Assessing the role of performance-based financing approach on medical logistics in the case of Agaro General Hospital.

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This is to certify that the thesis is prepared by Habtamu Worku, entitled, Assessing the role of performance-based financing approach on medical logistics in the case of Agaro General Hospital, in partial fulfillment of the requirements for Master of Arts in Logistics and Supply chain Management with the regulation of the university.

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DECLARATION

I, Habtamu Worku, hereby declare that this thesis entitled, assessing the role of Performance-based financing approach on medical logistics in case of Agaro General Hospital, is my original work and that sources of materials used in this thesis have been duly acknowledged. I seriously declare that this thesis is not submitted to any other institution anywhere for an academic degree, diploma, or certificate.

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Letter of Certification

This is to certify that Habtamu Worku has carried out his thesis on the topic entitled: assessing the role of Performance-based financing approach on medical logistics in the case of Agaro General Hospital. This work is original in nature and suitable for the award of Master of Arts (MA) in Logistics and Supply chain Management.

Tenkir Seifu (Ph.D.)

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ABBREVIATION AND ACRONYMS

WHO: World Health Organization

PBF: Performance-based financing

FMOH: Federal Ministry of Health

UHC: Universal health coverage

RBF: Results-based finance

FCAS: Fragile and conflict-affected areas

PHCU: Primary health care units

HC: Health Centers

HP: Health Posts

Abstract

Performance-based financing (PBF) is being implemented across low- and middle-income countries to improve the availability and quality of health services, including medicines. Although a few studies have examined the effects of PBF on the availability of essential medicines (EMs) in low- and middle-income countries, there is limited knowledge of the mechanisms underlying these effects.

Pharmaceuticals, medical and surgical supplies, medical devices and equipment, and other products needed to assist doctors, nurses, and other health and dental care providers are all part of medical logistics. Medical logistics tasks are an important part of the healthcare system: medical supplies are the most expensive component of healthcare after staff costs. Medical logistics companies are implementing supply chain management techniques to reduce healthcare expenses.

The objective of this study is to assess the role of Performance-based financing on medical logistics in the case of Agaro General Hospital. Both quantitative and qualitative approaches are used in an explanatory and descriptive research design. A total of 114 samples were taken from 160 populations. Structured questionnaires and open-ended interview questions are used as a tool for data collection. The data were analyzed using both descriptive and inferential statistical tools. Moreover, the result was described using mean, frequency, and standard deviation, and the researcher has also applied a parametric statistical test (correlations, and regression analysis) to interpret and analyze the data, using Statistical Package for Social Science version 26.

The findings showed that medical logistics is found to be strongly affected by the Performance-based financing approach. Most of the respondents agreed that the approach has a positive role in the availability of the essential drug, supporting their own procurement of medical equipment, stock management, and bringing motivations to provide good quality care services to the patients. And most respondents disagree that the approach supports having a formal logistics department. This may be due to government structure and requires decisions from the Federal Ministry of Health.

From the findings of the study, 44.5 percent of the variance in medical logistics was explained by the variance of explanatory variables, while the rest 55.5 percent was contributed by other factors that were not included in the model. Hence it is recommended that the Federal Ministry of Health must assess the role of the Performance-based financing approach impact in the health sector including the overall impact of the approach considering various factors.

Keywords: Medical logistics, Performance-based financing approach, Pharmaceuticals, and medical supplies,

Chapter One

Introduction

In this chapter background of the study, statement of the problem, research questions, research objectives, significance of the study, limitation of the study definitions of key terms, and organizations of the study, were discussed.

1.1 Background of the study

Medical logistics involves obtaining resources, managing supplies, and delivering goods and services to providers and patients. To complete the process, physical goods and information about the medical products and services usually go through several independent stakeholders including manufacturers, distribution, hospitals, zonal health bureaus, woreda health centers, and several regulatory agencies.

Hospital logistics is one of the important infrastructures that facilitate health care services. Hospital logistics differentiate between three core lows: patient, material, and information flow. The patient flow involves the movement of patients to get access to medical care and related resources, in healthcare. The material flow includes the supply of medical, pharmaceutical, and surgical consumables, medical equipment, and devices necessary to support the medical personnel and unquestionably patients at the hospitals(Dachyar, Farizal, & Yafi, 2018).

Ethiopia has made steady improvements towards achieving its main health goals. There is good progress in reducing mortality and morbidity among children and women.

Over the last two decades, the under-five mortality rates declined from 166 deaths per 100,000 live births in 2000 to 67 to 2016 and the infant mortality rate (IMR) declined per 100,000 lives in 2006. (World Bank,2012)

However, Ethiopia remains one of the poorest countries in the world with lagging indicators in maternal and child death, especially, neonatal mortality. Equitable access to basic services is a concern, while the quality of services and readiness of facilities to provide quality services is a major hindrance to Universal health coverage (UHC), financial protection from services illness remains inadequate and is one of the most challenging agendas.

To overcome and fulfill the logistics requirements of the health sector a good and sound financial approach is very important to improve the availability and accessibility of good quality health care and a stronger health system at large, which supports the progressive realization of universal health coverage.

The primary role of finance in health services organizations is to plan for, acquire and use resources to maximize the efficiency of the service provider, to enhance health governance, information system, transparency, and improved utilization of available resources.

Performance-based financing, hereafter, PBF, is one of the approaches to fulfill the challenges in health sectors logistics by providing an additional source of income by enhancing transparency and accountability in the health system, by introducing the proper checks and balances, while responding to the health needs of most vulnerable populations.

PBF initiatives are a subset of RBF projects that are defined by a focus on monetary incentives for health care professionals who meet performance targets under conditions.

PBF is a health-financing tool that makes payments to healthcare providers conditional on performance on pre-defined and validated quantity indicators that are adjusted for quality measures.

Performance-Based Financing (PBF) is a form of RBF distinguished by three conditions:

- Incentives are directed only to providers, not beneficiaries.
- Awards are purely financial; payment is by fee-for-service for specified services; and
- Payments depend explicitly on the degree to which services are of approved quality, as specified by protocols for processes or outcomes.

Results-based finance (RBF) has become more popular in low- and middle-income nations, particularly in fragile and conflict-affected areas, over the last decade (FCAS). Funds are made conditional on agreed-upon outputs or results, frequently with quality adjustments, under RBF programs.

Supply-side RBF, also known as performance-based financing (PBF), has been proposed as a healthcare system intervention that has the potential to encourage a more strategic approach to purchasing and logistics.

The health system of Ethiopia is federally decentralized along its region. The three-tier model for the delivery of health services is organized into:

- Primary level healthcare (Primary hospitals and primary healthcare units)
- General hospitals and
- Specialized hospitals

The primary health care units (PHCU's) are established at district (Woreda) and organized from the kebele level upwards. It forms the foundation of the health care system and consists of Health Centers (HC) with their Health Posts (HP).

The secondary and tertiary levels are comprised of general and specialized hospitals, and coverage of each extends to the larger portions of the population. The management, coordination, and distribution of pharmaceutical items and any technical support at each level are the responsibility of the District Health Offices and the Regional Health Bureaus.

Background to PBF project in Jimma Zone

PBF implementation in Jimma commenced in October 2019. It is being implemented in 13 Woredas in 10 woredas that are not under the United States Agency for International Development (USAID) Transform program, as well as three (3) woredas that are under USAID Transform. Sixty-five (65) Health Centers and five (5) hospitals are under PBF and the total catchment population for health services is 1,828,148 people, i.e., 54% of the population of Jimma Zone, now it is expanded to all Jimma zones.

1.2Statement of the problem

Medical logistics are an essential component ofhaving an active health management system. Quality health care refers to care that is safe, reliable, patient-centered, efficient, and provided to all in need in an equitable and timely manner. The Federal Ministry of Health (FMOH) states that a lot remains to be done towards improving the quality of care at each level of the health system.

One of the objectives Performance-based financing approach is to create access to essential drugs, services delivery, financing, and preventing stock out. PBF engages and empowers communities to attend to their own health needs by defining indicators in such a way they improve health services for the poorest and most vulnerable people, especially those isolated with proper planning of logistics with consistent supply.

The basic function of a logistic department is to assure value for money, to make sure that services are provided the most effectively and efficiently. Performance-based financing (PBF) has been demonstrated to be an effective strategy for addressing health system challenges in countries like Ethiopia. In Ethiopia, overall shortage, uneven distribution, rapid turnover, shortage of health professionals and essential drugs, poor inventory management are factors that affect the health system approach.

The most challenging factor in the medical logistics of Ethiopia is inadequate information provided to the community on service delivery and product availability issues, leading to low or nonexistent community engagement and limited accountability, poor conditions at health facilities, lack of coordination in donor assistance that supports supply chain and health services.

Lack of equity in access to good quality healthcare, equity in health care is ensuring availability of the best care to all whereby the quality of care provided does not differ by any personal characteristics and Ethiopia has demonstrated remarkable progress in expanding access to health care. Despite this progress, substantial inequalities still exist in health outcomes, based on economic status, education, place of residence, and sex.Low capacity of woreda health offices to play their government role, low patient satisfaction, low motivation of health professionals,and other challenges too.

The long procurement cycle through which government purchasing is carried out can be initiated only after funds are disbursed from the ministry of finance, treasury, or an international donor agency to the ministry of health or the procuring agency. The timing of such a fund's disbursement is uncertain and highly variable, leading to the delayed start of the procurement cycle. Given the long procurement cycles, any delays in procurement initiation create a cycle of uncertainty in the system and result in system-widestockouts (Prashant, 2015).

Inadequate forecasts, insufficient financing, delays in funding disbursements, and extended lead times are common difficulties in national health systems that affect supply chains (tendering and manufacturing). To add to the complication, many donors fund program-specific supply chains that run concurrently with the national health systems. In an already resource-constrained context, these potentially duplicative efforts throughout supply chains can result in inefficiencies.(Anna, 2013)

Referring to Ethiopia National Health Care Quality Strategy 2016 report, a lot of challenges are listed in health sector logisticsand pointed out that the health system is facing a lack of equitable health care delivery, lack of coordination with government counterparts, lack of essential drugs, and a proper database to achieve maximum level patient satisfaction, to keep health workers motivation, to have proactive logistical support with the smooth flow of supplies and maximum access to good quality health care service.

Therefore, this research proposal aspires to assessthe performance-based financing approach'srole towards the improvement of these challenges on medical logistics.

1.3 Research Objectives

1.3.1 General objectives

This study intends to assess the role of a performance-based financing approach on medical logistics in the case of Agaro General Hospital.

1.3.2 Specific objectives

- ✓ To assess how PBF supports the flow of pharmaceuticals, essential drugs, and medical supplies.
- ✓ To examine the role of the PBF approach on logistical capacity and motivations.

- ✓ To analyze the effect of PBF on proactive logistic responses.

1.4 Research Questions

- ✓ What are the contributions of PBF for the flow of the pharmaceuticals supply, essential drugs,and medical supplies?
- ✓ Howdoesthe PBF approach support proactive logistics, procurement, stock management, and maintenance?
- ✓ What are the roles of PBF helps the community get a proper health care service with proactive logistics responses?

1.5 Scope of the study

The focus of the study was the supply side of the RBF approach in evaluating the role of the approach in terms of logistics and supply fulfillment in health sector logistics in Agaro General Hospital.

Since most government health service providers follow the same logistical procedures and centralized procurement process led by Ethiopian Pharmaceuticals Supply Agency – EPSA, some degree of generalization might be possible.

1.6Significance of the study

The study was evaluatedthe role of the performance-based financing approach on health sector logistics, and it is very significant to know how the approach enables and facilitates the supply side of the health sector logistics in the Agaro General Hospital.

Moreover, the thesis report will be a good resource for the public and scholars by:

1. Providing information about the status of PBF and its impact.
2. Serving scholars as a resource for future assessments and studies in the area.

Therefore, this study is timely important and will provide information on PBF'srole in medical logistics, it will benefit the FMOH, partners, regional health bureaus, and health facilities in understanding PBF and its role in excelling in health care service.

1.7 Limitation of the study

Currently, PBF projects are under implementation in the Borena and Jimma zones of the Oromia region But because of budget and time constraints, this study will be limited to Agaro general hospital.

The study will not consider any issues that may arise.

- international supply chains.
- Regulatory requirements and regulations for medications.
- Pharmaceutical production.
- Vaccines or other medicines require special storage and distribution conditions, such as a cold chain.
- Motivation has a lot of internal and external factors but in this study, only the incentive of PBF towards better service will be assessed in terms of the health care delivery system.

1.8 Definition of Operational Terms

Medical logistics is the logistics of surgical, medical, and pharmaceutical supplies. It also includes the supplies of medical devices, medical and laboratory equipment, and other items, products, pieces of equipment to support dentists, doctors, veterinary physicians, nurses, and other healthcare providers and in the flow of patients through the entire hospital and involves coordination across a multitude of specialist teams and departments.

Mortality refers to the death rate.

Morbidity refers to the rate of diseases in the population.

Infant mortality rate (IMR) is the number of deaths per 1,000 live births of children under one year of age.

Universal health coverage (UHC) is about ensuring that people have access to the health care they need without suffering financial hardship. It is key to achieving ending of extreme poverty and increasing equity and shared prosperity and as such it is the driving force behind all the WBG's health and nutrition investments.

Results-based financing is an umbrella term referring to any program or intervention that provides rewards to individuals or institutions after agreed-upon results are achieved and verified. RBF interventions have been used to incentivize many different actors and institutions within the education sector.

Performance-Based Financing (PBF) is an innovative, results-oriented approach that incentivizes service providers based on their achievement of agreed-upon, measurable performance targets. Incentives include financial payments, bonuses, and public recognition.

Healthcenters are community-based and patient-directed organizations that deliver comprehensive, culturally competent, high-quality primary health care services.

The term logistics refers to the planning and verification of processes that transform input factors into products or services.

1.9 Organization of the study

This paper has five chapters. Chapter one dealt with the introduction/background of the study, a statement of the problem with research questions, objectives of the study, significance, scope, and limitation of the study. The second chapter presented a review of the theoretical and empirical literature. The research design and methodology of the study were included in the third chapter. The fourth chapter explains data analysis and presentation. Finally, the fifth chapter of this paper contains the findings, conclusion, and recommendations.

Chapter Two

Review of Related Literature

This chapter covers the literature review of the existing research literature on the role of performance-based financing in medical logistics. Specifically, the chapter will discuss the theoretical literature review, empirical literature review, identify the research gaps and develop the conceptual framework.

2.1 Theoretical Review

2.1.1 PBF and Health Sector Logistics

Public health specialists in developing nations are urgently seeking innovative ways to stretch resources to provide more results. Performance-based financing (PBF) has gained prominence as a possible solution because of its emphasis on paying for results rather than inputs. The basis of PBF is that cash or non-monetary benefits are offered in return for measurable actions or the achievement of a defined target. (Brian, 2013)

PBF in the health service delivery context. For instance, doctors and nurses may be rewarded, if fewer patients acquire infections during a hospital stay. However, PBF interventions can also be used to improve public health supply chains in developing countries. For instance, staff at a central medical store can be rewarded for using a computerized logistics system correctly and for increasing their productivity. By linking a supply-chain worker's performance with rewards, PBF may be able to reduce bottlenecks along the supply chain, reduce stockouts, and improve commodity availability. (Brian, 2013)

Performance-based financing (PBF) schemes are implemented in a growing number of low and middle-income countries and sub-Saharan Africa.

Now, there are about 34 countries in Africa where at least one pilot or regional scheme is in place. In a few countries, notably Burundi, Rwanda, and Sierra Leone, PBF has been introduced at the national level. (Fritsche, 2014)

In a nutshell, PBF schemes entail the payment of a financial bonus to healthcare providers based on their performance, measured by the number of services provided (or the achievement of a coverage target), out of a list of pre-identified indicators, usually adjusted by a measure of structural quality. (Fritsche, 2014)

The performance bonus is normally used to cover facility running costs and individual staff incentives. PBF is envisaged to improve the quantity and quality of services provided by increasing the motivation of health workers and their responsiveness to patients' needs. It is also expected to have positive systemic effects through the reorganization and clarification of roles and responsibilities between actors and increased autonomy of providers, transparency, and accountability (Meessen, 2012).

Performance-based financing (PBF) initiatives are attracting much global attention as a strategy to achieve health results. To date, however, we are aware of a few PBF initiatives with a focus on strengthening the performance of supply chains. PBF introduces incentives (generally financial) to reward the attainment of results. Recipients of performance incentives – which can be service delivery points (SDPs), subnational entities such as district teams or regional supply depots, or central medical stores – receive performance payments only if specified results are achieved (no result, no performance payment)(Delivery project 2012).

By doing so, PBF promotes hard work, innovation, accountability, and results – as opposed to simply paying for inputs, like equipment, training, fixed salaried staff, and drugs. In essence, PBF is "any program that rewards the delivery of one or more outputs or outcomes by one or more incentives, financial or otherwise, upon verification that the agreed-upon result has been delivered" (Musgrove 2010). This implies a financial risk – payment is received when (or withheld until) results (or actions) are verified.

How does PBF work in theory?

The theoretical underpinning of the PBF theory of change lies in the principal-agent model:

- Enriched by a more complex view on human behavior from behavioral economics
- The basic rationale is that health care providers exert more effort when payments are conditioned to the quantity and quality of the health services provided. (Mercedes,2019)

2.1.2 Procurement and Health Care Delivery

Regarding the impact of procurement on healthcare delivery costs to the customer suggest that inefficient purchasing, as well as any advances in efficiency, will eventually be passed along to the patient as additional costs or lower costs, respectively. In addition, note that inadequate and tedious procurement procedures and practices are responsible for rising costs and inefficiencies in healthcare systems.

Procurement practices affect inventory levels and ultimately the serviceprovided to the consumer or patient in the case of a hospital. There is a high risk, therefore, that erroneous decisions in

SCM can culminate into stock-outs and total failure of healthcare delivery(Kizito& James, 2013).

2.1.3 Health sector logistics

The health situation in many African countries and at the regional level is characterized by serious flaws. Very low human development indices, health being a major factor, reflect a critical situation, characterized by a lack of material and human resources and access to health services. Moreover, the use of these scarce resources is not optimized.(B. Silve, 2008)

The resulting morbidity and mortality rates are high, particularly for children, due to the weakness of the health system and the persistence of significant risk factors (unhealthy environment, lifestyles, inadequate and unbalanced diet). This fosters the development of infectious and parasitic diseases and the rapid spread of HIV infection. (Silve, 2008)

Apart from the human consequences, this has a significant negative impact on socio-economic development. For these reasons, health care is one of the priority sectors for governments of developing countries, particularly in Africa; above all, developing health is a prerequisite. (B. Silve, 2008)

Logistics function now become one of the key strategic decisions. towards the improvement of the health care delivery system. Several strategic decisions related to logistics can be considered for better health care service, such as outsourcing activities, supply management, stock management, and pharmaceuticals supply chain(B. Silve, 2008).

For the past 15 years, the logistics function has gained a strategic place in the management of hospitals. Nowadays, we are also witnessing several strategic decisions related to logistics such as the outsourcing of certain activities in the hospital supply chain (purchasing and supply management, sterilization, stock management or intra and inter-site transport, etc.)(B. Silve, 2008)

Hospital managers have also implemented various tools and methods of lean management allowing a continuous improvement approach. Therefore, significant results were achieved in reducing errors, improving process quality, and reducing wait times. (Blandine Ageron, SmailBenzidia& Michael Bourlakis, 2018).

The lack of resources is exacerbated by problems of governance and management of available resources which lead to:

- Poor quality of health services, related to overworked, poorly trained, and poorly organized staff,
- Late or insufficiently effective responses to epidemics and natural disasters,
- The waste of scarce resources (such as vaccines poorly preserved),
- Insufficient vaccination coverage and high infant mortality rates.
- Lack of supplies and logistical responses (B. Silve, 2008)

To overcome these problems assigning proper human and material resources, usage of technology, and proper systematic approach is vital. One of the requirements in human resources is health logistician.

2.1.4 The profession of health logistician

Health Logistician will deal with numerous functions that are currently either burdening the doctors and nurses themselves, or divided among other personnel, or not addressed at all. Indeed, the Health Logistician represents an additional job at the district level. Considered a key element to improve cost efficiency, the sooner this job is implemented, the greater benefits will accrue to health programs of all kinds. The question is not how much it costs, but rather how much it will save, not to mention improve patient care.(B. Silve, 2008)

Health logistics is the function that deals with the use of material resources essential to the efficiency, quality, and cost-efficiency of health activities within the programs and structures (in satisfactory conditions in terms of safety and security).

The Health Logistician is responsible for optimizing the use of technical means and material resources available to health systems for efficiency, quality, and traceability of health operations.

The different skills sectors of the Health Logistician are based on 7 key areas of expertise:

1.Plan logistical activities of health structures and programs at the district level.

2.Administrate and coordinate logistics of health programs and structures.

3.Manage the supply chain.

4.Coordinate the use, maintenance (including subcontracting) of medical and technical equipment.

5.Coordinate the maintenance of facilities and housing, including water and sanitation of health structures.

6.Ensure effective logistical support of Health Emergencies and Humanitarian operations.

7.Foster intersectoral collaboration and community participation. (B. Silve, 2008)

Over time, the profession of logistics and supply chain management has evolved to meet the changing needs of the global supply chain. According to the Council of Supply Chain Management Professionals (CSCMP)— "Supply chain management encompasses the planning and management of all activities involved in sourcing and procurement and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across companies.

The CSCMP also defines logistics management as, thepart of supply chain management that plans, implements, and controls the efficient, effective forward and reverses flow and storage of goods, services, and related information between the point of origin and the point of consumption to meet customers' requirement.

Logistics management is an integrating function, which coordinates and optimizes all logistics activities, as well as integrates logistics activities with other functions including marketing, sales manufacturing, finance, and information technology." (CSCMP 2011)

In other words, you can consider logistics activities as the operational component of supply chain management, including quantification, procurement, inventory management, transportation and fleet management, and data collection and reporting. Supply chain management includes the logistics activities plus the coordination and collaboration of staff, levels, and functions. The supply chain includes global manufacturers and supply and demand dynamics, but logistics tends to focus more on specific tasks within a particular program health system.

2.1.5 Why Health Logistics Matters?

In the past, logistics was considered a custodial activity. Storekeepers were the custodians of supplies stored in small storerooms and large warehouses. Consequently, the science (and art) of logistics, and the people who make the health logistics system work, were not considered an important part of family planning, HIV and AIDS, or vaccination programs, to name only a few. Fortunately, as time passed, more and more program managers have come to understand how important logistics is to a program's success.

The goal of a health logistics system is much larger than simply making sure a product gets where it needs to go. Ultimately, the goal of every public health logistics system is to help ensure that every customer has commodity security. Commodity security exists when every person can obtain and use quality essential health supplies whenever he or she needs them. (Arlington, Va, 2011)

A properly functioning supply chain is a critical part of ensuring commodity security-financing, policies, and commitment are also necessary. Effective supply chains not only help ensure commodity security but also help determine the success or failure of any public health program. (Arlington, Va, 2011)

Both in business and the public sector, decision-makers increasingly direct their attention to improving supply chains, because logistics improvements bring important, quantifiable benefits.

Well-functioning supply chains benefit public health programs in important ways by; -

- ✓ increasing program impact
- ✓ enhancing quality of care
- ✓ improving cost-effectiveness and efficiency.

Logistics increases program impact

If a logistics system provides a reliable supply of commodities, more people are likely to use health services. Customers feel more confident about the health program when they have a constant supply of commodities, it motivates them to seek and use services(Arlington, Va, 2011).

Logistics enhances the quality of care

Well-supplied health programs can provide superior service, while poorly supplied programs cannot. Likewise, well-supplied health workers can use their training and expertise fully, directly improving the quality of care for clients. Customers are not the only ones who benefit from the consistent availability of commodities. An effective logistics system helps provide adequate, appropriate supplies to health providers, increasing their professional satisfaction, motivation, and morale. A motivated staff is more likely to deliver a higher quality of service. (Arlington, Va, 2011)

Logistics improves cost efficiency and effectiveness

An effective supply chain contributes to improved cost-effectiveness in all parts of a program, and it can stretch limited resources.

Strengthening and maintaining the logistics system is an investment that pays off in three ways.

(1) It reduces losses due to overstock, waste, expiry, damage, pilferage, and inefficiency.

(2) It protects other major program investments; and

(3) It maximizes the potential for cost recovery. (Arlington, Va, 2011)

To enjoy the benefit of logistics in the health sector proper health financing requires an available budget to run the operations and to have sufficient pharmaceuticals, to hire skilled labor, and enhance proper tools implementation for better care service delivery.

2.1.6 Health financing

Health financing is fundamental to the ability of health systems to maintain and improve human welfare. At the extreme, without the necessary funds no health workers would be employed, no medicines would be available, and no health promotion or prevention would take place. However, financing is much more than simply generating funds. (WHO 2008).

Health financing refers to the "function of a health system concerned with the mobilization, accumulation, and allocation of money to cover the health needs of the people, individually and collectively, in the health system, the purpose of health financing is to make funding available, as well as to set the right financial incentives to providers, to ensure that all individuals have access to effective public health and personal health care" (WHO 2008).

In most low-income and many middle-income countries, revenue collection derives from a mix of domestic and external sources. Despite the substantial increases in external assistance for health since 2000, the resources available are still insufficient in most low-income settings to assure universal coverage with even a very basic set of needed interventions.

This is not the place to debate exactly how much is needed, but adjustment of Commission on Macroeconomics and Health estimates of the cost of a core package to current prices reveals a need for around US$40 per person per year.

This is an underestimate for many reasons, but even then, almost a third of the 193 member countries of WHO did not yet have access to even this level of funding in 2005, while 33 spend less than $25 per person each year despite increased external inflows. (WHO,2008).

An ideal indicator of this part of the financing system would need to capture the amount and the adequacy of the funds that are raised. Financial risk protection is determined by how funds are raised and whether and how they are pooled to spread risks across population groups. Direct user charges, for example, are regressive – the rich pay the same fees as the poor. They deter some people from seeking or continuing care.

They also provide no financial risk protection, in that people pay when they are sick and do not pay when they are healthy. As a result of this lack of solidarity, some people incur financial hardship and can even be pushed below the poverty line. Financing policy must grapple with questions of how to raise funds equitably, which usually implies a degree of progressivity (where the rich contribute a higher proportion of their income than the poor). It also needs to consider how to ensure access to needed services while protecting people against the more severe financial consequences of paying for a scare. (WHO,2008)

These goals cannot be achieved without some form of prepayment and the subsequent pooling of the collected revenues – people pay into a pool when they are healthy and can draw on these

funds when sick. Pooled funds can come from tax or health insurance contributions and in most countries, they come from a mix. (WHO,2008).

2.1.7 Performance-based financing

Ethiopia has made important strides toward improving the health status of its population as well as in advancing health sector strategies and health care financing (HCF) reforms. The 20-year national Health Sector Development Program (HSDP), implemented in five-year plans, began in 1997 and was completed in 2015.

A policy implementation document, it guided the development of subnational plans and set the overarching framework under which the health sector operated, including principles of government leadership, responsiveness to community health needs, and comprehensive coverage of priority health sector issues.

Implementation of the Health Sector Transformation Plan (HSTP) began in 2015/16, with ambitious goals; -

- To improve equity, coverage, and utilization of essential health services. Improve the quality of health care and enhance the implementation capacity of the health sector at all levels of the system.
- To support HCF reform under these comprehensive plans, Ethiopia has also implemented an HCF strategy.

The strategy articulated several HCF reforms to increase funding for health, enhance efficiency in the use of available resources, improve the quality and coverage of health services, ensure equity, and promote sustainability.

A revised strategy, for 2017–2025, builds upon the successes and challenges of its predecessor in accelerating Ethiopia's progress toward attaining universal health coverage through primary health care.

It is intended to lead to sustainable HCF that will enable the provision of proven essential health services to all segments of the population, without them incurring financial hardship in accessing services.

Health is increasingly recognized as a key aspect of human and economic development in Africa and countries are increasing investment in actions and reforms to improve health outcomes and accelerate progress towards meeting the health Millennium Development Goals (MDGs).

The political will of the national leaders to put health in forefront of development has been reiterated at the continental level through actions such as the Abuja Declaration of 2001 on increasing government funding for health, the Addis-Ababa Declaration of 2006 on community health in the African Region, and the 2008 Ouagadougou Declaration on primary health care and health systems in Africa. (WHO, 2013).

Health system financing is one of the key areas that offer important opportunities to translate these commitments and political will into results. The need to develop strong health financing systems is a common objective of all countries. Even the richest countries are finding it increasingly difficult to keep up with rising health care costs, and the current economic downturn is adding more pressure on health spending.

In low- and middle-income countries, which are where most African countries are ranked, scarcity of funds for health is an even more acute problem. (WHO, 2013).

The average total health expenditure in African countries stood at US$ 135 per capita in 2010, which is only a small fraction of the US$ 3150 spent on health in an average high-income country.

Insufficient investment in the health sector or inactions to tackle the environmental and social determinants of health is a serious obstacle to improving health outcomes in Africa, particularly considering that the continent bears the bulk of the global morbidity and mortality burden for maternal and infant mortality and HIV/AIDS. (WHO, 2013).

In addition, the rise in non-communicable diseases and injuries has put many countries under the pressure of a double burden of disease. The major constraint arising from funds shortage in most African countries is that the strategies and mechanisms that underpin health financing systems pose problems.

In about half of African countries, 40% or more of the total health expenditure is constituted of the household out-of-pocket payments, which is the most regressive way of funding health care. The reliance on this payment mechanism creates financial barriers to access to health services and puts people at risk of impoverishment.

Furthermore, the current financial flows within the health systems are creating and exacerbating inefficiencies and inequities, for example through the skewed allocation of funds to urban areas and specialized care.

These weaknesses in the health financing systems have been identified as the main underlying reasons for the limited progress towards achieving the health MDGs in Africa. (WHO, 2013).

According to the accounts data, the share of health spending from government sources has accounted for on average around 28 percent of Ethiopia's total health expenditure since 1995/96. Ethiopia's total health expenditure accounted for 8.2 percent of the country 's total general government expenditure.

This shows that the government still needs to take measures to reach 15 percent of overall government spending on health, as Ethiopia committed to doing under the Abuja declaration.

Health accounts data also show that donors accounted for on average 33 percent of the Country's total health spending. Donors' share of health spending peaked, at most 50 percent in 2010/11, from a low of 8 percent during the first health accounts exercise in 1995/96.

Although this decrease is encouraging, the most recent (2013/14) health accounts exercise shows a still-high donor share of 36 percent. (WHO,2013).

Overall health accounts findings reveal that on average approximately 42 percent of total health spending in Ethiopia is consumed by primary and preventive care services providers. Hospitals consumed on average around 22 percent. The higher relative spending at the lower level of care is in line with the Ethiopian government's health policy. (Soeters and Nzala 1994).

To fill the gap on health spending the Ethiopian government is working with different donors to provide financial support on the sector with different approaches. One of the approaches is the Performance-based financing approach that is under implementation.

Performance-based financing (PBF) can be defined as cash or non-monetary benefits given for measurable actions or achievement of a defined performance target.

Performance-based financing in lower- and middle-income countries can be traced to early experimentation with the introduction of market forces in primary health care. This experiment was in a publicly funded and publicly provided health system, and its purpose was to co-finance primary health care in Zambia's Western Province in the late 1980s and early 1990s. (Soeters and Nzala 1994).

A further development was spurred in 1999, through Cambodia's contracting of health services experience. In Cambodia, non-governmental organizations (NGOs) were contracted to provide either health services or management support to government-provided health services (Bhushan, Keller, and Schwartz 2002; Bhushan et al. 2007; Soeters and Griffi ths 2003). In Haiti, NGOs were contracted for service delivery (Eichler et al. 2009).

In both Cambodia and Haiti, these contracts were output-based or fixed-price contracts with an element of award fees; this form of performance contracting was called performance-based contracting (PBC) (Loevinsohn 2008).

In Afghanistan since 2003, PBC has been introduced as a national strategy for health service delivery (Arur et al. 2009; Loevinsohn and Sayed 2008; Palmer et al. 2006).

Since 2002, PBF has developed in its current form in Rwanda, where actors who had been engaged in Cambodia brought their experience (Meessen et al. 2006; Meessen, Kashala, and Musango 2007; Soeters, Habineza, and Peerenboom 2006). A further boost came through the development of similar approaches in the Democratic Republic of Congo (Soeters et al. 2011) and Burundi from 2006 onward.

A small pilot started in Cameroon in 2008 and on Flores, Indonesia, in 2009. In 2009, the Central African Republic began a pilot in one prefecture, which has been expanded to six prefectures

(January 2010 onward). Rwanda (in 2006), Burundi (in 2010), and Sierra Leone (in 2011) scaled up PBF approaches to function nationwide.

As of 2013, additional PBF projects and programs have been planned and implemented in a wide range of countries such as Afghanistan, Benin, Burkina Faso, Cameroon, Chad, Djibouti, The Gabon, Gambia, Kenya, the Kyrgyz Republic, Lao People's Democratic Republic, Lesotho, Liberia, Mozambique, Nigeria, Senegal, South Sudan, Tajikistan, Tanzania, Vietnam, Zambia, Zanzibar (Tanzania), and Zimbabwe (see box I.2). More are certain to follow.

PBF approaches are undergoing dynamic growth in terms of both participating countries and methodological issues (such as design, quality, equity, demand-side interventions, and expansion in the secondary-care level).

Many acronyms and abbreviations describe pay-for-performanceprograms, and this multitude of names can be confusing. Most of the acronyms and abbreviations are synonymous, while some describe a subset of such programs.

whereas PBF involves contracts with individual health facilities, whether public or private (Meessen et al. 2006; Meessen, Kashala, and Musango 2007; Soeters, Habineza, and Peerenboom 2006; Soeters et al. 2011).

PBF is done through a "contracting-" approach: PBF is put onto existing public and private health systems with significant involvement of non-state actors. Using one RBF approach or the other depends on the context (Gorter, Ir, and Meessen 2013). PBC works well in fragile states (for example, Haiti, Cambodia, or Afghanistan), whereas PBF can work in both fragile states and more stable environments. (György Bèla, Fritsche Robert Soeters, Bruno Meessen, 2014)

The Role of Performance-Based Financing in Future Supply Chains in Developing Countries begins by summarizing the context for global health in 2035 as predicted by the recent Lancet Commissions report, "Global health 2035: a world converging within a generation."

It then explores the project's own forecasts for the future of public health supply chains while identifying implications for performance-based financing schemes under the functions of financing, supply chain design, information systems, storage and distribution, human resources, governance, and accountability.

2.2Empirical literature review

According to B. Silve,(2008) study, the health situation in many African countries and at regional level is characterized by serious flaws. Very low human development indices, health being a major factor, reflect a critical situation, characterized by a lack of material and human resources and access to health services. Moreover, the use of these scarce resources is not optimized.

A. Lack of recognition of logistics

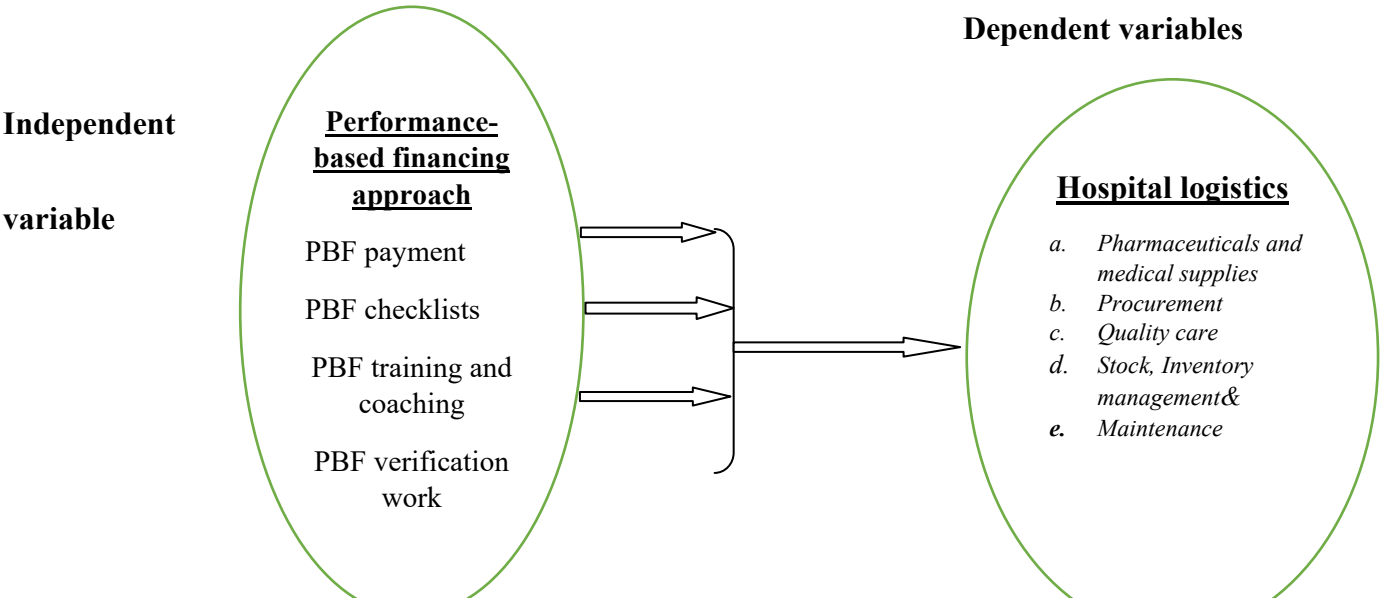
Task Force on Immunization Meeting, Maputo, 2006 stated that, Given the recognized need for health logistics officers and the present lack of such officers in the countries, WHO/AFRO, UNICEF, Bio force and partners should urge countries to create positions of health logistics officers in health management teams, coordinate their efforts and mobilize necessary resources

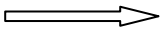
to initiate adequate training in logistics for health in support of present move toward greater integration of public health interventions.

H1. Performance-based financing approaches recognize the important roles of medical logistics in the health sector.

2.3Conceptual framework

A conceptual framework includes one or more formal theories (in part or whole) as well as other concepts and empirical findings from the literature. It is used to show relationships among these ideas and how they relate to the research study.Based on existing literature conceptual framework is developed to see the relationship of variables.





Source: Conceptual framework has been adapted from (Youness , Jawab, Boutahari, Laaraj, Akoudad, Zehmed and Moufad 2018). Proceedings of the International Conference on Industrial Engineering and Operations Management Paris, France, July 26-27, 2018. Hospital logistics: an effective tool in improving the quality of care

2.4 Gaps in the existing literature

In the last two decades, an increasing number of developing countries have introduced incentive payments linked to results to widen access to care and to improve the quality and performance of health care services and systems. These incentive schemes, known collectively as Performance-based financing (PBF), play an important role in advancing progress toward universal health coverage, contributing to the achievement of Sustainable Development Goals.

For over a decade, the World Bank's strategies have emphasized the importance of paying for results approaches to expanding access to and improving health care services.

The World Development Report 2004: Making Services Work for Poor People lists weak incentives for health providers as one of the drivers of poor-quality service, leading to low demand for health services. To address such barriers to service delivery, the report recommends the creation of incentives for better quality service and strengthening accountability (Sophie, 2013). The 2007 Healthy Development: The World Bank Strategy for Health, Nutrition and Population Results report puts greater emphasis on achieving results in the field by increasing the links between health financing and health results.

Independent Evaluation Group (IEG) conducted an in-depth analysis of PBF consisting of structured reviews of academic and policy literature, the development of an intervention-specific theory of change, portfolio review analysis, and evidence gaps maps of systematic reviews of impact evaluations. (Sophie, 2013)

The study found that the design of the World Bank's PBF-related projects included the main components of the intervention theory of change, the quality of their M&E frameworks tends to be better than the rest of the health portfolio, and their development effectiveness was overall positive.

However, there are still considerable knowledge gaps in measuring cost-effectiveness and health-workers performance, suggesting that PBF interventions need to be further studied in various contexts. (Sophie, 2013)

Most impact evaluations have focused on the potential of PBF programs to increase access to health care services finding, in general, a positive impact, yet there are variations across countries and across maternal and childcare services.

While systematic reviews conclude that the impact of PBF programs on quality of care is still unclear, several reviewed programs found improvements in quality measures.

Still, there is a knowledge gap on the cost-effectiveness of PBF programs and therefore it could be a priority for future prospective research.

The value for money of PBF programs with respect to more traditional input-based financing is yet to be ascertained as suggested by a recent systematic review which concluded that available studies do not estimate the full economic returns of PBF programs and that alternative interventions to strengthen the capacities of the healthcare system were not considered.

Evidence on the effects of PBF on health workers' performance in low-income settings is still nascent, although crucial to advance our understanding of why incentives work or not. For example, in Zambia and Zimbabwe impact evaluations found that while extrinsic motivation did not crowd-out intrinsic interests and health workers' satisfaction with their job compensation was higher, job satisfaction was lower due to higher workload.

However, so far, few studies have looked at whether and how PBF is aligned to and integrated with national health-financing strategies, particularly in fragile and conflict-affected settings(USAID, 2012).

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

Introduction

In this chapter, the types of data utilized and the methodologies to be used to assess the role of the performance-based financing approach on medical logistics in the case of Agaro General Hospital were discussed. To do so, topics such as the study strategy, research design, sample design, data source, data interpretation methodologies, data analysis, and data interpretation, as well as validity, reliability, and ethical considerations, were addressed.

3.1 Description of the Study Area

The study was conducted in the Oromia region Jimma zone, Agaro General Hospital.

3.2 Research Design

This study was adopteda descriptive and explanatory research design. Accordingly, descriptive design enabled quantitively assess the relationships of the variables. Quantitative research is a means for testing objective theories by examining the relationships among variables. These variables can be measured, typically on instruments, so that the numbered data can be analyzed using statistical procedures(Creswell, 2008). Explanatory research design, the study concerned with determining the relationships of the variables. Hence, this research used descriptive and explanatory research design to provide a sufficient description of the variables and reveal the degree to whichthe Performance-based financing approach affects medical logistics in terms of Pharmaceuticals and medical supplies availability, logistics responses, procurement, quality care stock management, and capacity building and motivations in case of Agaro general hospital.

3.3 Research Approach

The Researcher used both quantitative and qualitative study approaches to assess the role of the performance-based financing approach on medical logistics in the case of Agaro general hospital.

Qualitative research is a method of investigating and comprehending the meaning that individuals or groups attach to a social or human issue. Quantitative research is a method for studying the relationship between variables to test objective theories. These variables can then be measured using instruments, resulting in a numberof data that can be examined using statistical processes.

Mixed methods research is a kind of investigation that involves gathering both quantitative and qualitative data, combining the two types of data, and employing different designs that may include philosophical assumptions and theoretical frameworks.

3.4 Target Population and Sample Size

3.4.1 Target Population

The target population is the group of individuals that the intervention intends to conduct research in and draw conclusions from (Nghiem, 2018). Therefore, for this study, the target populations are employees of Agaro General Hospital of 160 permanent employees.

The following table shows a detailed staff list of Agaro general hospital.

Professionals	No
Chief Executive Officer (CEO)	1
Medical Director (MD)	1
Medical Doctors	13
Health Officer (HO)	2
Nurse (B.Sc.)	40
Midwives	23
Nurse (Diploma)	10
BSc anesthetist/Nurse anesthetist	4
Ophthalmic nurse	2
Psychiatric nurse	2
Dental professional	1
Radiology professional	3
Laboratory technologist	2
Laboratory technician	9
Pharmacist	9
Pharmacy technician (Druggist)	4
Environmental Health Officer	1

Professionals	No
Health Information Officers	3
Maintenance officer (plumbing, electricity, general maintenance services)	4
Medical equipment maintenance technician	2
Food and dietary staff	1
Social workers	1
Compliant handling officer	1
Finance Officer	5
Daily Revenue collector	5
Human resource	4
Storekeeper	2
Archive	2
Secretary	2
HRIS	1
Total	160

Table 1 Permanent staff of Agaro General Hospital

3.4.2. Sample Size

A Simplified Formula for Proportions Yamane (1967:886) provides a simplified formula to calculate sample sizes. This formula was used to calculate the sample sizes and A 95% confidence level and P = .5 are assumed for Equation. Based on the following equation 114 sample size is calculated:

n = N/ (1+N (e) 2)

Where,

n = required sample size

N= number of total populations

e = level of confidence = 95% (0.05).

3.5 Sampling Technique

All items in any filed inquiry constitute a universe or population. It is obvious that in such inquiry on elements of chance is left and the highest level of accuracy can be obtained but, this may not be practical due to time, money, and energy constraints. (Kothari, 2004)

To undertake this research, the researcher employed both probability and non-probability sampling techniques. The rationale to use both types of sampling techniques is because of the characteristics of the respondent to be used in this research. The probability sampling techniquewas used to select respondents randomly from the target population. The researcher also took samples using a simple random sampling technique (lottery method).

In this sampling method, each member of the population has an exactly equal chance of being selected (Thomas, 2020). This technique is important to each element of the population have an equal chance of being in the selected sample and it is easy to implement and free from subjectivity or personal errors.

For a qualitative interview, respondents were selected purposely from the top management as they are leading the implementation of PBF, and the logistics side of the Hospital handled by Pharmacists and storekeepers. Therefore, the Chief executive officer and medical director, two Pharmacists, and 2 storekeepers had been selected for depth interviews based on the direct relationships they have with PBF and medical logistics.

3.6 Source of Data

Both primary and secondary sources of data were used for conducting this study. Primary data is the information that the researcher finds out by himself/ herself regarding a specific topic having the likely advantage of that the data is collected with the research's purpose in mind, whereby ensuring the resulting consistency of the information with the research questions and purpose (Biggam, 2008).

3.6.1 Primary Data

Primary data were collected from employees of the Agaro general hospital by using a self-administered questionnaire and interviews. The questionnaire was designed in a way that enabled to capture of the demographic information of respondents, and their evaluation of the role of the performance-based financing approach towards medical logistics.

3.6.2 Secondary Data

The source of secondary data for this research is the annual report of PBF, PBF booklets, books, journals, and Cordaid's official website.

3.7 Data Collection procedure

Prior to the distribution of the questioners, the Chief Executive Officer (CEO) and Medical Director (MD) of the Hospital are briefed on the study's objective to gain their cooperation in supporting the study. In this study, Likert scale questionnaires were adopted from different articles. Likert scale Alen Bryaman (2012) is a psychological measurement device that is used to gauge attitudes, values, and opinions. The instrument was given to 114 health professionals and support staff.

Questionnaires were designed using a 5-point scale of strongly agree coded as 5; agree coded as 4; neutral coded as 3 (which is the middle value of the response); disagree coded as 2, and strongly disagree coded as 1. Moreover, each variable has its own, multiple numbers of questionnaires and aggregated to average to examine the effect of intervening variable and dependent variable. In addition, a face-to-face interview was applied based on interview guidelines with purposely selected staff.

Table 2 Variables and measurement items

Variable/ Factor	Measurement items	Adopted From
PBF payment	PBF subsidy payment allows and provides appropriate supplies to health providers, follow up of subsidy utilization, PBF bonus payment has an impact on performance and motivations, items are Procured as per the business plan, delivered timely, PBF subsidy payment permits to manage procurement by own resources, does use of PBF payments facilitates to deliver the required goods on time.A business plan helps to minimize delays in procurement.	(Ibn El Farouk et al., 2013).

PBF checklist	As PBF checklist, medicines are listed and appropriately documented in the essential drug list, availability of Physical inventory is done at least once per year, all medical types of equipment registered with proper management of inventory, the checklist is properly used for stock management, the role of PBF for the availability of medical equipment, overall checklist usage against the availability of drugs, and stock management. PBF approaches enable to reduce waiting time, waiting is the consequence of the mismatch between resources availability (care staff, medicine, equipment, furniture, etc.) and care needs.	(Chen et al.,2004)
PBF training and coaching	PBF is a means of knowledge transfer, how the training and coaching process add value, does PBF has an impact on logistics activities such as planning, coordination, and communication in delivering health care services via training setup.	(Melo, 2012).
PBF Verification work	PBF verification works to ensure the implementation of indicators of logistics activities, verification work is timely carried out, what the consequences of not fulfilling, the subsidy payment is checked during the verification period. verification work ensures the availability of a special storage area for cold chain items, enough storage space to store items, storage equipment is regularly checked for compliance, measures in place to ensure pharmaceuticals don't waste and expired.	(Melo, 2012).

3.8 Data Analysis Techniques and Presentation

3.8.1 Method of Data Analysis

In general, there are two types of data analysis techniques: qualitative and quantitative, with the choice of these methods being heavily influenced by the type of data available to the researcher.

If most of the information collected contains numerical, the analysis calls quantitative tools and descriptive statistics can be used. On the other hand, if most of the data collected are in words

which means data gathered using individual interviews, open-ended questions, and focus group discussion, it is logical enough to apply qualitative data analysis tools.

Firstly, the data is collected, and then checked, coded, and converted into a format that will be appropriate for analysis and interpretation. Descriptive statistics (percentage, frequency and mean) and inferential statistics (regression and diagnostics tests) were employed.

Secondly, Data was analyzed, and hypotheses were tested by conducting Multiple Linear Regression by using the software called SPSS 26.

3.8.2Methods of Data Presentation

The result of descriptive statistics was presented by using the tools such as tables, percentages, averages, and charts. Whereas the inferential statistics analysis results were also presented using tables based on the output of SPPSS version 26.

3.9 Model Specification

For valid hypothesis testing and to make data available for reliable results, the test of the assumption of the regression model is required.

Accordingly, the study had gone through the most critical regression diagnostic tests consisting of, interval/continuous, normality, and model specification accordingly.

3.9.1 Variable description and model specification for the role of Performance-Based Financing Approach

A dependent variable is one that has an effect or an outcome. Because the value of this variable depends on the cause, medical logistics is dependent variables (internal procurement,

availability of pharmaceuticals, stock and inventory management, quality care, and maintenances) are the dependent variables.

Explanatory or predictive variable- A variable that is a cause is known as an independent variable (because its value does not depend on any other variables). The performance-based financing approach is the independent variable, (PBF payment, PBF checklists, PBF training, and coaching, PBF verification works).

Generally, the model applied in the analysis provides the extent to which the independent variables affect dependent variablesis presented in equation (1) as follows:

$$ML = \beta 0 + \beta 1PBFP + \beta 2PBFC + \beta 3PBFT + \beta 4PBFV + \ldots\ldots\ldots (1)$$

Where:

Dependent variable

ML= Medical logistics

Independent variables

PBFP= Performance-based financing approach payment

PBFC= Performance-based financing approach checklist

PBFT= Performance-based financing approach training and coaching

PBFV= Performance-based financing approach verification works

E=error term, which captures other variables not included in the model that affects the dependent variable

β0 =constant term or slope of the dependent variable

β1, β2, β3, β4, estimate regression coefficients: PBF payment, PBF checklists, PBF training, and coaching, PBF verification works). respectively.

3.10 Validity and reliability test

3.10.1 Validity Test

The characteristic ascribed to a proposition or a measure of the degree to which they conform to existing knowledge or truth is known as research instrument validity. The degree to which the results of an attitude scale match other measures of attitude possession, for example, is called legitimate.

As a result, it refers to the degree to which an instrument accurately asks the proper questions. The research instruments used in this study had previously been used by other researchers for other similar studies, and the researchers determined that they were valid instruments. A pilot study was done to test the questionnaire's validity and was asked to complete it.

Moreover, the researcher discussed with friends and colleagues to give comments on the format and wording of the questionnaire.

3.10.2 Reliability Test

As proposed by Nunnally (1978), Cronbach's alpha coefficient was within the acceptable level of reliability of 0.763 for scale acceptability.

Table 4, Cronbach's alpha coefficient

Reliability Statistics

Cronbach's Alpha	N of Items
.763	42

As per the result of the above table, the data were collected from 106 respondents and 42 item scales were assessed using the Cronbach alpha technique. The scale produced an alpha of 76.3%, which is above the standard threshold level. Therefore, the questionnaires were reliable.

3.11 Ethical Considerations

The researcher in this study acted ethically. Individuals and institutions' dignity, rights, and secrecy were all protected. Respondents were informed of the researcher's motivations and goals for conducting this study. The respondents had been informed and assured that nothing would be done to jeopardize their rights and security.

There was also an attempt to maintain the anonymity of the information that respondents would supply, as well as their freedom to end the questionnaire/interview at any time and skip any questions they did not want to answer.

Finally, respondents were asked to fill out a questionnaire.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This chapter examines the role of the performance-based financing approach on medical logistics in the case of Agaro general hospital by evaluating and presenting data acquired through questionnaires and interviews. Thus, to answer the research questions and test the hypotheses posed in the study, data have been collected and analyzed with both descriptive and inferential statistics.

The demographic information of respondents, the survey findings, as well as their detailed analysis and discussion were presented in this chapter.

After discussing the above topics, the chapter goes into detail about the data analysis outcomes using inferential statistics (correlations, and multiple regressions). As a result, the study's hypotheses have been examined using inferential statistics. The findings of the study were presented using statistical tables and figures in this section

4.2 Demographic Characteristics of Respondents

As mentioned in chapter three, the respondents are employees of Agaro General Hospitals employees. Data related to their profile was collected and analyzed to know the respondent's level of education and work experience.

To collect required data for assessing the role of the Performance-Based Financing approach towards medical logistics 114 (One hundred fourteen) questionnaires were distributed and 110 (96.49%) were returned.

From the collected questionnaires 4 (3.63%) were discarded since the fact on the questionnaire was inappropriate for the study. Hence, the analysis and interpretation of employee opinions were carried out based on 106 (92.98%) of the returned questionnaires.

4.2.1 Gender and Age of the Respondents

A total of 106 respondents participated in the study. Out of this 65 (61.3%) were male and 41 (38.7%) were female.

4.2.2 Age

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Under 25	11	10.4	10.4	10.4
	25 -30	40	37.7	37.7	48.1
	31-35	39	36.8	36.8	84.9
	36-40	10	9.4	9.4	94.3
	Above 40	6	5.7	5.7	100.0
	Total	106	100.0	100.0	

Table 3 Age Survey 2021

Respondents were also categorized into different age groups. As shown in table 4.2.2 the ages of most of the respondents were between 25-30 years which constitute 40 (37.7%) of the respondents. 39 (36.8%) of the respondents were between 31-35 years. Those above 40 years accountfor about 6 (5.7%) of the respondents. This shows that most of the employees of Agaro General Hospitals are young and assumed to be very good inputs for the Hospitalto achieve its objectives and implement new methods to increase the quality of health care services.

4.2.3 Educational Level of the Respondents

Educational Background

	Frequency	Percent	Valid Percent	Cumulative Percent

Valid	Level 4	10	9.4	9.4	9.4
	MD	10	9.4	9.4	18.9
	BSc/BA	85	80.2	80.2	99.1
	MSc/MBA	1	.9	.9	100.0
	Total	106	100.0	100.0	

Table 4 Educational background Survey 2021

80.2 percent of employees have bachelor's degree, Medical Doctors accounts 10% and the remaining are Diploma holders (Level Four). Which will help and valuable inputs to better grasp the methodology of the approach and give fertile ground for learning how it aids medical logistics.

4.2.4 Work Experiences of the Respondents

Experiences

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than two years	17	16.0	16.0	16.0
	2-5 years	41	38.7	38.7	54.7
	6-10 years	31	29.2	29.2	84.0
	Over 10 years	17	16.0	16.0	100.0
	Total	106	100.0	100.0	

Table 5 Work Experiences of the Respondents, Survey 2021

Regarding work experiences,38.7 percent of the respondents have between 2-5 years while 29.2 percent of them have between 6- 10 years and Over 10 years accounts for 16 percent.

This implies that most of the employees are part of the implementation of the PBF project starting from the beginning since the project in started 2019 G.C, they have good knowledge about the approach, and have a clear understanding of the current practices of the hospital.

4.3 Descriptive statistics on assessing the role of performance-based financing approach on medical logistics,

To collect information on the role of Performance-based financing, questionnaires were prepared for Agaro general employees, that focus on areas like role on logistics responses, availability of Pharmaceuticals and medical supplies,Procurement, stock and inventory management, and capacity building and motivations.

To achieve this objective, a five-point Likert scale where 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, and 5=Strongly Agree was used to collect data from respondents.

Descriptive statistics are a set of short descriptive coefficients that summarize a data set, which could be a sample or a representation of the entire population. Descriptive statistics include measurements of central tendency and measures of variability (spread). Following the editing and coding process, the sample was subjected to descriptive analysis.

Participants were polled on the role of performance-based financing on medical logistics. A self-administered questionnaire was used to obtain data from the target population for the survey. The factors were measured using 42 closed-ended questionnaires averaged to determine the degree to which the respondents agreed or disagreed. Furthermore, the entire study was triangulated using open-ended surveys and interviews.

4.3.1 Assessing the role of the PBF approach in supporting logistics activities, procurement, stock management.

	Logistics Activities		SD (1)	D (2)	N (3)	A (4)	SA (5)	Mean	SD
1	Procurement	***Frequencies***	0	0	16	80	10	3.9434	.49435
		%			15.1	75.5	9.4		
2	Distribution	***Frequencies***	0	6	20	70	10	3.7925	.68615
		%	0	5.7	18.9	66.0	9.4		
3	Catering/Food/ Laundry	***Frequencies***	0	0	2	91	13	4.1038	.36330
		%	0	0	1.9	85.8	12.3		
4	Hygiene, Waster management	***Frequencies***	0	0	5	80	21	4.1509	.47394
		%	0	0	4.7	75.5	19.8		
5	Reception services	***Frequencies***	0	10	39	51	6	3.5000	.74642
		%	0	9.4	36.8	48.1	5.7		
6	Patient flows	***Frequencies***	0	0	20	75	11	3.9151	.53662
		%	0	0	18.9	70.8	10.4		
7	Stock management	***Frequencies***	0	0	34	72		3.6792	.46898
		%	0	0	32.1	67.9			
8	Files archiving management	***Frequencies***	0	0	2	101	3	4.0094	.21801
		%	0	0	1.9	95.3	2.8		
							Total composites mean	4.4420	0.5696

Table 6 Sources: Field survey, 2021 1 = strongly disagree (SD); 2 = disagree(D); 3 = no answer(N); 4 = agree(A); and 5 = strongly agree(SA).

As shown in the above table 4.3.1, respondents were asked whether that Performance-based financing approach supports logistic activities of the Hospitals or not. In this regard majority, 80 (75.5%) respondents assured that the approach supports procurement activities of the Hospitals

and from Interview answers that all interviewers explained that the subsidy payment helps a lot to fulfill the gaps in pharmaceuticals and other medical supplies procurement by following the procurement procedures of the Hospitals rather than waiting to supply from the region.

Hospitals around the world are challenged by the increased pressure in terms of reducing costs and better managing their activities while continuing to meet the needs of an increasingly demanding population. As a significant proportion of hospital cost is devoted to logistics activities, which can account for up to 46% of the hospital budget (Chow and Heaver, 1994)

As per Tom Saine & Tom Williams, Hospitals exist to treat individuals who have been in accidents or have been injured, to offer unexpected medical treatment, to perform scheduled or unscheduled surgeries, and to deliver infants. A hospital must provide patient care areas (ED, surgery, L&D, Birthing Rooms, Patient Rooms, and so on), services (laboratory, pharmacy, radiology, surgery, and so on), employees (clinical, office, and support), equipment, and supplies to fulfill these functions. Hospital procurement is the ideal place to go for sourcing, negotiating, and acquiring purchased services, equipment, and supplies. It is the responsibility of hospital procurement to obtain the appropriate product, in the appropriate location, in the appropriate amount, for the appropriate patient, at the appropriate time, and at the appropriate price.

Respondents were also asked to give their opinion on whether the approach supports the distributions or not. In this regard 10 (9.4%) of respondents strongly agreed and 70 (66%) agreed and 20 (18.9%) neutral and 6 (5.7%) strongly disagreed about the role of PBF in terms of distributions.

This implies that the majority had agreed that the approach has a positive role in distribution however, 26 (24.6%) of the respondents they are neutral or disagree about the role of PBF in distribution.

As per Gabriel Madelin, the increasing trend of shorter hospital stays and increase of treatments and surgeries in clinics, present new challenges for the supply of goods. The rise in patients in hospitals, and consequently the increase of treatments and surgeries, cause growth of material usage and goods movement.

Sometimes, outpatient departments function as satellite clinics of large general hospitals; in other cases, primary care providers and general practitioners constitute an integral part of the hospitals' services. Every healthcare system has its own way to distribute medical supplies.

Most of the respondents were agreed that the Performance-based financing approach directly supports Catering and Laundry service provision and Hygiene, waste management 91(85.8%) and 80 (75.5%) respectively. In 30 out of 48 countries with data available, more than half of health care facilities lacked basic waste management services in 2016 (Global Baseline Report 2019). This implies that the approach has a positive role in the waste management of the Hospital.

Healthcare waste management has an impact on everyone who works in a hospital, and everyone should be given training and instruction on how healthcare waste handling and disposal processes affect infection control.

At its foundation, hospital waste management increases the safety of employees and patients by reducing the potential to sustain a sharps injury potential, along with the costs of direct and indirect treatment as a result. It also reduces the risk of exposure to blood-borne pathogens and reduces hospital-acquired infections (HAIs) (Chamberlain, 2020).

Washington State created its best practices guide for medical waste years ago. As per the guide, every department within the hospital - from administration to janitorial - is given specific guidelines and instructions.

The next point isrespondents were asked to give their opinions regarding the PBF approach that supports reception services and patient flows. Accordingly, 51(48.1%) of the respondents agreed, 6 (5.7%) strongly agreed that PBF supports the reception services. 39 (36.8%) of respondents are not clear about the role of PBF in terms of reception services.

75 (70.8%) agreed and 11 (10.4%) strongly agreed that PBF has a constructive impact on patient flows with quality care. And 20 (18.9%) of respondents are neutral.

This implies that PBF supports, by combining patient insights, care needs, and resource requirements to assist care delivery at the optimal time, place, and setting, it facilitates improved care coordination and patient conversions.

Patient happiness (1), loyalty (2), and the productivity and profitability of healthcare companies are all linked to service quality (3). As a result, healthcare firms all over the world see it as a strat egic differentiator for maintaining a competitive edge. As a result, defining metrics and improving the quality of healthcare services is critical.

According to Victoria, Hospitals under financial pressure may struggle to maintain quality and patient safety and have worse patient outcomes relative to well-resourced hospitals. Given that activities to improve hospital quality and patient safety can entail substantial costs, it is presumed that hospitals facing greater financial pressure from inadequate revenues will limit quality improvements as financial performance declines.

A frequency of 67.9 % agreed that PBF enables to have stock management and 32.1 % neutral for this regard. Archiving management, 2.8% strongly agree, 95.3% agree and only 1.9 % of respondents are natural.

This implies PBF has an impact to establish stock and archiving management as healthcare institutions are required to meet strict quality standards set by the government. They may be compelled to shut down operations and incur large losses if they fail to do so. Because of the price of valuable human lives at stake, the demand for reliable equipment tracking is magnified in the healthcare industry.

Identifying waste, balancing inventory levels, and altering stock quantities can all help the facility save money. Every day, hospitals require a massive volume of inventory. The only way to successfully manage such inventory is for the hospital to have proper inventory management.

Safeguarding medications that are accessed by a large crew requires ongoing monitoring, whether administered by nurses and doctors or provided through the hospital pharmacy. Some medications are prone to theft or abuse; knowing how much inventory you have and who accessed it at any time can curb theft.

4.3.2 Summary of responses on the role Performance-based financing approach in logistics response

Role of Performance-based financing approach in logistics responses		SD (1)	D (2)	N (3)	A (4)	SA (5)	Mean	SD
PBF approaches enable medical logistics and the supply chain in healthcare are aimed at ensuring the flow, reducing the waiting time of the patients, and providing good quality healthcare services.	***Frequencies***	0	4		100	2	3.9434	.41011
	%		3.8		94.3	1.9		
PBF helps the community get a proper health care service with proactive logistics responses.	***Frequencies***	0	6		96	4	3.9245	.51080
	%	0	5.7		90.6	3.7		
PBF supports to have formalized a logistics department in the health sector.	***Frequencies***	0	14	47	34	11	3.3962	.84717
	%	0	13.2	44.3	32.1	10.4		
PBF subsidy supports procuring any source (e.g., electricity grid, generator, solar, or other) including for stand-alone devices (EPI cold chain).	***Frequencies***	0	0	10	86	10	4.0000	.43644
	%	0	0	9.4	81.2	9.4		
As per PBF checklists, Resources are properly utilized with effective disposal methods.	***Frequencies***			7	77	22	4.1415	.50594
	%			6.6	72.6	20.8		
The subsidy enables to use restructuring and maintenance of the buildings.	***Frequencies***			36	46	24	3.8868	.74732
	%			33.9	43.4	22.6		
						Total composites mean	3.88	0.58

Table 7 Sources: Field survey, 2021 1 = strongly disagree (SD); 2 = disagree(D); 3 = no answer(N); 4 = agree(A); and 5 = strongly agree (SA).

As per above table 4.3.2, 100 (94.3%) of the respondents agreed that the PBF approach positively impacted the quality of health care delivery system by reducing the waiting time of patients, and interviewers were also responded that the approach enables to have proactive logistics by providing a business plan on a quarterly basis to fulfill the gaps observed in terms of materials required then based on that plan the payment will be released after verification work done.

According to Wiger, Healthcare is frequently being called upon to be more cost-efficient and still fulfill demands regarding waiting times, quality, and availability.

Patient logistics, as a cross-departmental organization and optimization approach, offers the possibility of improving the quality of care and the use of resources in hospitals. Patient satisfaction was measured by the overall quality of care, likelihood of recommending the care provider, and likelihood of recommending the practice.

The next point is the **PBF supports to have formalized a logistics department in the health sector.** Most of the respondents either disagree or neutral about the PBF's role in establishing a formal logistics department**,** however, 42.5% of respondents are agreed that PBF supports having formal logistics in a hospital environment.

This implies that there are no clear guidelines to formulate a setup of a formal logistics department in the hospital environment during the implementation of the approach. Hospital logistics is a set of design, planning, and execution activities that enable the purchase, inventory management, and replenishment of goods and services surrounding the provision of medical services to patients.

Accordingly, it is very important to recognize the role of logistics in the health sector. Hospitals' primary function is to offer treatment to patients. There are several auxiliary activities that must be considered in this regard.

Although most of them are not visible to the patient, they have a substantial impact on how patients perceive their hospital stay (Dobrzaska, Dobrzaski, and mieszek, 2013). Many of these tasks fall under the category of hospital logistics, which includes things like purchasing, transportation, and catering.

The duty for such tasks is usually distributed among many departments. Even though hospitals have a designated department to oversee and deal with logistics, they are still dispersed throughout two or more departments.

In certain cases, it was discovered that up to five different teams of persons were engaged.Respondents were asked about their opinion regarding PBF subsidy payment towards procuring generators and solar panels to sustain power. Accordingly, 86 (81.2%) respondents are agreed and 10 (9.4%) strongly agreed that the subsidy payment facilitated the acquisitionof different equipment and devices that supports the flow of work in the Hospital. 10 (9.4%) respondents were neutral.

A power outage at a hospital can be disastrous. To conduct their jobs correctly, doctors, nurses, and surgeons all require light. Power is required to keep machines running 24 hours a day, seven days a week to keep patients alive. Before it can be utilized, medical equipment must be sterilized. In a hospital, even a few minutes without power can be disastrous.

Emergency generators are used in hospitals to avert power disruptions. Hospital emergency power requirements are governed by strict standards and regulations to ensure that hospitals are constantly prepared.

Respondents were questioned to evaluate their opinions regarding resource utilization with proper disposal methods. 77 (72.6%) of respondents are agreed and 22(20.8%) strongly agreed that the PBF approach has a role in resources utilization by enforcing proper disposal methods. And 7 (6.6%) respondents were neutral.

Most medical waste problems can be avoided if healthcare workers follow a few key best practices. Employees should be familiar with the rules, and then classify and separate all garbage into the appropriate, color-coded waste bins. Waste should be identified according to its category, and all containers should be accompanied by the appropriate documentation while in transportation.

Medical waste, if not correctly managed, can pose several health risks to healthcare personnel, garbage workers, and the public. If needles are unintentionally delivered to recycling facilities or if containers burst open in transit, we may be exposed to needle sticks and infection. Sharps poke their way out through plastic bags, putting housekeepers and janitors at risk.

4.3.3 Summary of responses on the role Performance-based financing approach against Availability of pharmaceuticals, medical supplies, and inventory management

		SD (1)	D (2)	N (3)	A (4)	SA (5)	Mean	SD
PBF has a positive role in drug and medicines availability. It creates an opportunity to acquire medical equipment's within own procedure.	***Frequencies***		6	3	67	30	4.1415	.77294
	%		5.7	2.8	63.2	28.3		
PBF allows flexibility in the procurement of essential drugs.	***Frequencies***			4	83	19	4.1415	.44591
	%			3.8	78.3	17.9		
PBF allows and ensures proper inventory management as per the criteria.	***Frequencies***			9	83	14	4.0472	.46562
	%			8.5	78.3	13.2		
Inventory checklists of PBF are helpful for	***Frequencies***		23	35	48		3.2358	.78742

proper management.	*%*		21.7	33.0	45.3			
As PBF checklists, it is very significant to keep the record of patient visits and history on daily basis.	***Frequencies***		13	17	76		3.5943	.70072
	%		12.3	16	71.7			
PBF takes into consideration stock out every quarter, this ensures no stock out for essential drugs.	***Frequencies***			7	85	19	4.1132	.48444
	%			6.6	75.5	17.9		
PBF approaches enable us to update the inventory on periodically.	***Frequencies***		11	29	66		3.5189	.67937
	%		10.4	27.4	62.3			
Proper storage availability for drugs and PBF verification work creates consistency with follow up actions.	***Frequencies***		30	25	51		3.1981	.85546
	%		28.3	23.6	48.1			
PBF has a positive impact on the availability of medicines in stock.	Frequencies			16	50	40	4.2264	.69396
	%			15.1	47.2	37.3		
Pharmaceuticals and medical supply have a long procedure as purchased from Gov't and hurt our performance.	Frequencies				50	56	4.5283	.50157
	%				47.2	52.8		
						Total composites mean	3.87452	0.638741

Table 8 Sources: Field survey, 2021 1 = strongly disagree (SD); 2 = disagree(D); 3 = no answer(N); 4 = agree(A); and 5 = strongly agree (SA).

The pharmaceutical supply chain refers to the process of getting prescription drugs to patients. Because the stakeholders in the supply chain are always evolving, and commercial ties vary significantly by area, type of medication, and other considerations, there are many variations on this fundamental structure.

According to the above table, 67 (63.2%) respondents agreed and 30 (28.3%) strongly agreed that PBF has a positive role in drug and medicines availability. It creates an opportunity to acquire medical equipment's within own procedure.

And 6 (5.7%) of respondents disagree and 3 (2.8%) respondents are neutral regarding the role of PBF towards the pharmaceuticals supply chain.

This is implying that the PBF approach helps in acquiring and assisting the pharmaceuticals supply in Hospitals and sources of income to purchase essential drugs by their own procedures.

83(78.3%) of the respondents agreed that and 19(17.9%) strongly agreed that the approach has provided flexibility in the procurement of essential drugs.

The pharmaceutical sector faces numerous obstacles, including maintaining medicine quality, timely delivery, supplier network, mode of transportation, and so on. Few medications require appropriate temperature while transportation from one location to another, which can be difficult if the temperature is not maintained and necessitates a significant financial investment.

Most of the respondents are agreed that PBF allows and ensures proper inventory management as per the criteria. Any hospital or medical business may keep exact and up-to-date stock records with the help of Inventory Management software.

Pharmaceuticals and surgical equipment. It is one of the most important responsibilities of every hospital. Because medications and surgical equipment are the most often used commodities in a hospital, each hospital should maintain a steady supply of medicine.

83(78.3%) and 14 (13.2%) of respondents are agreed and strongly agreed that inventory checklists of PBF are helpful for proper management. Another related point is as PBF checklists, it is very significant to keep the record of patient visits and history on daily basis. 54.7 % of the respondents either disagree or are neutral about the role of PBF checklists for proper management. And 45.5% of respondents are agreed.

76 (71.7%) of respondents are agreed that PBF checklistis very significant to keep the record of patient visits and history on daily basis.

Patient data refers to medical information regarding a specific patient. Information about a patient's past and current health or sickness, treatment history, lifestyle choices, and genetic data are all examples of patient data. The data is utilized to help make decisions about that person's care and treatment.

Fulfilling those medical records requests necessitates a thorough awareness of legal and legislative obligations, as well as a thorough understanding of the expenses associated with issuing medical records and the operational changes that may result from supporting additional patient data access.

To inform our clinical care, we need high-quality information. Everyone should have access to information about their own healthcare, including the ability to verify that the information is correct and to assist in the management of any problem. To inform therapy and give the greatest care, a hospital must have access to up-to-date information about patients.

The next discussion points are PBF takes into consideration stock out every quarter, this ensures no stock out for essential drugs and approaches enable us to update the inventory periodically.

85 (75.5%) and 66 (62.3%) respondents that PBF approaches has a system to check out stock every quarter and enables to update inventory periodically.

Surgical clips, which are expensive but small, are implantable medical devices available in hospitals. It implies that they are easily taken. However, these medical items carry a serial number that may be tracked using an inventory management system.

Until the patient is treated with it. We all know that there are various valuable assets in a hospital. It's no surprise that if any assets are stolen, they can have unfavorable consequences.

It can also damage the hospital's reputation. As a result, inventory management software is critical. Overall, the inventory management system is the best solution for all hospital needs and emergency clinic and facility requirements. There are a variety of Inventory Management Software options available these days.

51 (48.1%) of respondents are agreed that PBF verification works monthly establishes consistency for proper storage availability with follow-up actions. 30 (28.3%) disagreed and 25(23.6%) are also neutral. Which accounts for 51.9 %. This indicatesmost respondents disagreewith the role of verification works against proper storage.

While each hospital operates differently, most rely on a medical supply room or warehouse to keep medical supplies like first aid supplies, intravenous solutions and tubing, personal protective equipment, personal care items, orthopedic supplies, and more.

For hospitals and other healthcare facilities, having a streamlined storage area is more than just a luxury—it is a necessity for day-to-day operations. Medical facilities stock a massive quantity of supplies, from medications and surgical kits to diagnostic tools, linens, protective equipment, and personal care supplies.

Proper storage of these various supplies is critical to providing a high level of patient care, yet many hospitals struggle with inadequate storage space and poor organization. Efficient, organized healthcare storage directly impacts the patient experience. with patients. Proper storage also reduces the risk of lost or damaged supplies and supports cleanliness.

90 % of respondents are strongly agreed and agreed that PBF has a positive impact on the availability of medicines in stock. And all most all respondents agreed that the government pharmaceuticals supply has negatively affected their health delivery system.

Medicines are an important part of patient treatment around the world. Essential medicines (EMs) are defined by the World Health Organization (WHO) as goods that meet the population's primary healthcare needs and should always be available in sufficient quantities and at a reasonable cost at health facilities.

4.3.4 The role of PBF on capacity building and motivations

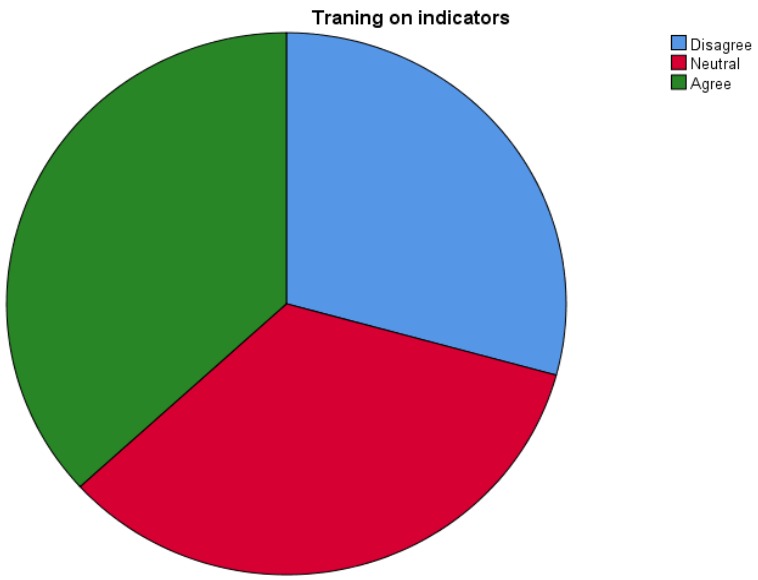


Figure 1 Training on indicators

As per the above pie charts majority of respondents, are disagree or neutral that PBF does not provide sufficient training on quality or quantity indicators that have been used for evaluating the health services that Agaro General Hospital is providing in terms of medical logistics. Performance-based financing (PBF) measures and determines payments based on the quality of care delivered and is emerging as a potential tool to improve quality.

A small collection of indicators included in checklists for common service categories such as maternal, neonatal, and child health have a high degree of consistency. Performance-based financing is a compelling way to address specific quality gaps and progress toward the Sustainable Development Goals of high-quality coverage. Most indicators are currently focused on structural concerns and resource availability. There is room to rationalize and evolve these programs' quality checklists to attain national and global goals for improved care quality.

4.3.5 The role of PBF on the job training

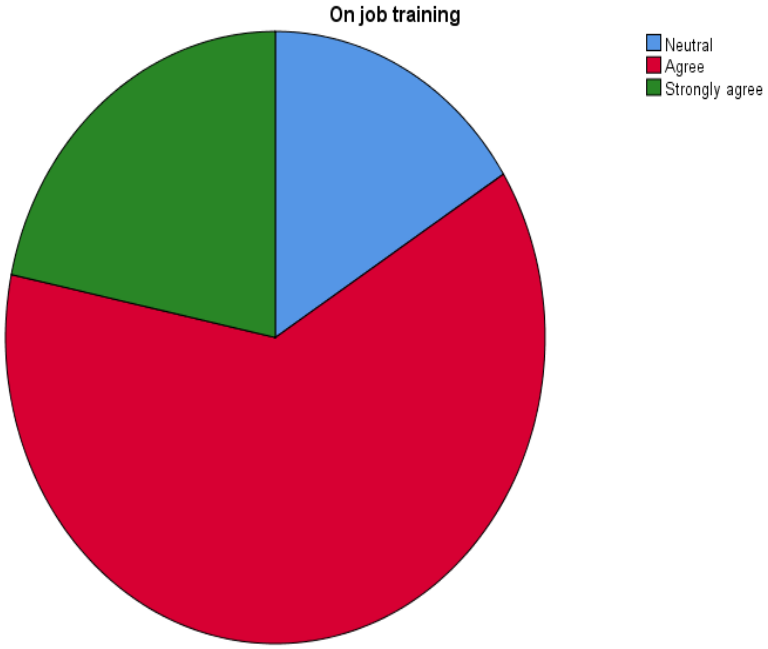


Figure 2 On the job training

As per the above Pie chart, most respondents agreed and strongly agree that the PBF approach has provided job training and interviewers also stated that the approach provided on the job training about the role of PBF, the importance of checklists, and activating verification works which is an input for subsidy payment preparation on a quarterly basis.

On-the-job training is a type of training that takes place on the job. Employees get familiarized with the working environment they will be a part of during the training. Employees acquire hands-on experience with machinery, equipment, tools, and materials, among other things.

4.3.6 The role of PBF on means of knowledge transfer

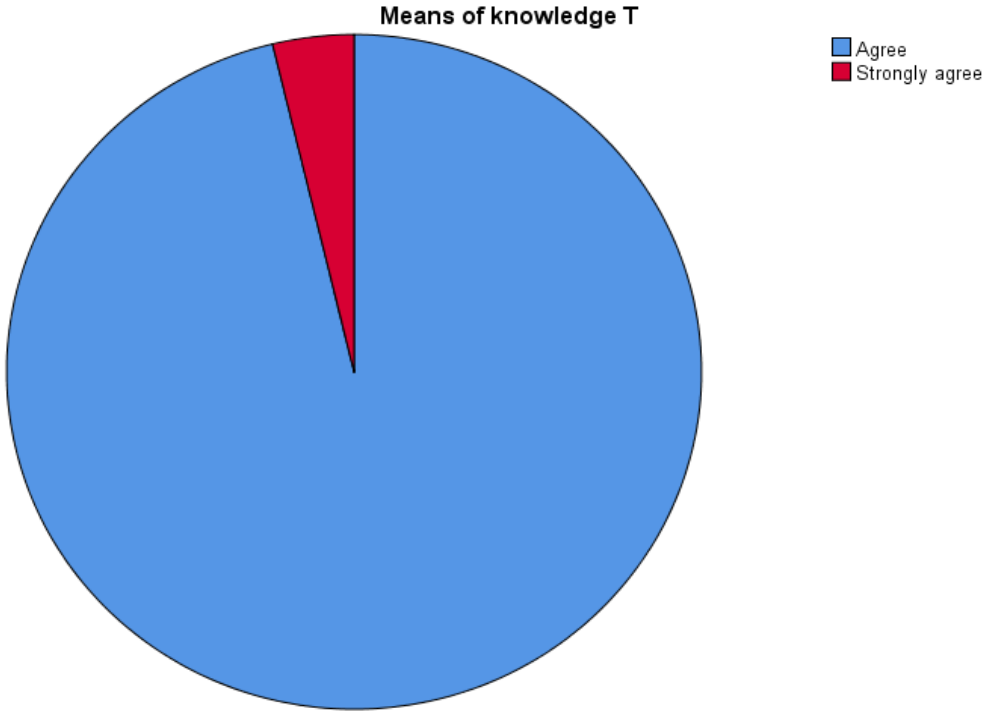


Figure 3 Means of knowledge transfer

All respondents are agreed and strongly agreed that the PBF approach is means of knowledge transfer.

Although the methods governing the creation of PBF mechanisms are similar, the significant and unique experiences of implementing quality of care, logistics, and components in PBF programs.

This comparison implies that the quality component of PBF programs should be tailored even more to local and country circumstances, as well as a need to learn more about how quality is monitored in practice. The growing operational experiences with PBF programs in various

settings provide the opportunity to learn from best practices, improve current and future programs, and inform research to address current issues.

Table 4.3.7 The summary of respondents on the role of PBF on motivations

Capacity building and motivations		SD (1)	D (2)	N (3)	A (4)	SA (5)	Mean	SD
PBF subsidy payments have an impact on my motivations.	***Frequencies***	13		26	42	25	3.6226	1.20675
	%	12.3		24.5	39.6	23.6		
PBF becomes the source of income to improve health care services.	***Frequencies***		36	47	23		2.8774	.73941
	%		34	44.3	21.7			
PBF provides the payment on time.	***Frequencies***		6	25	75		3.6509	.58623
	%		5.7	23.6	70.8			
PBF has become an additional source of income for better health services.	***Frequencies***			16	63	27	4.1038	.63139
	%			15.1	59.4	25.5		
PBF bonus has creates a motivation for me to provide better services.	***Frequencies***			2	79	25	4.1981	.52408
	%			1.9	74.5	23.6		
PBF creates a means for revenue generation to fulfill the financial gaps.	***Frequencies***			1	96	9	4.0755	.29915
	%			0.9	90.6	8.5		
						Total composites mean	3.7547	0.6645

Table 9 Sources: Field survey, 2021 1 = strongly disagree (SD); 2 = disagree(D); 3 = no answer(N); 4 = agree(A); and 5 = strongly agree (SA).

The mean value for the statement “PBF subsidy payments have an impact on my motivations.” is 3.6226which shows that most of the respondents strongly agree.

The use of blended payment schemes in primary care, including the use of financial incentives to directly reward 'performance' and 'quality' is increasing in several countries.

In line with the statement “PBF become the source of income to improve health care services.” The mean value is 2.8774 so most respondents are disagreed or neutral that the approach’s role in improving health care services as a source of income.

The mean value of the statement “PBF provides the payment on time.” is 3.6509, which means that most respondents are agreed with the statement that PBF provides the payment on time.

PBF design supports components of the six-health system building blocks of service delivery, focusing on strengthening health delivery systems as espoused by the World Health Organization (WHO). The six health systems blocks are health workforce, health information system, access to medical products including medicines, ensuring adequate financing, and promoting good leadership and governance.

Ethiopia's main thrust in its health strategy is to expand and strengthen healthcare delivery at the grassroots level through the implementation of the Health Service Extension Programme (HSEP), which aims to bring health service delivery to the rural community at the family level to increase community ownership. The HSEP also aspires to improve health center administration, health worker motivation and career development, private sector engagement, FMOH responsiveness, and decentralized structures, as well as the construction of alternative and more efficient funding mechanisms. Ethiopia's 20-year health-sector goal has resulted in significant progress in disease management.

The mean value of the statement is 4.1038“PBF has become an additional source income for better health services.” Hence, most respondents are agreed PBF has a means of the financial source to provide quality health services.

The PBF ‘principles’ (i.e., autonomy for health facilities, payment according to verified performance, contractual relationships, separation of functions, community engagement, equity bonuses), These PBF ‘principles’ have helped to identify functions and roles, and to promote PBF as a coherent approach, building on experience as implementation progressed across countries.

4.3.8The role of PBF Bonus on motivations

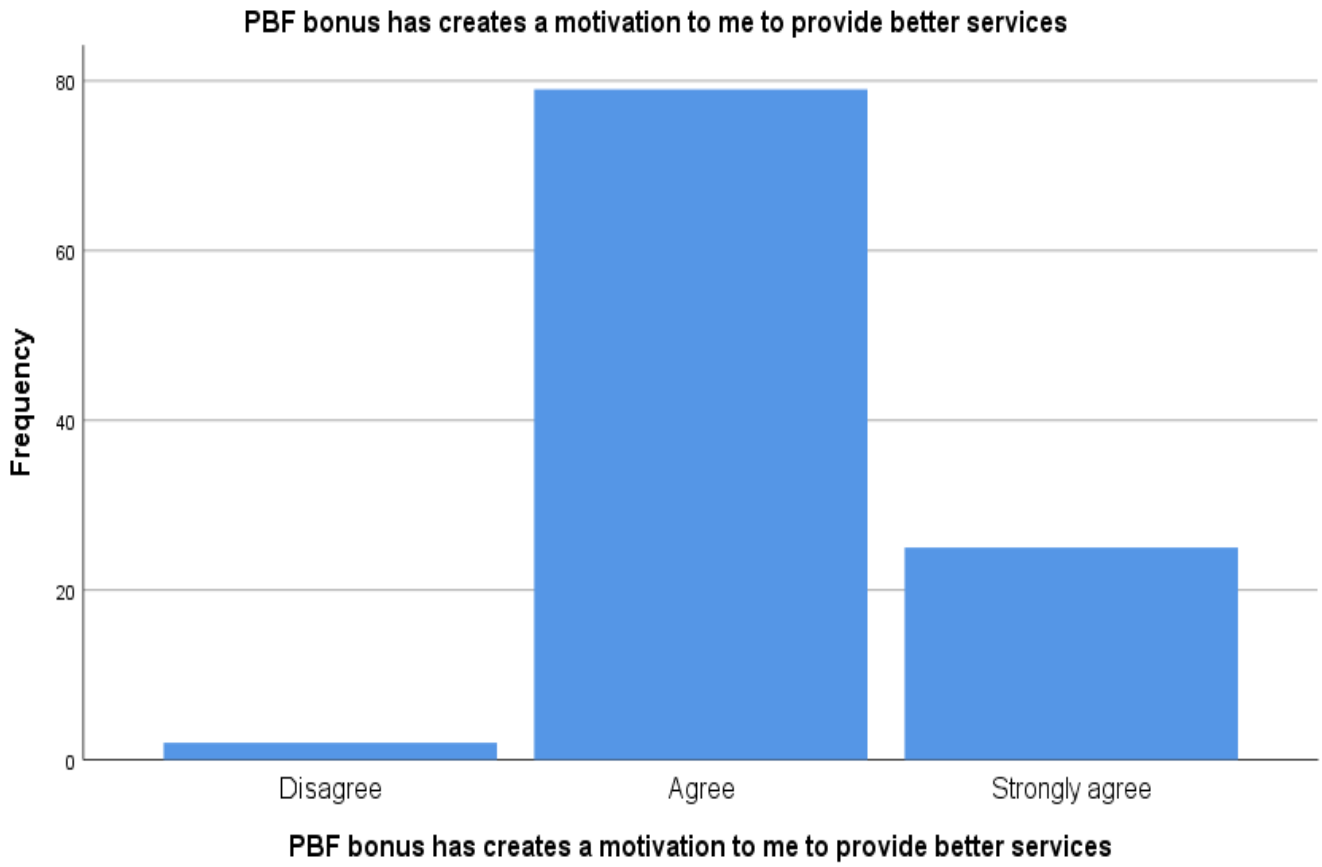


Figure 4 PBF Bonus

4.3.9 The role of PBF means of revenue generation

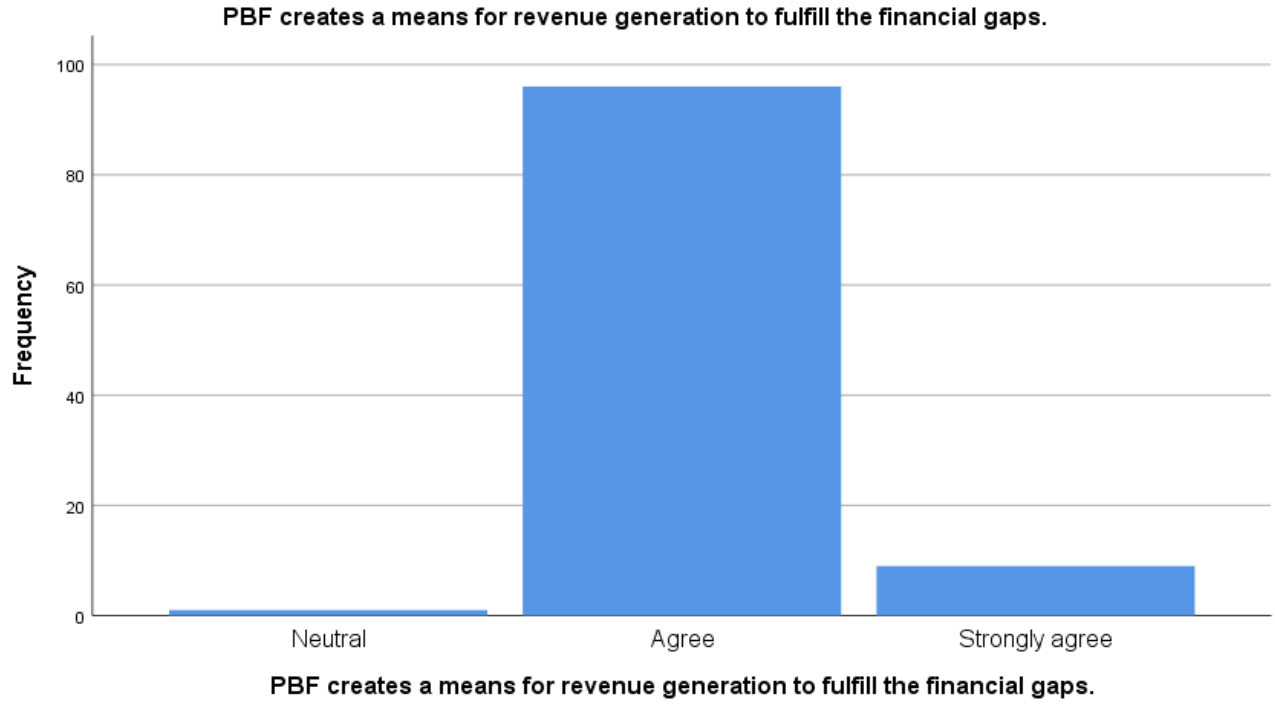


Figure 5 Revenue generation

As per the above graphs majority of respondents are agreed that PBF bonus has created a motivation for better services provision, and it is the source of income to fill the financial gaps of the Hospital.

PBF has proven to be effective in nations such as Rwanda, Zimbabwe, and the Democratic Republic of Congo. Payment under PBF is conditional on conditional quantifiable actions being taken and validated as proof, unlike traditional input-based financing for health systems. Although Ethiopia has achieved progress in disease control when compared to other low-income African countries, it has been noticed that consumption of health care remains low and unevenly distributed.

Low-quality care and limited access to services are issues, particularly in rural and pastoralist communities. Furthermore, in these rural, marginalized locations, these have been seen to have negative consequences on improving health care and limiting progress on maternal mortality reduction and postnatal care.

Performance-based financing (PBF) schemes aim to improve health service delivery by providing bonuses to service providers (usually facilities, but often with a portion paid to individual staff) based on the verified quantity of outputs produced, modified by quality indicators.

Such programs have been increasingly implemented across low and middle-income countries in the past decade with considerable external financing from multilateral, bilateral, and global health initiatives.

4.4 Advanced Data Analysis

4.4.1 Test of Assumptions

Parametric inferential tests are performed on data that meet certain criteria: the data must be normal, the data must be at least on an interval/continuous level, the samples must be independent, and the samples must not be multi-collinear, and linearity assumptions must be met.

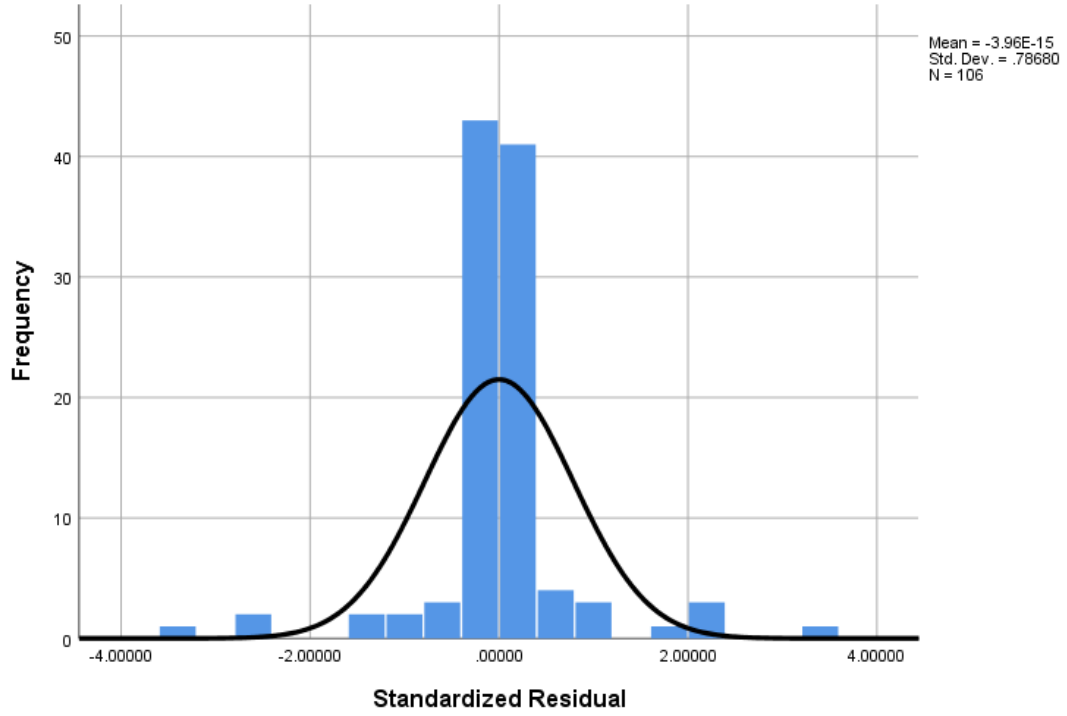
Tests for reliability and validity were also performed. It is impossible to move forward until these assumptions are met. Instead, it should look at non-parametric statistical approaches and other testing mechanisms. As a result, this criterion should be ensured before conducting such tests, and the examined variables revealed that all assumptions were almost met.

4.4.1.1 Normality Test/ Test for Normal Errors

When the researchertakes the analysis data in inferential statistics like multiple regressions the value should be in a normal distribution across the samples. This means errors are normally distributed and that a plot of the value of the residuals will approximate a normal curve (Kothari, 2004). After completing the model and the parameters, the results indicate that they fitted a model, and the model assumptions bias needs to be checked. This is done in two ways: the histogram, and the normal probability plot.

The best way to evaluate how far the used data are from a Gaussian (normal) is to look at agraph and see if the distribution grossly deviates from a bell-shaped normal distribution. Thehistogram looks symmetric, and the normal p-p plot showed consistent with that of the line and the residuals are normally distributed. Therefore, according to these findings, this assumption was fulfilled (see the following graph).

Figure 6: Model Assumptions of Histograms



Source: Survey result, 2021

4.4.1.2 Test of Interval Level/Continuous Scale Data

Data should be measured at the continuous interval level to ensure the robustness of parametric statistical analysis (Kothari, 2004). To measure each variable, the researcher utilized a five-level Likert scale. The mean score is calculated by averaging the sum of several elements for each variable. The statistics for procurement, availability of pharmaceuticals, quality care, stock, inventory management, and maintenance were constructed by generating a composite score of the mean from numerous items rather than a single mean.

As a result, a series of numerous items were averaged and used to evaluate dependent and independent variables, implying that numbers might be added, subtracted, multiplied, or divided. As a result, these assumptions were confirmed.

4.4.2 Correlation Analysis between Independent and Dependent Variable

Table 10 Correlation Analysis between Independent and Dependent Variable

Correlation analysis was used to provide an initial understanding of the directionality and significance of relationships between dependent variables witha Performance-based financing approach. The Pearson correlation is used in this study to determine the linear relationship between two metric variables (Robert B., Richard A.2008). With a value ranging from -1.00 to 1.00, the test also reveals the degree of a relationship between variables; 0 indicates no relationship, -1.00 indicates a negative correlation, and 1.00 represents a perfect positive correlation (Pallant, 2010)

A modest connection exists for values 0.1 to 0.29, a medium correlation exists for values 0.3 to 0 .49, and a large correlation exists for values 0.50 to 1.0. (Pallant, 2010).All variables were positiv ely connected with themedical logistics. As shown in the table below, even if their connection strength varied from highly correlated (PBF training and coaching) and low correlated (PBF checklist)

		PBF payment	PBF Checklist	PBF training and coaching	PBF verification	Medical logistics
PBF payment	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	106				
PBF checklist	Pearson Correlation	.105	1			
	Sig. (2-tailed)	.067				
	N	106	106			
PBF training and coaching	Pearson Correlation	.387**	.205**	1		
	Sig. (2-tailed)	.000	.000			
	N	106	106	106		
PBF verification work	Pearson Correlation	.256	.102**	.146	1	
	Sig. (2-tailed)	.000	.000	.136		
	N	106	106	106	106	
Medical logistics	Pearson Correlation	.415	.249	.599**	.451*	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	106	106	106	106	106

** Correlation is significant at the 0.01 level(2-tailed)
Source: Survey result, 2021

4.4.3 Regression Analysis financing approach

4.4.3.1 Multiple regression Analysis of Performance-based

According to Cohen et al (2011), several assumptions must be met to ensure that the regression model has a good fit.

As previously stated, the data in this investigation met the following assumptions: The data is collected using a Likert scale, which is considered an interval, there are no extreme outliers, the dependent variable and the independent variables have an approximately linear relationship, the dependent variable is approximately normally distributed, and the data values are independent of each other.

The purpose of regression analysis was to evaluate how much the independent variable explained the dependent variables and the importance of each variable. Procurement, quality care, stock m anagement availability of pharmaceuticals and medical supplies, and maintenance were dependent variables in a typicalmultiple regression with the overall Performance-based financing approachas the independent variable.

The SPSS output of the regression result is divided into three parts. The below table highlights the regression model summary, while the center sub table discusses ANOVA and indicates overall significance. Furthermore, the third provides details on each regression coefficient.

Table 11: Model summary

Model	R	R Square	Adjusted R Square	Std. The error of the Estimate	Durbin-Watson
1	.673	.452	.445	.42243	1.544

Survey 2021

Table 12 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	44.205	4	11.051	61.929	.000[b]
	Residual	53.534	101	.178		
	Total	97.739	105			

a. Dependent Variable: Medical logistics

b. Predictors: (Constant), PBF payment, PBF checklist, PBF training, and coaching, PBF verification work

Based on the model summary and ANOVA table the researcher had found the followingfindings.

The Model Summary table and the ANOVA table, as shown in both tables, can be used to assess the regression model's fit. The R, R2, modified R2, and standard error of the estimate are all included in the model summary table, which can be used to determine how good the model is at predicting the outcome (Cohen et al 2011). R is a metric that can be used to assess the accuracy of a forecast of a dependent variable's relationship to an independent variable.

The adjusted R square value gives the most useful measure of the success of the model. The adjusted R square is medium indeed (0.445), indicating that 44.5 % of the variance in the dependent variables is explained by the independent variable, which is medium. As Cohen et al (2011) highlight, there is a medium fit for the model.

Similarly, to the above table, the analysis of variance is highly statistically significant (0.000) at the 5 % level of significance and the F ratio is 61.929, demonstrating that the relationship between the independent and dependent variables is strong.

In conclusion and from the above results, both the Model Summary table and ANOVA table show a significant fit of the data overall and prove that the model enhances our capability to expect the dependent variable.

In the below table, the random effect estimation regression result below shows that coefficient intercept (B) is 0.391. This means, when all explanatory variables took a value of zero, the average value ofmedical logistics would take 0.391 units and be statistically significant at the 5 % level of significance (P=0.013).

Table 13Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.391	.157		2.490	.013
	PBF payment	.325	.081	.187	4.004	.000
	PBF checklists	.166	.059	.123	2.816	.005
	PBF training and coaching	.542	.066	.410	8.153	.000
	PBF verification work	.199	.043	.0218	4.601	.000

a. Dependent Variable: Medical logistics

The Model

Medical logistics = 0.391 + 0.325 PBF payment +0.166 PBF checklist +0.542PBF training and coaching +0.199PBF verification work. PBF payment is found to have a positive linearly significant on medical logistics since (β=0.325, p=0.004<0.05). One unit of increase in PBF payment results in 0.325 unit increases in medical logistics.

PBF checklist positively and significantly affected medical logistics (β=0.166, p=0.021<0.05) Implying one unit change in PBF the checklist results in a 0.166 unit increase in medical logistics.

PBF training and coaching positively and significantly affected medical logistics (β=0.542, p =0.002<0.05) Implying one unit change in PBF training and coachingresults in a 0.542 unit increase in medical logistics.

PBF verification workspositively and significantly affected medical logistics (β=0.199, p=0.016<0.05) Implying one unit change in PBF verification works results in a 0.199 unit increase in medical logistics.

The beta coefficients indicate the relative importance of each independent variable (PBF payment, PBF checklists, PBF training and coaching, PBF verification works) in influencing the dependent variable (Medical logistics). PBF training and coaching is the most important in influencing the dependent variable since the beta value is high (β=0.542). PBF checklist is the least influential onthe dependent variable with the least beta value (β=0.166).

CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATION

5.1 Summary of findings

The main objective of the study was to assess the role of the performance-based financing approach on medical logistics.

A quantitative and qualitative study was conducted in an explanatory research design using structured questionnaires and interviews. The role of Performance-based financing on medical logistics in Agaro general hospital was assessed and evaluated in the paper.

The findings indicate that majority of the respondents 65 who filled the questionnaires were male representing 61.3 %, whereas 41 or 38.7 % of them were female.

The descriptive analysis ofthe Performance-based financing approach towards logistics activities shows that majority of the respondents agree that the approach supports the logistics activities of their hospital (composite mean 4.44).

Respondents also disagree or are neutral about PBF'ssupport to have formalized a logistics department in the health sector with of mean 3. Most respondents are agreed as the mean value for PBF subsidy supports procuring any source (e.g., electricity grid, generator, solar, or other) including for stand-alone devices (EPI cold chain) is 4.0000.

The finding reveals that the mean value regardingthe PBF bonus that has a motivation role to provide better services in hospitals is 4.1981. So, all respondents agreed on the impact of their motivations.

Most all respondents agreed that PBF takes into consideration stock out every quarter, this ensures no stock out for essential drugs as the mean 4.1132. Respondents agreed that the role of PBF on capacity building and motivations to provide a quality health care system as a mean is 4.1038. The advanced analysis PBF has significant effects on medical logistics.

5.2 Conclusions

According to a study of selected PBF literature from developing nation contexts, the early outcomes of applying such approaches are promising and show promise for improving health service utilization and quality of care. The extent to which success may be attributed is a point of contention among healthcare experts. This necessitates a more thorough examination of the impact of greater resources and technical help versus the provision of performance-based incentives. PBF has improved indicators in Agaro general hospital, according to this study. The following are major conclusions:

The PBF outcomes demonstrate significant gains in health indicators (utilization, coverage, and emergency referral), as well as improved health care performance quality. As PBF has two-a-waysystems of subsidy utilization for health facilities and employees as a bonus. Due to this, PBF has an impact on the quality health care delivery system.

While PBF is expensive to implement and labor-intensive to monitor all targeted health facilities monthly, there is a risk that rural facilities and hard-to-reach populations would be overlooked. In recent socio-economic research, the issue of equality has been addressed through a willingness to pay and perceived affordability of services, with some assessments also focusing on user fee reduction.

Because abilities are required to fulfill the administrative, technological, and monitoring requirements, capacity building is clearly the backbone of this endeavor. PBF implementation has included training and in-service assistance, however, the degree of understanding of PBF among health professionals and public sector management may be insufficient. PBF provides more freedom and autonomy in project management, as well as capacity building and ongoing incentives to perform. This sounds very promising, and it prompts additional investigation into whether success attributing has been exaggerated in this case.

A great number of these tasks fall under the category of hospital logistics, which includes things like purchasing, transportation, and catering. The duty for such tasks is usually distributed among many departments.

Even though hospitals have a designated department to oversee and deal with logistics, they are still dispersed throughout two or more departments. In other circumstances, for example, it was discovered that up to five different teams of employees were involved in stock replenishment activities and processes. Accordingly, the PBF approach has the gap in forcing Agaro general hospital to have a formal logistics department.

Delayed pharmaceutical delivery has several negative consequences for patient safety, quality of care, health system use, and expenditures. The findings of this study add to our understanding of how drug shortages affect patient outcomes because of long-term procedural and regulatory restrictions at the federal level, which have a negative influence on healthcare providers.

There are many ways to improve a health system, but in general, strong inventory management and transportation and distribution strategy necessitate the use of appropriate tools, management skills, and human resources with logistics expertise and capacity, all of which are difficult to come by in developing countries. Stakeholders should concentrate on well-functioning transportation management systems and inventory management regulations, as well as strong political engagement, clear responsibilities and roles, effective supervisory mechanisms, and enough budgeting.

5.3 Recommendations

Performance-based financing correlates with medical logistics as evidenced by the study's findings and conclusions. A result of this study revealsthat the Performance-based financing approach is means of providing financial support in terms of subsidy payment based on verification works and ensuring quality and quantity indicators are met. The approach gave an opportunity for the hospital to acquire pharmaceuticals and medical supplies by their own procedure.

Stock and inventory management is one of the requirements of the PBF checklist and forced the health center to follow up a proper stock and inventory management. Hospitals are frequently chastised for inefficient supply management and excessive inventory costs. Materials managers, suppliers, and staff members are under pressure to handle inventory management as hospitals tighten their belts; regrettably, they are often urged to do so in a time-consuming manner utilizing manual processes that are inefficient and prone to human error.

The storage space at almost all hospitals is insufficient and not up to quality; the major difficulty that affects this from all the challenges assessed is a lack of budget, and some also say space.

As a result, the office should focus on securing funding to assist in the construction of a standardized storage area rather than allocating space for other purposes.

I recommend the PBF approach to emphasizemakinga system-based inventory and stock management.

PBF approach is providing Health workers motivations and focusing on capacity building of health workers. All aspects of capacity building, including developing knowledge in innovative ways, offering easy access to information, raising awareness of the necessity of guidelines and standardization, developing appropriate process performance indicators, and focusing on regular monitoring. The approach must be focused on knowledge transfer in terms of medical logistics.

PBF approach with a close collaboration between different stakeholders will needto have its basis in information transparency, a willingness to worktogether in a sustainable way, and the sharing of information to ensure success and strengthen the health system particularly, in filling logistics activities of Agaro general hospitals. The approach must work and enforce Agaro general hospital to have a formal logistics department.

Hospitals should have a master list of all medical equipment in their store and service areas; this should be done in collaboration with biomedical engineers so that information on the status of medical equipment may be included. According to the WHO, whenever there is a change in the list or status, it should be updated, especially in the annual inventory. Medical equipment procurement, inventory, transportation, and warehouse management should be prioritized by hospital administration since the hospital cannot provide even basic lifesaving treatments without adequate medical equipment.

5.4 Suggesting for Further Research

Several limitations of this study may be noted. There are many factors that affect medical logistics. But the current study has used only the Performance-based financing approach role in terms of medical logistics considering only four independent variables(PBF payment, PBF training and coaching, PBF checklists, and PBF verification work)

Based on the findings, the statistical model in this study explained 44.5% of the variation in predicting the role of Performance-based financing on medical logistics.

Therefore, further research should be conducted to account for other factors. Moreover, further study must be carried out to investigate the impact of the Performance-based financing approach on the health sector including medical logistics with more area coverage.

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Questionnaire to the staff of Agaro General Hospital

First, I would like to thank all of you for your willingness to participate in the response of questioner for the research.

I am Habtamu Worku a final year Master of Arts in logistic and supply chain management (MA LSCM) Student at Addis Ababa University College of Business and Economics school of commerce department of Logistics and Supply Chain Management Distance Graduate Program.

I am conducting research on my final thesis entitled, assessing the role of performance-based financing approach on medical logistics, in the case of Agaro general hospital. The purpose of this study is to evaluate the role of PBF on pharmaceuticals and medical supplies availability, logistics responses, capacity building, and motivation.

Information about the PBF project

In Ethiopia, Cordaid started to showcase Performance-based- financing (PBF) in the arid and pastoralist zone of the Borena, Oromia region. After a participatory design process of six months, the project officially started on May 1st, 2015, and now expanded to zones of Jimma.

Since you are experienced in your institution, your ideas and information are crucial for my research to evaluate PBF role in medical logistics. The information you are giving will be used for partial fulfilment of the master's thesis only.

I. Demography of Respondents

1. Years of Stayed in the organization

a. Less than two years b. 2-5 years c. 6-10 years. d. Over 10 years

2. Age

a. Under 25 b. 25- 30 c. 31 - 35 d. 36- 40 e. above 40.

3. Gender

a. Male b. Female

4. Educational level

a. Level 4 b.MD c. BSc/BA d. MSc /MA e. PhD f. other …….

II. Introduction: Please indicate your consent by putting a tick mark (√) the number that best represents how you feel about the role of PBF on medical logistics response, pharmaceuticals supply ,and essential drugs availability, capacity building, and motivations.

Variables	Items	Strongly Disagree	Disagree	Neutral	Agreed	Strongly

		(1)	(2)	(3)	(4)	Agree (5)
1) Logistics responses	PBF approach has properly supported the following Logistics Activities					
	Procurement					
	Distribution					
	Catering/ Food/ Laundry					
	Hygiene, Waste management Maintenance					
	Reception service					
	Patient flow					
	Stock management					
	Mail service/ files archiving management					
	PBF approaches enable medical logistics and the supply chain in healthcare are aimed at ensuring the flow, reducing the waiting time of the user to provide good quality healthcare services.					
	PBF helps the community get a proper health care service with proactive logistics responses.					
	PBF supports to have formalized a logistics department in the health sector.					
	PBF subsidy supports procuring any source (e.g., electricity grid, generator, solar, or other) including for stand-alone devices (EPI cold chain).					
	As PBF checklists, Resources are properly utilized with effective disposal methods.					
	The subsidy enables use restructuring and maintenance of the buildings.					

Variables	Items	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)

2) Availability of pharmaceuticals and medical supplies and inventory management	PBF has a positive role in drug and medicines availability. Itcreates an opportunity to acquire medical equipment's within own procedure.					
	PBF allows flexibility in the procurement of essential drugs.					
	PBF allows and ensures proper inventory management as per the criteria.					
	Inventory checklists of PBF are helpful for proper management.					
	As PBF checklists, it is very significant to keep the record of patient visits and history on daily basis.					
	PBF takes into consideration stock out every quarter, this ensures no stock out for essential drugs.					
	PBF approaches enable us to update the inventory periodically.					
	Proper storage availability for drugs and PBF verification work creates consistency with follow-up actions.					
	PBF has a positive impact on the availability of medicines in stock.					
	Pharmaceuticals and medical supply have a long procedure as purchased from Gov't and hurts our performance.					

Variables						
3)Capacity building and motivations	Items	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
	PBF provides training on indicators of logistics criteria.					
	PBF allows on-the-job training about the pharmaceutical supply chain.					
	PBF do a significant role in capacity building.					
	PBF is a means of knowledge transfer about medical logistics.					
	PBF subsidy payments have an impact on my motivations.					
	PBF becomes the source of income to improve health care services.					
	PBF provides the payment on time.					
	PBF has become an additional					

	source of income for better health services.					
	PBF bonus has creates a motivation for me to provide better services.					
	PBF creates a means for revenue generation to fulfill the financial gaps.					

4. One of the requirements of PBF is to submit a quarterly business plan for subsidy utilization, do Do you know about the business plan, and its importance?

a. Yes b. No

If your answer is "Yes", who is responsible to prepare it and please specify its

importance?

……

……

5. Do you think that PBF creates an additional source of income?

a. Yes b. No c. May be

If your answer is "NO", Please specify your reasons?

…….

……..

6. As a health worker and support staff, does the PBF bonus creates a motivation for you for the betterment and it is an additional income for you?

a. Yes b. No c. May be

If your answer is "NO", Please specify your reasons?

…….

……

I thank you for your time and patience to fill out the questionnaires.

Interview Guide

This interview is designed to obtain information fromthe Chief executive officer and medical director, two Pharmacists, and 2 storekeepers of Agaro general hospital in assessing the role of PBF in health sector logistics.

You will be presented with a series of closed & open-ended questions and the decision to answer each question is your own. However, your contribution in answering as many questions as possible to provide important information would be greatly appreciated.

1. What is your role in this organization?

2. Who is responsible for logistics arrangements?

3. How long your hospital controlled by PBF ?

4. What is your role regarding PBF implementation?

5. Do you think PBF has a positive role in the medical supply chain in your opinion?

6. Do the PBF checklist of logistics and inventory management supports your daily activities? Is any new way of working?

7. Do you think PBF subsidy supports handling your requirements by your procedure? Does this enable you to proactively respond to patients' requirements?

8. Do the PBF bonus has an impact on your motivation? Is it an additional income for you?

9. Does PBF creates a means for revenue generation to fulfil the financial gaps?

10. What mechanisms are practiced in PBF to release the payment on time?

11. Any closing remark?