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# Effect of Health Care Building Planning on Successful Project Delivery in Bauchi State.

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***Abstract***
*This research assessed the effect of health care building planning on successful project delivery in Bauchi State. The cross sectional approach was adopted with the population comprising of 118 professionals in the construction industry within Bauchi metropolis, particularly the core building professionals, Architects, Builders, Estate surveyors, Civil engineers and Quantity surveyors. The sample size of eighty eight, (88) was arrived at using the Krejcie and Morgan Table (1970). Inferential statistical analysis was employed using linear regression to examine the impact of the independent variable on the dependent variable. The study found out that health care building planning had significant effect on successful project delivery in Bauchi State. The study recommends that organizations should prioritize thorough and strategic planning from the beginning. This requires actively involving all parties with an interest in the matter, following established rules and guidelines, and anticipating upcoming requirements and improvements in technology.*

***Keywords: Health Care, Health Care Building Planning and Successful Project Delivery***

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## I. INTRODUCTION

The design and organisation of healthcare facilities play a crucial role in the effective provision of healthcare services, particularly in areas such as Bauchi State, Nigeria (World Health Organization, 2021). The state, renowned for its heterogeneous population and substantial healthcare requirements, encounters distinctive obstacles in guaranteeing that its healthcare infrastructure adequately caters to the needs of its citizens. Efficient healthcare building planning involves several components, including the selection of a suitable location, architectural design, allocation of resources, and adherence to healthcare laws (Ma, 2021). The success of these projects is crucial in improving the entire healthcare delivery system in Bauchi State.

Masoyi, Babayo and Jalam (2023) opined that the planning phase of healthcare construction projects in Bauchi State is essential in defining the efficiency and functioning of the final facilities. This stage encompasses thorough needs assessments to comprehend the precise health wants of the community, painstaking design processes to guarantee that the structures are suitable for their intended use, and strategic planning to incorporate these facilities into the larger healthcare system. Hussein (2021) suggested the successful completion of a project depends on the capacity to foresee and tackle potential obstacles at this stage, which encompasses acquiring sufficient funds, gaining required permissions, and assuring active involvement of stakeholders.

The influence of well-designed hospital facilities extends beyond their physical form; it directly affects the quality of healthcare services delivered. Aziz (2023) pointed that well-designed facilities are strategically intended to optimise patient flow, promote infection control, and foster a favourable atmosphere for both patients and healthcare staff. In Bauchi State, where resources may be scarce and the prevalence of sickness is significant, it is crucial to prioritise the efficiency and efficacy of healthcare infrastructure (Opeyemi, Obeagu & Hassan, 2024). Therefore, strategic planning not only tackles current healthcare requirements but also enhances long-term health results and durability.

Furthermore, the effective implementation of healthcare construction projects in Bauchi State might serve as a blueprint for other areas facing comparable difficulties. Through the analysis of project outcomes, stakeholders can discern optimal strategies and valuable insights that can be utilised in forthcoming endeavours (Ibeh, Asuzu, Olorunsogo, Elufioye, Ndubuisi & Daraojimba, 2024). The concept of iterative learning is crucial for the ongoing enhancement of healthcare infrastructure design and delivery. The emphasis on careful planning and implementation in Bauchi State's healthcare programmes highlights the larger importance of strategic infrastructure development in attaining sustained health gains and overall project success.

The study provided answers to this research question:

i. What effect does health care building planning have on successful project delivery in Bauchi State?

## II. LITERATURE REVIEW

**Theoretical Framework**

**The Theory of Project Management**

Project Management theory by Richardson (2010) highlights the significance of strategically arranging, coordinating, and overseeing resources in order to accomplish particular objectives within predetermined limitations, such as time, budget, and quality. Within the realm of healthcare construction projects, this idea emphasises the need of employing a systematic approach to planning. This entails establishing precise goals, defining specific roles and duties, and creating thorough project plans. These plans should include all parts of the project lifecycle, including needs assessment, design, procurement, construction, and evaluation (Fewings & Henjewele, 2019). By following these principles, project managers may reduce risks, guarantee that stakeholders are in agreement, and increase the chances of successfully completing the project.

The research is supported by Project Management theory, which offers tools and procedures to enhance project execution and control. Nicholas, J. M., & Steyn, H. (2020) show methods like as Gantt charts, critical path analysis, and risk management procedures play a crucial role in overseeing project advancement and proactively dealing with possible problems. Applying Project Management theory in Bauchi State, where healthcare infrastructure projects frequently encounter obstacles such as limited funds, legal barriers, and logistical complications, guarantees a systematic approach to project implementation. This theoretical framework facilitates the methodical organisation and synchronisation necessary to negotiate these hurdles, ultimately leading to the successful completion of healthcare facilities that fulfil the community's requirements and comply with quality standards. Bahago (2021) made it through the use of Project Management concepts, the research aims to illustrate the direct influence of well-organized planning procedures on the efficiency, efficacy, and sustainability of healthcare infrastructure projects in Bauchi State.

**Conceptual Framework**

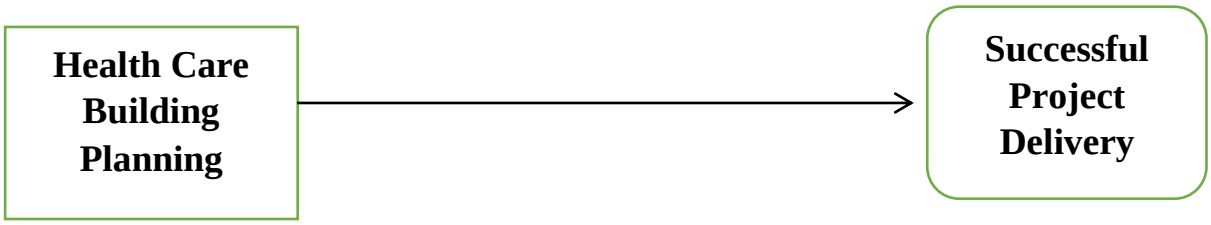


**Figure 1: Research Framework showing the relationship between the study variables**
**Source: Authors Desk Research, 2024**

**Health Care Building Planning**

Health Care Building Planning is a complex process that involves strategically developing healthcare facilities to satisfy the particular demands of a community while following regulatory standards and maximising resource utilization (WHO, 2020). This notion involves several crucial components, such as the careful selection of a location, the design of the building, the efficient layout of functional spaces, and adherence to health and safety laws. Pillai (2022) said the planning phase starts with a comprehensive needs assessment to gain a deep understanding of the demographic and epidemiological characteristics of the target group. This information informs judgements on the selection of services, the dimensions and capabilities of the facility, and the essential technology and medical equipment. Efficient health care construction planning also entails the incorporation of sustainable principles, guaranteeing that the facilities are eco-friendly and economically advantageous in the long run.

Furthermore, the process of Health treatment Building Planning is crucial in order to establish a patient-centered setting that improves the overall quality of treatment. Emmanuel, Osondu and Kalu (2020) posit the architecture and arrangement of healthcare facilities have a substantial influence on the movement of patients, the effectiveness of personnel, and the implementation of infection control protocols. Strategically designed facilities optimise operational efficiency by integrating streamlined layouts that minimise patient waiting times, promote confidentiality, and boost ease of access (Zamani, Joy & Worley, 2024). Moreover, it is important for these facilities to possess the necessary versatility to accommodate forthcoming alterations in healthcare provision, such as the integration of novel medical advancements or improvements in patient care approaches. Obeagu, Anyanwu and Obeagu (2024) said by taking into account these factors throughout the initial stage of development, healthcare facilities may provide a secure, effective, and inviting setting for patients, families, and healthcare professionals, eventually leading to improved health results and patient contentment.

**Successful Project Delivery**

Successful Project Delivery in the context of healthcare infrastructure entails the accomplishment of a project within the predetermined parameters of scope, schedule, and money, while adhering to the set quality standards and fulfilling stakeholder expectations (Ika & Pinto, 2022). This idea entails the careful and systematic organisation, synchronisation, and implementation of project activities to ensure the successful attainment of all project objectives. Essential elements for achieving successful project completion encompass unambiguous project description, thorough planning, effective resource allocation, and meticulous monitoring and assessment. Tijani, Jin and Osei-Kyei (2023) said efficient communication and cooperation among stakeholders, such as project managers, architects, contractors, healthcare professionals, and community members, are essential to address difficulties and guarantee that project goals are met.

In healthcare construction projects, achieving effective project delivery involves more than simply satisfying technical and budgetary requirements. Tang, Wang and Li (2021) suggested also involves creating buildings that are functional, sustainable, and capable of adapting to future demands. This entails the implementation of optimal methods in design and construction to create environments that improve patient care and operational effectiveness. Effective projects also include feedback methods to consistently enhance procedures and results. By prioritising these wider dimensions, healthcare infrastructure projects may attain sustained success, guaranteeing that the facilities not only address urgent need but also contribute to the general enhancement of the healthcare system. This comprehensive strategy guarantees that healthcare facilities are adequately prepared to give top-notch treatment, therefore accomplishing their original objective and providing value to the community (Dogra, Gautam & Dogra, 2024).

**Effect of Health Care Building Planning on Successful Project Delivery**

Smith, Li and Rafferty (2020) show the impact of health care building planning on the effective execution of a project is significant and complex. Thorough and strategic planning from the beginning guarantees that all areas of the project are carefully examined and in line with the healthcare requirements of the community. Effective planning include precise needs evaluations, meticulous design and architectural planning, optimal resource allocation, and strict adherence to regulatory standards. By proactively addressing these crucial components at the beginning of the project, planners may predict possible difficulties and devise solutions to minimise their impact (Obiuto, Ebirim, Ninduwezuor-Ehiobu, Ani, Olu-lawal & Ugwuanyi, 2024). By adopting this proactive strategy, delays, cost overruns, and quality concerns may be prevented, leading to improved efficiency and effectiveness in project execution.

Furthermore, Provenzano, Sitzman, Florentino and Buterbaugh (2020) emphasize the layout of health care buildings has a substantial impact on the efficiency and long-term viability of the finished facilities. Strategic planning guarantees that the hospital building's design facilitates efficient movement of patients, implements effective infection control measures, and establishes a favourable atmosphere for both patients and healthcare staff. Well-designed facilities can more readily accommodate future changes in healthcare delivery, such as the incorporation of new technology or changes in patient care models. The capacity to adapt is essential for ensuring the long-term sustainability and significance of the healthcare infrastructure (Emeka-Okoli, Nwankwo, Otonnah & Nwankwo, 2024). Thorough planning is essential to ensuring that the project is completed on schedule and within the allocated funds. Additionally, it guarantees that the healthcare facility fulfils its intended function and efficiently serves the community's requirements for an extended period.

The study adopted the following hypothesis

H01: Health care building planning does not significantly affect successful project delivery in Bauchi State?

## III. METHODOLOGY

The study was carried out using the cross sectional research design. The population comprised of 118 professionals in the construction industry within Bauchi metropolis, particularly the core building professionals, Architects, Builders, Estate surveyors, Civil engineers and Quantity surveyors. The sample size of eighty eight, (88) was arrived at using the Krejcie and Morgan Table (1970). The study made use of primary data collection (questionnaire). The research instrument was validated through expert's vetting and approval while the reliability of the instrument was achieved by the use of the Cronbach Alpha coefficient with all the items scoring above 0.70. Descriptive and inferential statistics was used to analyze the data collected using the SPSS software to analyze the questionnaire statements and test the hypotheses.

## IV. DATA ANALYSIS AND RESULTS

The linear regression was used to analyze the primary data with a 95 percent confidence level. The tests specifically address the null forms of hypothesis H01, which was bivariate.. The probability of accepting the null hypothesis at ($p>0.05$) or rejecting the null hypothesis at (p0.05) is determined by the use of the 0.05 significance level as the criterion.

**Table 1: Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .743[a] | .551 | .549 | .732073 |

a. Predictors: (Constant), Health Care Building Planning

***Source: SPSS Field Survey, 2024***

The table above suggests that Health Care Building Planning has a moderately strong positive relationship with the dependent variable, explaining around 55% of its variance.

**Table 2: ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 110.022 | 1 | 110.022 | 205.292 | .000[b] |
| | Residual | 89.501 | 167 | .536 | | |
| | Total | 199.523 | 168 | | | |

a. Dependent Variable: Successful Project Delivery

b. Predictors: (Constant), Health Care Building Planning

***Source: SPSS Field Survey, 2024***

The Regression Sum of Squares is 110.022, indicating a significant portion of the variance is explained by the model. The F-statistic is 205.292, which is a very high value, suggesting a strong relationship between Health Care Building Planning and Successful Project Delivery.

The Sig. value of 0.000 is less than 0.05, implying a statistically significant relationship at a 95% confidence level. The ANOVA table provides strong evidence that Health Care Building Planning has a statistically significant positive impact on Successful Project Delivery

**Table 3: Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | -.096 | .252 | | -.380 | .704 |
| | Health Care Building Planning | .994 | .069 | .743 | 14.328 | .000 |

a. Dependent Variable: Successful Project Delivery

***Source: SPSS Field Survey, 2024***

The table confirms that Health Care Building Planning has a positive and statistically significant impact on Successful Project Delivery. For every unit increase in Health Care Building Planning, we can expect an average increase of 0.994 in Successful Project Delivery, with a moderately strong positive relationship between the two variables.

## V. Discussion of Findings

Based on this outcome, the previously stated null hypothesis was set aside therefore; the study found out that health care building planning has significantly affected the successful of project delivery in Bauchi State. These findings agreed with Shehu et al. (2020) who found out that adherence with the processes of managing construction projects most especially monitoring and controlling the project schedule, estimating resource requirement for the project activities and developing schedule of the project, lead to effective increase on timely completion of construction project in Nigeria.

## VI. CONCLUSION AND RECOMMENDATION

The conclusion highlights the significant influence of thorough planning in healthcare building projects on their successful completion, emphasising the impact it has on their effectiveness and efficiency. Thorough planning throughout the first stages of the project is essential as it establishes the basis for completing the project on schedule and within budget. This is a comprehensive strategy that combines input from stakeholders, adherence to regulatory standards, and proactive management of risks. Thoroughly attending to these factors decreases the chances of unexpected hurdles, leading to a more seamless building process and improved adherence to the planned schedule and budgetary limitations.

Furthermore, the strategic planning of healthcare buildings plays a crucial role in developing facilities that are not only efficient and in accordance with regulations, but also capable of being adjusted to meet future requirements. This progressive strategy guarantees that the design integrates cutting-edge technology, complies with accessibility regulations, and accommodates future expansions or adjustments. Effective planning improves operational efficiency and boosts the quality of patient care in the hospital, ultimately leading to increased overall project success. Essentially, the careful and thorough planning of healthcare buildings guarantees that

these facilities can provide excellent healthcare services, ultimately leading to better health results and satisfaction among stakeholders.

The study recommends that organizations should prioritize thorough and strategic planning from the beginning. This requires actively involving all parties with an interest in the matter, following established rules and guidelines, and anticipating upcoming requirements and improvements in technology. By employing this approach, it is possible to ensure that projects are finished according to schedule, within the allocated budget, and with a design that improves operational efficiency and the quality of patient care. This, in turn, results in the creation of healthcare facilities that are both sustainable and effective.

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