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Effects of The Application of Project Management Techniques On Health Care Project Success. A Study of Badagry General Hospital, Lagos State

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Abstract: The study examines the effects of the application of project management techniques on health care project success, a study of Badagry General Hospital, Lagos State. Survey research design was adopted for this study. Copies of the questionnaire used for the study were administered to 65 health workers using purposive sampling technique while 256 copies of the questionnaire were administered to patients using simple random sampling technique. The questionnaire for this study was validated using content validity and the reliability of the questionnaire was confirmed by determining the Cronbach's Alpha, which was equal to 0.851. The data collected for the study were presented using charts, tables, percentages and frequencies, while the stated hypotheses were analysed with the aid of correlation analysis and regression analysis. The findings revealed that there is a significant high relationship between resource allocation and sustainability in the health system, with a Pearson's Moment correlation coefficient ($r = 0.832$, p -value < 0.05). It was also discovered that 85% of the variation recorded in improved quality is accounted for or contributed by monitoring services scheduled. ($R^2 = 0.85$, p -value < 0.05). Based on these findings, the study therefore recommended that projects set by a healthcare facility's administrative board must be addressed by a project management team. Healthcare managers must also be concerned with the quality of care and patient outcomes, and lastly that there is need for The Health Information Technology for Economic and Clinical Health (HITECH) Act to be put in place to improve Nigerian healthcare patient care and delivery through an unprecedented investment in Health Information Technology.

Keywords: Health Care, Project Management Techniques, Resource Allocation N, Quality Improvement, Monitoring Services

JEL codes: I10, I14, I15

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1. Introduction

Project management in health care facilities optimizes organizational efficiency, lowers costs, and answers the needs of all stakeholders involved. According to the Industry Classification Benchmark (ICB), developed by Dow Jones and FTSE, the healthcare sector encompasses a range of fields, such as pharmaceuticals, biotechnology and life sciences. Projects in these fields share a high degree of similarity compared to other projects from some other fields (Herzlinger, 2006). Such projects quite typically share the same managerial and team management issues, encompassing characteristics such as clarity of goals; delegation of roles and responsibilities; requirement of a proper structure or a model serving as a backbone of the project process; work commitments, and ethics (Chandra, 2009: 54).

The healthcare industry has been engaged in projects for a long time, but not necessarily using formal project management techniques. Healthcare organizations are realizing that to remain competitive, they must develop skills to effectively select and manage the projects they undertake. They also realize that many of the concepts of project management, especially interpersonal skills, will help them as they work with people on a day-to-day basis (Herzlinger, 2006).

The Nigerian healthcare system is extremely complex, adverse health effects have been linked to poor socio-economic growth and development. Nigeria's public healthcare system has consistently failed to meet the health demand of her growing population due to poor facilities, insufficient medical experts, low funding, corruption and government instability. The current situation of healthcare projects, call for a critical analysis of the factors that influence the successful completion of such projects. To manage the challenging demands of providing effective healthcare, an increasing number of healthcare organizations operating Project Management Offices (PMO) need to develop the Healthcare Project Management practices (PMI, 2008).

Healthcare provision in Nigeria is a concurrent responsibility of the three tiers of government in the country. Private providers of healthcare have a visible role to play in health care delivery. The federal government's role is mostly limited to coordinating the affairs of the university teaching hospitals, Federal Medical Centres (tertiary healthcare) while the state government manages the various general hospitals (secondary healthcare) and the local government focus on dispensaries (primary healthcare), which are regulated by the federal government through the National Primary Health Care Development Agency (NPHCDA).

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The total expenditure on healthcare as % of GDP is 4.6, while the percentage of federal government expenditure on healthcare is about 1.5%. A long run indicator of the ability of the country to provide food sustenance and avoid malnutrition is the rate of growth of per capita food production; from 1970–1990, the rate for Nigeria was 0.25%. Though small, the positive rate of per capita may be due to Nigeria's importation of food products. Nigeria faces some fundamental issues, the pitfalls are not far-fetched, they include lack of sufficient medical facilities, insufficient medical experts, corruption and political instability, poor policy implantation, lack of basic amenities, lack of research funds.

Apparently, Nigeria has the resources to develop a global standard healthcare system, but the above mentioned problems have hindered the country from achieving this. To assess the situation, this study exploits the current situation in the Nigerian healthcare sector using Badagry General Hospital, Lagos State.

In recent times, organizations activities are becoming more project based, the implication is that organization tends to split routine work into programs of project in order to quickly achieve organizational goal of value added. Good management of these projects is essential if the organization is going to succeed.

An increasing speed of new knowledge generation and a growing specialization of individuals in specific fields make researches in the healthcare industry more and more widespread to stay abreast of the latest technological developments. A project in the healthcare sector is an endeavor to accomplish specific objectives connected with the project management in this field and it requires practical skill as much as knowledge. However, studies targeting project management have almost exclusively focused on industrial projects, neglecting the importance of health care projects in other fields (Niedergassel and Leker, 2011).

Project management focuses on the management of project constraints. These constraints include quality of project required which is achieved through proper monitoring. To meet up with the desired quality, resources should be allocated properly, timely and continually to guarantee the sustainability of the project.

In line with the above school of thought, this study evaluates the effects of the application of project management techniques on health care project success using the following indicators, resource allocation, sustainability, monitoring services and quality improvement.

The broad objective of the study is to evaluate the effects of the application of project management techniques on health care project success, a study of Badagry General Hospital, Lagos state. The specific objectives are to;

1. examine the relationship between resource allocation and sustainability in the health monitoring services system
2. investigate the effects of monitoring services scheduled on quality improvement.

The research questions for the study are:

1. Is there a significant relationship between resource allocation and sustainability in the health system?
2. Does monitoring services scheduled have significant effect on quality improvement?

2. Literature Reviewed

THEORETICAL FRAMEWORK

Project Management Theories

The theory of project is conceptualized as a transformation of inputs to outputs, flows and value generation which considers time, variability and customers on an operation (Koskela, 2000). There are a number of principles by which a project is managed, these principles suggest the decomposing the total transformation hierarchically into smaller transformations, tasks and minimizing the cost of each task independently, this is known as work break down structure. This study is of the opinion that if this principle is applied when implementing the budget on the health sector, the problem faced by the Nigerian Healthcare System would be reduced. A follow up to this action is the principle of flow model. Feedback cycles are created both on daily level and monthly level by dealing with the associated uncertainties and variability. The model allows for dense information flows among the tasks needed. The principles of value generation model are also applied in so many ways. Firstly, value is explicitly modelled through the Product Backlog, consisting of prioritized items. Secondly, it is acknowledged that the customer has difficulties in the determination of requirements rather it can be characterized as a constant process of sense making. The inclusion of the customer to the process ensures that such sense making can effectively take place and is directly influencing the work in the project. Thirdly, through the daily and monthly

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feedback cycles, the customers can readily assure that the requirements are correctly understood by the team.

Health Maintenance Models

Health Maintenance Organizations are typically organizations that require the member to select a Primary Care Provider as their personal physician to direct their care. Health Maintenance Organizations generally operate in one of two primary models, i.e. staff model and mixed model.

Staff Model

In a staff model, the healthcare maintenance organization directly hires doctors and nurses to perform the necessary services, and may build and own its own hospital facilities. This model is more common in Nigeria.

Mixed Model

Some healthcare maintenance organizations operate in a mixed model, where some services are directly provided by the healthcare maintenance organization, and others are contracted out. The key issue with this model is that if a patient visits a doctor or other service provider that are not part of the organizations network or staff, then the services are not covered unless the organization has granted a special exemption for that service. Program Management can help with these issues.

Program management should be viewed as an overseer of specific projects; a program manager usually has extensive experience as a project manager now managing several projects within one program. For example, a program could have several projects under one program such as medical management. Other examples include project categories that would typically be categorized under a program.

CONCEPTUAL FRAMEWORK

Project Management

A project is a temporary endeavor undertaken to create a unique product, service, or Result (PMBOK, 2013: 21). Operations, on the other hand, is work done in organizations to sustain the

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business. Projects are different from operations in that they end when their objectives have been reached or the project has been terminated.

The following attributes help to define a project further:

1. *A project has a unique purpose.*
2. *A project is temporary.*
3. *A project is developed using progressive elaboration or in an iterative fashion.*
4. *A project requires resources, often from various areas.*
5. *A project should have a primary customer or sponsor.*
6. *A project involves uncertainty.*

Every project is constrained in different ways. Some project managers focus on scope, time, and cost constraints. These limitations are sometimes referred to in project management as the tripleconstraint. To create a successful project, project managers must consider scope, time, and cost and balance these three often-competing goals. They must consider the following:

Scope: What work will be done as part of the project? What unique product, service, or result does the customer or sponsor expect from the project?

Time: How long should it take to complete the project? What is the project's schedule?

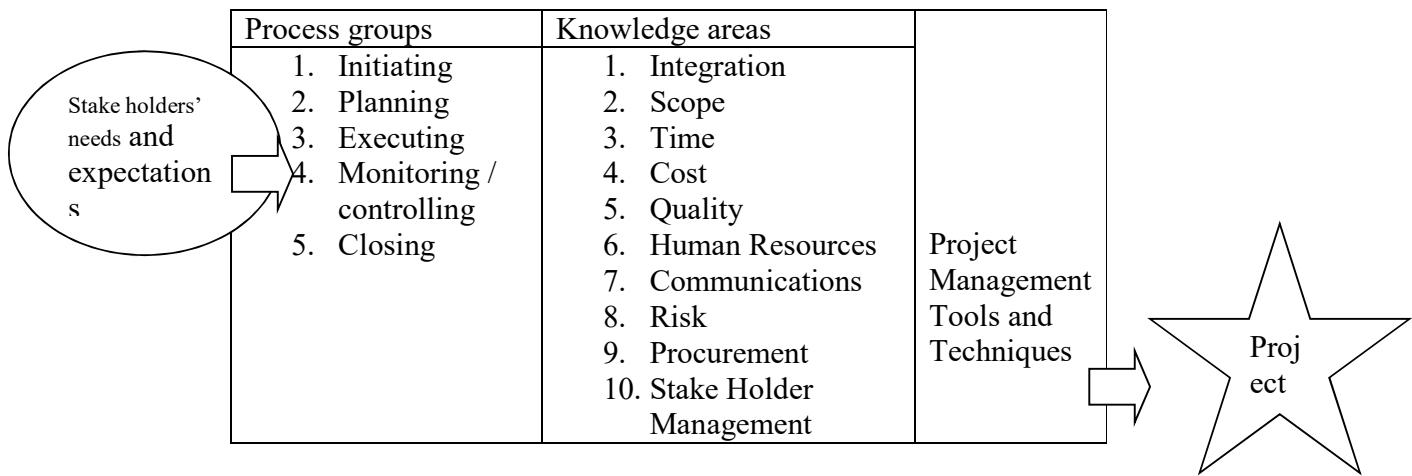
Cost: What should it cost to complete the project? What is the project's budget? What resources are needed?

Quality: How good does the quality of the products or services need to be? What do we need to do to satisfy the customer?

Project management is the application of knowledge, skills, tools and techniques to project activities to meet the project requirements (PMBOK, 2013:34; Olateju, Abdul-Azeez and Alamutu (2011: 6). Project managers must not only strive to meet specific scope, time, cost, and quality requirements of projects, they must also facilitate the entire process to meet the needs and expectations of the people involved in or affected by project activities.

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Figure 2. Project Management Framework



Source: Modified by the Researcher (2017)

Figure 2 illustrates the key elements of the framework that help to understand project management. These include the project stakeholders, project management process groups, knowledge areas, tools and techniques, project success.

Similar to other projects, healthcare projects follow a sequence of stages in their life cycle that can often be generalized as: project initiation, project planning, project executing, monitoring and controlling, and closing activities.

As the world continues to become more complex, it is even more important for people to develop and use tools, especially for managing important projects. Project management tools and techniques assist project managers and their teams in carrying out work in all ten knowledge areas.

Table 1. Common project management tools and techniques by knowledge areas

Knowledge Area/Category	Tools and Techniques
Integration management	Project selection methods, project management methodologies, project charters, project management plans, project management software, change requests, change control boards, project review meetings, lessons-learned reports
Scope management	Scope statements, work breakdown structures, mind maps, statements of work, requirements analyses, scope management plans, scope verification techniques, and scope change controls
Time management	Gantt charts, project network diagrams, critical-path analyses, crashing, fast tracking, schedule performance measurements
Cost management	Net present value, return on investment, payback analyses, earned value management, project portfolio management, cost estimates, cost management plans, cost baselines
Quality management	Quality metrics, checklists, quality control charts, Pareto diagrams, fishbone diagrams, maturity models, statistical methods
Human resource management	Motivation techniques, empathic listening, responsibility assignment matrices, project organizational charts, resource histograms, team building exercises
Communications management	Communications management plans, kickoff meetings, conflict management, communications media selection, status and progress reports, virtual communications, templates, project Web sites
Risk management	Risk management plans, risk registers, probability/impact matrices, risk rankings
Procurement management	Make-or-buy analyses, contracts, requests for proposals or quotes, source selections, supplier evaluation matrices
Stakeholder management	Stakeholder registers, stakeholder analyses, issue logs, interpersonal skills, reporting systems

Source: Compiled by the Researcher (2017)

Project Success

The definition of a project has suggested that there is an orientation towards higher and long-term goals. There are several ways to define project success. The list that follows outlines a few common criteria for measuring project success;

1. The project met scope, time, and cost goals.
2. The project satisfied the customer/sponsor.
3. The results of the project met its main objective

It is obvious that an in-depth knowledge of the field and a broad level of skills are a unique requirement for health care projects, collaborations between several teams within and from the

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outside of the organisation can also be an important determinant of a failure or a success of the project. In addition, an efficient utilization of the available resources needs careful and detailed planning from the very beginning of the project implementation. Implementing new programs, saving on existing programs and cutting cost in as many categories as possible calls for effective quality management programs namely, Project Management (PMBOK, 2013).

Project Management Activities in the Healthcare Industry

Healthcare entities and related projects in various contexts include the following: Patient/Health Consumer Level, Sole Providers and Physician Groups, Community Clinics, Hospital/ Hospital Departments, Health Networks, Health Research, Payers, Government and Public Health, Not for Profit/Community Health, Healthcare Vendor/Consulting/Auditing

The healthcare industry has been engaged in projects for a long time, but has not until recently specifically used formal Project Management techniques (Schwalbe, 2013:4). Applying project management techniques can reduce the costs of providing healthcare and also manage the myriad aspects that concern the above-mentioned stakeholders. A project is designed to deliver the right output (patient care) at the right time with appropriate expenditures. A project management team must be able to grasp all the problems faced in a hospital or other healthcare facility (Shirley, 2011:56).

Project management in healthcare involves the main elements common to all industries, such as human resources management, communications, marketing, accounts and finance, risk management, and staying on top of project scope. Established project management techniques work well in healthcare facilities. Software tools effectively track costs and budget, allocate resources among various projects, manage communication and tasks, and document administrative systems. The project manager must only pick his tool: Some prefer a familiar software application like an Excel spreadsheet designed for project management. Others work with a more sophisticated application such as Project 2010, available for individual or enterprise operations.

Healthcare facilities have many departments with different purposes but similar structures. Hospital-based clinical specialties such as anesthesiology, pathology, and radiology render different aspects of patient care but they all require monitoring of services scheduled, quality assurance, Professional credentialing, purchasing and capital budgets, and staffing, to name a few. The same is true of diagnostic setups for cardiology or neurology as well as for various screening

or rehabilitative facilities. It is efficient to create a single list of project tasks and then apply the same list to each clinical department. The same technique works when a facility prepares for accreditation or state licensing reviews and site visits.

Forces Driving Change in the Health Care System

The healthcare industry is unique among other industries in several respects. Healthcare as product or a whole is extremely hard to define and healthcare is a subjective and emotionally charged service. Three kinds of innovation can make health care better. The first is the way consumers buy and use healthcare. Another way is with the use of technology to develop new products and treatments or otherwise improve care. The third generates new business models and practices (Herzlinger, 2006).

There are a number of forces driving change in the health care system. Two forces appear to be driving costs up, demographics and technology. Three forces seem to attempt in driving costs down: political pressure, business pressure and quality management systems such as Project Management or various Six Sigma methodologies.

When economists outline factors that account for health care spending, they divide them into demand factors, such as demographics, population aging, population income, and insurance; and supply factors, such as facilities, technology, and physicians. Nations with older populations, richer populations, and insured populations have higher health care spending. Nigeria falls under the older population category and is projected to have an exponential increase for those who will need healthcare services because of the baby boomer generation reaching retirement ages. Older people tend to purchase more services than goods and younger people tend to purchase more goods than services. This information also demonstrates a demand for more healthcare workers generally and those who specialize in various competencies.

Jayawarna and Holt (2009) investigated the experiences of how the use of quality systems promotes and/or discourages the exploration and exploitation of RandD knowledge. They used case study analysis of seven technology-based RandD organizations in the UK and argue that the knowledge-intensive nature of RandD activity, coupled with the endlessly re-constructing nature of knowledge, precludes the use of generic frameworks or best-practice guidelines. Organizational systems, within which each team member can inquire about the organisation's strategic concerns, are a prerequisite for effective „quality management systems“ in R and D environments. On the

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contrary, when such systems are externally imposed as a procedure, they tend to be least effective (Jayawarna and Holt 2009).

3. Research Methods

This research design adopted for this study is structural research design. This was used because the study made use of both survey research design and explanatory research design concurrently. The study used quantitative research method, including a triangulation approach, based on the results of the literature review and data from the survey, the population of the study comprises of the entire members of staff of Badagry general hospital in Lagos state, researchers working on healthcare projects, and patients in the hospital. 65 health workers were selected while 256 patients were selected from the entire members of staff of Badagry general hospital in Lagos state using purposive sampling technique. Patient's satisfaction level was ascertained by selecting patients at the hospital using simple random sampling. A five -point Likert Scaled questionnaire with the ratings Strongly Agree (5), Agree (4), Undecided (3), Disagree (2) and Strongly disagree (1) was designed to establish the effects of the application of project management techniques on health care project success. To establish the validity of the research instrument the study sought opinions of experts in the field of study (content validity). The study used Cronbach's alpha methodology, which was based on internal consistency. The result of Cronbach's Alpha for the overall scale of the variables is 0.851 which is acceptable. Thus, the instrument was shown to be reliable.

Table 3. Information of Respondents

		Frequency	Percentage
<i>Sex</i>	Male	100	56%
	Female	80	44%
	Total	180	100%
<i>Age in Years</i>	Below 20 years	9	5%
	Between 21-30 years	55	31%
	Between 31-40 years	51	28%
	Between 41-50 years	49	27%
	50 years and above	16	9%
	Total	180	100%
<i>Education Qualification</i>	SSCE	50	28%
	OND	39	22%
	HND/BSC	80	44%
	POST GRADUATE	11	6%
	Total	180	100%

Source: Field Survey, 2017

Table 3 shows that 55.6% of the respondents were male while 44.4% were female, which implies that the population of male respondent is higher than female. Most of the respondents are between the age brackets 21 to 40 years old (58.9%) while only 5% are below 20 years old. This signifies that most of the respondents are matured. 27.8% have SSCE certificates, 21.7% have OND degree, 44.4% have HND/BSC qualification, while the remaining 6.1% have post graduate qualification. This means that the respondents are educated.

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HYPOTHESES TESTING

Hypothesis one

H0: There is no significant relationship between resource allocation and sustainability in the health system.

		Correlations	
		Resource Allocation	Sustainability
Resource Allocation	Pearson Correlation	1	.832
	Sig. (2-tailed)		.015
	N	180	180
Sustainability	Pearson Correlation	.832	1
	Sig. (2-tailed)	.015	
	N	180	180

The correlation table above shows that there is a linear relationship between Local Government administration and community development in Badagry LGA. The findings of the correlation analysis indicated that there is a very high relationship between resource allocation and sustainability in the health system, with a Pearson's Moment correlation coefficient ($r = 0.832$, p -value < 0.05). The relationship is statistically significant because the p -value of the result (0.015) is less than 0.05 level of significance used for the study. This indicates that there is a significant relationship between resource allocation and sustainability in the health system.

Hypothesis two

H0: Monitoring services scheduled does not have significant effect on quality improvement.

Regression analysis was also used to also test this hypothesis.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Sig.
1	.922 ^a	.850	.849	.47617	1007.724	.000

The model summary above shows the extent to which monitoring services scheduled affect quality improvement. The coefficient of determination ($R^2 = 0.850$) shows that 85% of the variation

recorded in improved quality is accounted for or contributed by monitoring services scheduled. The result is statistically significant at the specified 0.05 level of significance because the p-value 0.000 is less than the level of significance 0.05 used for the study. This means that monitoring services scheduled have significant effect on quality improvement.

This study evaluates the effects of the application of project management techniques on healthcare project success, a study of Badagry General Hospital, Lagos State, Nigeria. The first finding of this study suggests that there is a significant relationship between resource allocation and sustainability in the healthcare system. This finding is in line with the submissions of Karangwa, Mbabazile & Zenon (2016). They stated that project success is influenced by project execution plan. Activities are carried out in line with execution plan. Responsibility for each task is clearly defined and that appropriate tool requires for project task are availed. All these can only be possible if there exist an effective project resource allocation, which is one of the attributes that defines project management.

The second finding of this study is that 85% of the variation recorded in improved quality is accounted for by monitoring services. This submission has further buttressed the principles underlining project management theories. Project executions are broken into smaller transformations for proper monitoring. This is known as work breakdown structure and it is also in line with the principle of flow model. The findings are also related to the submission of Abouzahra (2011) who also concluded in his study that in order for the project team to eliminate or reduce project constraints, special attention must be given to project monitoring services, which is the major for assessing quality in project management.

4. Conclusion

The main objective of this study was to evaluate the effects of the application of project management techniques on health care project success, a study of Badagry General Hospital, Lagos state.

The findings from the study specifically discovered that:

1. There is a significant high relationship between resource allocation and sustainability in the health system, with a Pearson's Moment correlation coefficient ($r = 0.832$, $p\text{-value} < 0.05$).

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2. 85% of the variation recorded in improved quality is accounted for or contributed by monitoring services scheduled. ($R^2 = 0.85$, p-value <0.05). For a unit increase in monitoring of services scheduled, there is 112% increase in quality.

The healthcare industry has been engaged in projects for a long time, but not necessarily using formal project management techniques. Projects in the healthcare sector can be large or small and involve one person or thousands of people. They can be done in one day or take years to complete. They also can occur in various types of healthcare related entities. Project management provides advantages, such as better control of financial, physical, and human resources, improved customer relations, shorter development times, lower costs, higher quality and increased reliability, higher profit margins, improved productivity, better internal coordination, higher worker morale and reduced stress amongst others.

Healthcare organizations are realizing that to remain competitive, they must develop skills to effectively select and manage the projects they undertake. They also realize that many of the concepts of project management, especially interpersonal skills, will help them as they work with people on a day-to-day basis.

Projects are not run in isolation. They are part of a bigger system, and in order to be successful, project managers must understand that system it is known that there is a substantial growing demand for not just project managers but qualified and certified project managers pertaining to their fields. In the world of project management, if a project isn't going well, a project manager knows the project can end up becoming a disaster. Therefore, there is need for the Project Management Professional credential, known as the PMP, or other Project Management certifications in the Nigerian health care sector.

5. Policy Recommendations

The following policies are hereby recommended to policy makers in the health industry and government;

1. Project management should be an absolute critical aspect of the Nigerian Department of Health healthcare implementation plan.

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2. Within an organization whether it be government, nonprofit or for profit need to have a sufficient and tuned Project Management program for large-scale systems initiatives, or they are bound to fail.

There is need for The Health Information Technology for Economic and Clinical Health (HITECH) Act to be put in place to improve Nigerian healthcare patient care and delivery through an unprecedented investment in Health Information Technology.

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Wpływ zastosowania technik zarządzania projektowego na sukces projektu dotyczącego służby zdrowia. Przykład Szpitala Ogólnego w Badagry w stanie Lagos

Streszczenie

W niniejszym artykule zbadano wpływ zastosowania technik zarządzania projektowego na sukces projektu dotyczącego służby zdrowia na przykładzie Szpitala Ogólnego w Badagry w stanie Lagos. W tym celu wykorzystano badania ankietowe. Kwestionariusz ankietowy skierowano do 65 pracowników służby zdrowia, opierając się na technice celowego doboru próby, natomiast 256 kwestionariuszy rozdzielono pomiędzy pacjentów w oparciu o prosty losowy dobór próby. Weryfikacja kwestionariusza nastąpiła poprzez potwierdzenie zasadności treści oraz jej rzetelności dzięki współczynnikowi Alfa Cronbacha, który wyniósł 0,851. Dane zgromadzone w celach badawczych zaprezentowano za pomocą wykresów i tabel jako odsetki i częstotliwości, zaś postawione hipotezy przeanalizowano za pomocą analizy korelacji i regresji. Wyniki ukazały, że istnieje istotna zależność pomiędzy alokacją zasobów a podtrzymywalnością służby zdrowia, przy wykorzystaniu współczynnika korelacji Pearsona ($r = 0,832$, $p\text{-value} < 0,05$). Stwierdzono także, że 85% wariancji zaobserwowanych w poprawie jakości stanowi lub jest pochodną zaplanowanych usług monitoringowych ($R^2 = 0,85$, $p\text{-value} < 0,05$). W oparciu o wyniki, w artykule przedstawiono rekomendacje, zgodnie z którymi projekty ustanawiane przez radę administracyjną placówki służby zdrowia muszą być polecane przez zespół zarządzający projektem. Kierownicy służby zdrowia muszą być także zwracać uwagę na jakość opieki zdrowotnej i jej wyniki w postaci zdrowia pacjentów. Wreszcie, należy wdrożyć akt prawny dotyczący Technologii Informacji Zdrowotnej dla Zdrowia Ekonomicznego i Klinicznego (ang. The Health Information Technology for Economic and Clinical Health (HITECH)), aby podnieść poziom opieki zdrowotnej nad pacjentami w Nigerii poprzez bezprecedensowe inwestycje w Technologię Informacji Zdrowotnej.

Słowa kluczowe: opieka zdrowotna, techniki zarządzania projektami, alokacja zasobów, poprawa jakości, usługi monitorujące

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