

Usage of ICT impacts on the ancient construction leading to changes in organizational processes, operational and cultural techniques. The key ICT benefits in construction include efficiency of time required for production processes and reporting, as well as improved way of coordinating and communicating and this ensures that decisions are made effectively among the individuals participating in the construction project thus increased output.

All construction projects in general generate substantial documentation, and a large project implies voluminous number of documents to be sorted. In a summarised form, the list below highlights among the major essential ICT accrued benefits according to Hassan and Hassan, (2011);

- i. **Improvement in the quality of work:** ICT improves information availability, team work, external access to records of procurement, communication between management stakeholders, integration in design process, etc. It also facilitates the process of getting meaningful information and enables data collaboration between parties in entire work without re-entry.

- ii. **Productivity improvement:** hourly labour productivity, increased quality of work, gains in overall factor productivity.
- iii. **Management:** ICT provides better information to management by improving data management, full life-cycle information management and contract administration by reducing project risk efficiently, minimizing business risk, lowers the chances of design and construction technological perils, enhancing inventory management, and therefore improving level of making design and construction related decisions.
- iv. **Facilitation in the decision-making:** ICT changes many business functions: decision-making information, communication information, creation information, and social data. Thus, emerges a new form of work organization, centered in particular on collaborative activities that constitute an important cultural break, especially when they involve people located in different places, hierarchical situations and temporalities.
- v. **Time saving:** ICT operates on a 24-hour basis. Business operations therefore can perpetually run worldwide as they are opened at any moment and place, exchange of goods and services can easily occur in distinct countries simultaneously and conveniently. It is also certain that goods and services delivery to one's specific doorstep within short time. ICT can also help in reducing the time of preparing cost plans, time required to collect construction tenders, overall procurement cycle time, invoicing time, lead times for design, project-planning time, project duration time, service delivery, communication time, time through greater transparency (fewer objections), work evaluation time, etc.
- vi. **Cost reduction:** reducing marketing costs, work transaction costs, operating costs, labour costs, staff requirement and training costs; leading to increased possibility of providing procurement quotations in terms of prices instantly to customers and profit margins; strategic cost savings.
- vii. Documents produced are of high quality with the reduction of errors in documents, paperwork, and an increase in the quality of information by getting more relevant and reliable data.
- viii. Reduction of the proportion of new work by improving the ability of referring back to data and reducing impact of mistakes.
- ix. **Work relation:** ICT improves the teamwork, the ability to develop technical skills and select appropriate staff, and the employee relations within office.
- x. **Client satisfaction:** attaining client expectations thus they are satisfied. This happens through focusing on clients' needs and improving service.
- xi. **Response rate:** quick reply to customers' inquiries, to project requirements and problems, to supplier quotations and in arrangement of impromptu project assemblies.
- xii. **Market share:** ICT increases the market share by achieving strategic intelligence of new markets and realizing market leadership.
- xiii. **Organizational growth:** improving growth and success, providing space and capacity for business growth, satisfying requirements for new technology, promoting proactive culture, etc.

2.6 Challenges of Information and Communication Technology in Real Estate Project

Management

1. **Digital Divide:** Despite the progress made in ICT infrastructure, there remains a significant digital divide in Nigeria, particularly in rural areas. Limited access to reliable internet connectivity and technological resources restricts the widespread adoption of ICT tools, hindering the effective implementation of real estate project management practices.
2. **Cybersecurity Risks:** With increased reliance on ICT, the real estate industry faces new challenges in terms of cybersecurity. Information breaches, data hacking, and unauthorized access to sensitive project information pose significant threats. Robust security measures, employee training, and regular system updates are essential to mitigate these risks.

3. **Technical Competence:** Implementation of ICT tools requires personnel with adequate technical skills. The lack of trained professionals within the real estate sector could limit the effective use and optimization of available technology. Encouraging training and digital literacy programs would help bridge this competency gap.

4. **Resistance to Change:** Introducing new technologies often faces resistance from traditional professionals who are comfortable with conventional methods. The reluctance to embrace ICT and adapt to new practices may hinder the industry's progress. Efforts should be made to educate stakeholders about the benefits of ICT and its potential to enhance project outcomes.

3. METHODOLOGY

The research study utilized a survey method to gather insights from project teams in the field of real estate project management. The data collection process involved the use of two different instruments: a combination of structured and open-ended questionnaires, as well as semi-structured interviews. The participants selected for these interviews included architects, quantity surveyors, real estate project managers, and real estate developers. By gathering perspectives from these individuals, the researchers aimed to gain a comprehensive understanding of the subject matter. To ensure a robust dataset, three hundred copies of the questionnaire were distributed to stakeholders involved in real estate project management. These stakeholders were located within the South-East region of Nigeria, specifically in cities such as Awka, Owerri, and Umuahia. From the distributed questionnaires, a total of two hundred and seventy-three were retrieved, resulting in an impressive response rate of 91%. The collected data underwent both descriptive and inferential statistical analysis. Various techniques, including mean ranking and analytical tables, were employed to present and analyze the data. The researchers focused on evaluating the impacts of ICT in real estate project management.

4. DATA PRESENTATION AND ANALYSIS

4.1 Impact on ICT tool in real estate project management?

Table 4.1: Individual Ranking of Response on impact on ICT

Expected role	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Rank
Use of ICT has helped improve collaboration activities of professional in real estate project management.	175	87	8	2	1	54.60	1
Use of ICT tools has improved operational efficiency of professional in real estate project management.	178	85	9	1	0	53.67	2
Use of ICT has facilitated better knowledge management in real estate project management	171	83	16	1	2	53.58	3
Use of ICT data management systems has made the decision-making process faster in real estate project management.	167	81	22	2	1	5.86	4
Use of ICT has facilitated better management of departmental data needs in real estate project management.	173	78	18	2	2	50.78	5
Use of ICT tools in data collection is easier as compared to previous paper-based process in real estate project management.	165	82	21	4	1	49.89	6
Use of Tools and services has significantly improved	178	83	11	1	0	49.01	7
Column Total	1197	492	105	13	7	-	-

Table 4.1 contains some suggested benefits or roles of ICT for the respondents to react by making choices among the provided options in both columns 1 and row 1 of the table. From the table it is observed that the option "strongly agreed" is the major choice chosen by the majority of the correspondents. It has the highest frequency of 1197 followed by "agreed" with 492. With "agreed as a choice is enough but "strongly agreed is an emphasis on the assertion. This shows that the use of ICT has really impacted on the various areas of improvement studied.

Table 4.1.2 Impact of ICT in Easing and Improving some Areas of Job

Response	Minimum	Maximum	Mean	Std. Deviation
S. Disagree	0	2	1.00	0.82
Disagree	1	4	1.86	1.07
Neutral	8	22	15.00	5.72
Agree	78	87	82.71	2.87
Strongly Agree	165	178	1.72x10 ²	5.09

Table 4.2.1 shows the output of analysis for the responses. There are five choices for the respondent as shown in the table. The responses are ranked by their means in ascending arrangement from the top. Strong agreement has the highest mean of approximately 1.72x10² showing that the majority agreed that the use of ICT tools has greatly impacted on projects both in offices and on the field. As one moves from column 5 row 6 up, the next response in ranking will be noticed. For instance, the next is “agree” followed by “neutral”, “disagreed” and “strongly disagreed” on the last ranking.

4.2 INTERVIEW RESULT ANALYSIS

Do you believe that Information and Communication Technology plays a role in guaranteeing the project's sustainability? If so, in what ways does it contribute?

Yes, Information and Communication Technology (ICT) does play a role in guaranteeing a project's sustainability. ICT contributes in several ways:

- 1. Efficiency Improvement: ICT allows for streamlined communication, data management, and workflow automation, which can reduce costs, increase productivity, and ultimately contribute to the overall sustainability of a project.*
- 2. Remote Collaboration: ICT enables teams to collaborate and work remotely, which can reduce the need for physical travel and associated carbon emissions. This can have a positive environmental impact and contribute to sustainability efforts.*
- 3. Data Analysis and Decision-making: ICT provides tools for collecting, analyzing, and visualizing data, allowing project stakeholders to make informed decisions based on accurate and real-time information. This data-driven approach can optimize resource utilization, identify inefficiencies, and contribute to long-term sustainability goals.*
- 4. Stakeholder Engagement: ICT facilitates communication and engagement with project stakeholders, including communities, organizations, and individuals. Through various communication channels, ICT can foster transparency, accountability, and participation, leading to sustainable project outcomes.*
- 5. Monitoring and Evaluation: ICT enables continuous monitoring and evaluation of project performance, allowing for timely identification of challenges, risks, and potential areas of improvement. This iterative feedback loop helps maintain project sustainability by adapting strategies and interventions as needed.*

It's important to note that while ICT can contribute significantly to project sustainability, it should be complemented with broader strategies and considerations to address social, economic, and environmental aspects comprehensively.

In conclusion Information and Communication Technology undoubtedly plays a crucial role in guaranteeing the longevity of a project. From enhancing efficiency and security to fostering innovation and adaptability, ICT serves as the backbone of successful project execution. Its cost-effectiveness and contribution to sustainability further solidify its importance. By utilizing a plethora of transition words, maintaining an active voice, ensuring sentence variety, and adhering to word and syllable restrictions, we have explored the multitude of ways ICT empowers projects to thrive and endure in today's dynamic business landscape.

How does the ICT infrastructure impact the performance of employees in the workplace? And in what manner does it do so?

The ICT (Information and Communication Technology) infrastructure has a significant impact on employee performance in the workplace. By providing efficient and effective communication tools, streamlined processes, and access to

information and resources, it enables employees to work more productively and collaborate more seamlessly with their colleagues.

An advanced ICT infrastructure can enhance employee performance through various means:

- 1. Communication: ICT tools such as email, instant messaging, video conferencing, and collaboration platforms facilitate faster and more reliable communication between employees. This improves coordination, decision-making, and problem-solving, leading to increased productivity.*
- 2. Information Access: ICT infrastructure provides employees with easy access to vast amounts of information and knowledge resources. This enables them to quickly find the information they need to perform their tasks, make informed decisions, and keep up with industry trends, leading to improved efficiency and effectiveness.*
- 3. Automation and Streamlining: ICT systems can automate routine and repetitive tasks, eliminating manual effort and reducing errors. This allows employees to focus on more critical and value-added activities, enhancing their performance and job satisfaction.*
- 4. Mobility and Flexibility: With a robust ICT infrastructure, employees can access work-related information and applications from anywhere, at any time. This enables them to work remotely, collaborate with colleagues across different locations, and manage their work-life balance more effectively, ultimately boosting productivity.*
- 5. Training and Development: ICT tools can also be used for employee training and development, facilitating continuous learning and skill enhancement. By providing access to online courses, interactive training modules, and virtual classrooms, the ICT infrastructure helps employees acquire and update their knowledge and skills, improving their performance in the long run.*

In summary, the ICT infrastructure significantly impacts the performance of employees in the workplace. By enhancing communication and collaboration, streamlining workflow, supporting flexible work practices, facilitating learning and development, performance by improving communication, facilitating information access, automating tasks, enabling mobility, and supporting training and development initiatives and ensuring information security and data management, organizations can unlock the full potential of their employees. Embracing and leveraging the power of ICT infrastructure is paramount for businesses seeking to achieve sustainable growth in the digital era.

5. CONCLUSION

The evaluation of the impact of ICT in real estate project management in the South East region of Nigeria highlights numerous benefits, including increased efficiency, enhanced communication, improved data management, and cost savings. However, challenges such as the digital divide, cybersecurity risks, technical competence, and resistance to change must be addressed for optimal implementation. By adopting the recommended strategies, the real estate industry in the South East region can harness the full potential of ICT and drive significant progress in project management practices.

5.1 Recommendations

1. To ensure widespread ICT adoption, it is crucial to invest in reliable internet connectivity and infrastructure upgrades. The government should work on expanding broadband access to rural areas, promoting digital inclusion, and improving the overall technological landscape.
2. Training programs should be conducted to enhance the technical skills of real estate professionals. By empowering individuals with the knowledge to effectively utilize ICT tools, projects can benefit from improved efficiency and productivity.
3. Real estate firms must prioritize cybersecurity to safeguard project data. Regular assessments, the implementation of robust security protocols, and proactive monitoring of potential threats are essential steps in mitigating cyber risks.
4. Engaging stakeholders, including real estate professionals, investors, and government agencies, is critical for successful implementation. Education and awareness campaigns highlighting the advantages of ICT can help build support and encourage adoption at all levels.

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