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Vaccines, Immunization and Health Supply  
Chain Management (EAC RCE-VIHSCM)**

**EVALUATION OF PUBLIC-PRIVATE PARTNERSHIPS (PPPs)  
IN HEALTH SUPPLY CHAIN MANAGEMENT IN RWANDA**

by

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Thesis submitted to the University of Rwanda, in partial fulfilment of the requirements for the degree of Masters in Health Supply Chain Management.

COLLEGE OF MEDICINES AND HEALTH SCIENCES

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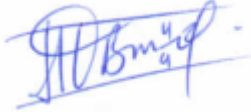
## DECLARATION

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## ABSTRACT

**Introduction:** The 2030 Agenda for Sustainable Development serves as a blueprint for global development and catalyse the private sector investment across various sectors(4, 5). This calls for the immediate mechanisms to enhance the partnership between the Government and private sector including civil society, businesses and others to achieve Sustainable Development Goals (SDGs) (1).

The Government of Rwanda (GOR) takes into consideration the private sector to play an important role in supporting augmented provision of strategic national investments through Public Private Partnerships (PPPs). PPPs are an alternative method for procuring and delivering both infrastructure assets and services (3). Governments under increasing budgetary pressure especially in developing countries were looking to public-private partnerships (PPPs) as a means to expand access to higher quality health services, enhancing capital, managerial capacity, and know-how from the private sector (4). According to HSSPIV, there was outstanding challenges including the important external financing of the sector, which was not sustainable and limited capacity in terms of internal revenues (5). It was thus crucial to conduct the study to evaluate various aspects regarding the PPPs in HSCM in Rwanda and came up with the findings and recommendations that may help decision makers and stakeholders to streamline the implementation of PPPs towards effective financing in HSCM in Rwanda.

**Methods:** The descriptive, cross-sectional and quantitative research design was used in this study. The study population were 103 experts and professionals of the health system and individuals familiar with HSCM PPP from institutions namely the Ministry of Health, RBC divisions, District Pharmacies and Private Wholesale Pharmacies. The sample size of this study was 75 respondents from aforementioned institutions. This study used a non-probability sampling techniques known as purposive sampling. The suitable method of data collection used for this study was the semi-structured questionnaire. For data analysis, after data entry in the template was done by MS excel and exported into SPSS to perform test statistical testing. Univariate analysis and Bivariate analysis were used. The data found were also rated according to the concerned questions. The approval clearance was given by the university, Institutional Review Board and National Health Research Committee as seen in appendices 5 and 6.

### **Results:**

There were different PPP Areas used in HSCM in Rwanda namely supply of commodities (99%), delivered health supplied IT supplies and equipment (operate) (53%), Finance (52%), maintenance

area (40%) designing of projects (35%). build area, construction of health facilities/buildings (31%). The contribution of the company in PPPs were availability of health commodities (99%), cost effectiveness of treatment to patients (84%), transportation (71%), finance (61%), and infrastructure (36%).

The opportunities available for the implementation of PPPs in HSCM in Rwanda were the political will at 95%, active private pharmaceutical sector at 92%, well-structure health supply chain at 83%, universal health coverage at 80% and e-health systems (e-procurement, online importation) at 76%.

The respondents agreed that there were challenges in the implementation of PPPs projects in HSCM and included limited conversation/dialogue and absence of formal platforms or systems for public and private engagement (83.7%), complex procurement requirements for medical Products and equipment by public institutions (73.3%), ineffective coordination/management and clarity of roles and responsibilities between Public institutions and key stakeholders (67.6%), contracting issues (64.8%) and lack of Regulations/laws about PPPs in HSCM (58.1 %). The measures/strategies to improve the PPPs in HSCM and these were to effective management/coordination of PPPs (93.3%), improved dialogue and formal platforms (90.6%), foster transparencies from all partners (89.3%), enhance trust between parties in PPPs (84%), appropriate risk allocation (financial) (81.3%), put and make aware laws and regulations about PPPs in HSCM (65.33%) and well prepared contract document (64%),

**Conclusion:** From the study results, it was found that private sector through PPPs plays a great role in the health supply chain management in Rwanda. The engagement of the private sector can increase the financial support in terms of financing the HSCM activities like delivery or supply of health commodities and equipment etc. Through PPPs in HSCM, there has been also effective and affordable cost of treatment to patients via availability and accessibility of subsidized medicines. This calls for the public decision makers in different levels to greatly and always consider the involvement of private sector in HSCM

## **KEY WORDS**

- Public-Private Partnership, Health Supply Chain Management, Private Sector, Project

## **ABBREVIATIONS AND ACRONYMS**

ASH: African Strategies for Health

BUFMAR: Bureau des Formations Médicales Agréées du Rwanda

CMs: Central Medical Stores

CHWs: Community Health Workers

CSCMP: Council of Supply Chain Management Professionals

DH: District Hospital

DHO: District Health Office

DPs: District Pharmacies

EDPRS: Economic Development and Poverty Reduction Strategy

FBOs: Faith-Based Organizations

GOR: Government of Rwanda

HCS: Health Commodities

HIV/AIDS: Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome

HSP: Health Sector Policy

HSCM: Health Supply Chain Management

HSRII: Health Systems Research India Initiative

HSSP: Health System Strategic Plan

MCCH: Maternal, Child and Community Health

MOH: Ministry of Health

MPPD: Medical Procurement and Production Division

NGO: Non-Governmental Organization

PPPs: Public Private Partnerships

PSE: Private Sector Engagement

PTF: Pharmacy Task Force

PwC: PricewaterhouseCoopers

RBC: Rwanda Biomedical Center

SDPs: Service Delivery Points

STIs: Sexually Transmitted Infections

TB: Tuberculosis

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## **SIGNATURES**

This is to confirm that this Thesis has passed via the antiplagiarism system and found to be compliant and this the approved final version of the Thesis.

### **EVALUATION OF PUBLIC-PRIVATE PARTNERSHIPS (PPPs) IN HEALTH SUPPLY CHAIN MANAGEMENT IN RWANDA**



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## **CHAPTER 1: INTRODUCTION**

Private sector engagement has gained an important momentum over the last two decades. The 2030 Agenda for Sustainable Development serves as a blueprint for global development and catalyse the private sector investment across various sectors(4, 5). This calls for the immediate mechanisms to enhance the partnership between the Government and private sector including civil society, businesses and others to achieve Sustainable Development Goals (SDGs)(1). In this regard, the health sector has to find effective approaches to harness and build the capacity of mixed health systems (with goods and services). Nations have to ensure that all providers, public and private are effectively engaged as part of efforts to ensure healthy lives and achieve universal health Coverage (UHC)(6).

Private sector engagement in health care aims to increase the involvement of non-state actors in a complex range of activities. These actors could include (multi) national companies like pharmaceutical wholesalers, nongovernmental organizations, and non-profit entities (6, 7).

The Government of Rwanda (GOR) takes into consideration the important role of the private sector (both for-profit and not-for-profit) in supporting improvement in the delivery of strategic national investments through Public-Private Partnerships (PPPs) and strengthen of the health system(8). The GoR is committed to promote Public Private Partnership PPPs (both which could help increase the participation of investment in health infrastructure and services. The involvement of the private sector can benefit the economy by providing quality infrastructure assets and services which may help the GOR to attain its goal in Vision 2020 and 2050 and the Economic Development and Poverty Reduction Strategy (EDPRS). PPPs were an alternative method for procuring and delivering both infrastructure assets and services (3).

The Government of Rwanda (GOR), in collaboration with its development partners, and other key stakeholders recognize the significance of increasing private sector engagement (PSE) in health as a means to improve equity, and efficiency in the provision of health services and accessibility of affordable drugs, vaccines, medical equipment and infrastructure.

Different countries have deployed some effort to strengthen the engagement of the private sector in health with the overall aim of relieving the burden on the public sector, leveraging on financial resources and capacities from the private sector and reduce inequalities in access and use of healthcare services (9).

An effective private health sector can relieve burden on the public sector and allow more resources to be spent on the very poor and vulnerable segments of society for instance the scaling of health posts in rural and remote areas across the country, availability of highly cost medicines with subsidiary affordable prices for example like hepatitis C medicines where the private sector in collaboration GOR reduced the treatment cost (9).

Enhancing supply, procurement, distribution, and maintenance (for medical equipment) is vital to the effective functioning of health system. In the framework of improving the Public Private Partnerships related to the supply chain of health commodities, medical supplies and medical equipment in Rwanda, the Ministry of Health gave a Ministerial Circular No20/1658/PTF/2007 of 15/June/2007 concerning with their acquisition from both public and private area by district pharmacies, referral hospitals including also provincial hospitals (10).

To further support the GoR, and the Ministry of Health in particular to continuously enhance the involvement of private investors in health, more robust knowledge of PPPs that is still required and may crucial for efficiency gains within a health system and was serves a domain that appropriately results itself to PPPs (11).

### **Public Supply Chain Area in Rwanda**

The GoR considers access to affordable medicines and medical devices a priority for its citizens. The Fourth Health Sector Strategic Plan (HSSP 4) stipulates that essential medicines and health equipment need to be available all the times in appropriate quality and at a reasonable price for individuals and households (12).

There are various levels and institutions from both private and public that engage hand in hand in the management and operational activities of Health Supply Chain Management in Rwanda. These include the Central Medical Stores namely the Medical Procurement and Production Division (MPPD) and Bureau des Formations Médicales Agréées au Rwanda (BUFMAR). MPPD is a public institution, while BUFMAR is a private faith based company. MPPD is responsible for quantification and forecasting, procuring, storage, inventory control and distribution of medicines, medical devices and equipment to referral hospitals and district pharmacies. This results into an increasing availability and accessibility to quality health commodities to patients (13).

The District Pharmacies are intermediate warehouse which are largely involved in the procurement of medicines, medical devices and equipment from CMSs as well their active distribution to various facilities (both public and private) in the catchment areas. Overall, Rwanda counts 30 district pharmacies distribute across the country. The medicines and medical supplies not found from first from MPPD and BUFMAR are then procured from private sector through procurement procedures prescribed by the laws and thereafter under the approval of the Ministry of Health (10).

The importance of companies from private sector in health supply chain management in Rwanda, has been significant especially in the availability and accessibility of medicines, medical supplies and medical equipment in health facilities and hence ensuring continuous supply and quality services delivery. These private companies (wholesale pharmacies) supply also the medicines, medical devices and medical equipment to District Pharmacies. Therefore, in absence of PPPs, there would be augmented stock out rates such health commodities and hence a need to conduct the research to evaluate the PPPs in the supply chain management in Rwanda (13). Other development partners have also played a crucial role in the Rwandan supply chain management through procurement of health commodities, construction of warehouses, provision of medical equipment and support for workforce.

It is important to note BUFMAR is another central medical store established in 1975 by the Christian confession with health facilities in Rwanda purposely to contribute to the availability of quality health services especially in health supply chain management (14). This is a private medical initiated under the PPP framework by Faith Based organizations. BUFMAR as a central warehouse is also in charge for quantification and forecasting, procurement, storage, inventory control and distribution of medicines, medical devices and equipment to district pharmacies and referral hospitals.

The health supply chain Area in Rwanda is illustrated in the figure 1 below. The flow of health commodities is from top to down while the flow of information or feedback is the reverse. At each level there are supply chain activities carried out like quantification, forecasting, procurement, storage, inventory management and distribution/use. As already mentioned, private companies also play a crucial role in the supply of health commodities to district pharmacies and referral hospitals.

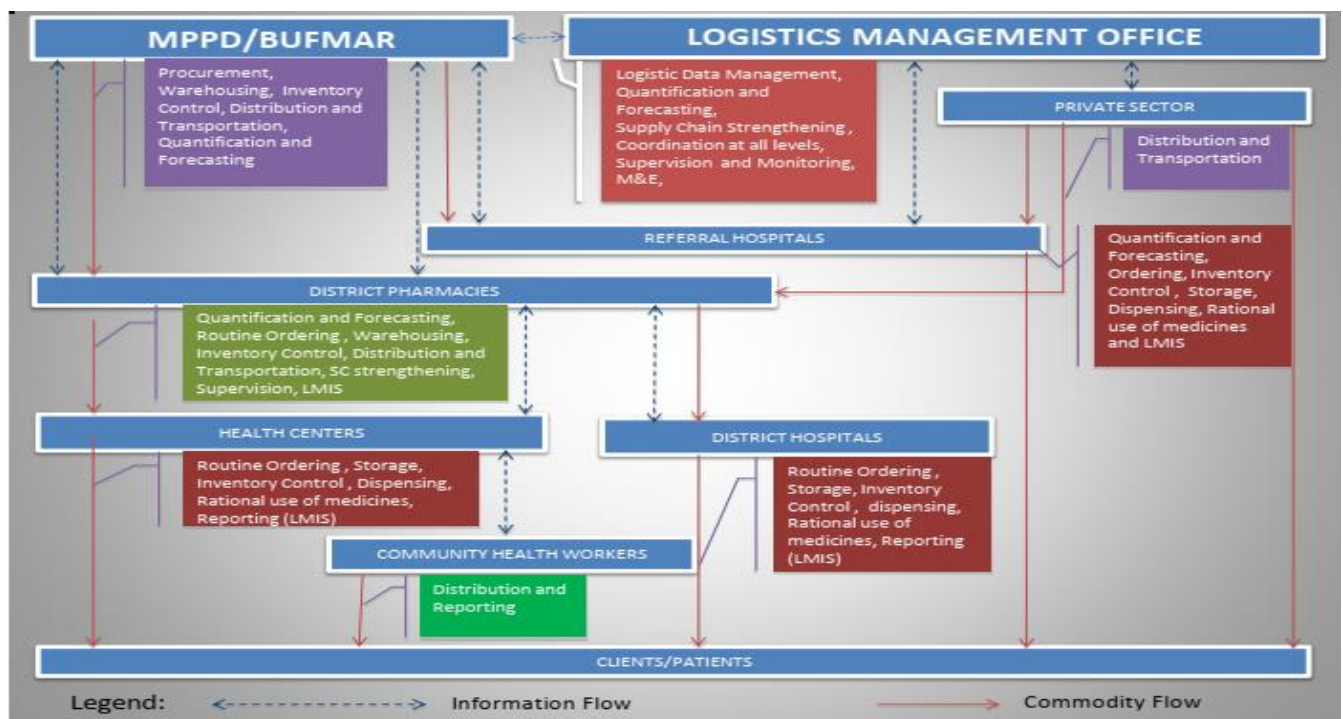


Figure 1: Health Supply Chain Model in Rwanda (13)

### The Government of Rwanda Health Goals, Structure, and Organization

The Rwanda's Health Structure includes referral hospitals, provincial hospitals, district hospitals, health centres, health posts and community health workers. There are both public and private health facilities. The Ministry of Health provides political, technical leadership and financial support under the framework of the Health Sector Policy (HSP) to the health sector which is executed under the Health Sector Strategic Plan (HSSP) IV. The Ministry of Health has also the role for coordinating its affiliated institutions, line Ministries, the private companies in health, Non-Governmental Organizations (NGOs), and development partners so as to strengthen and improve health care services and outcomes of the country. The figure below illustrates the Rwanda's Health Structure.



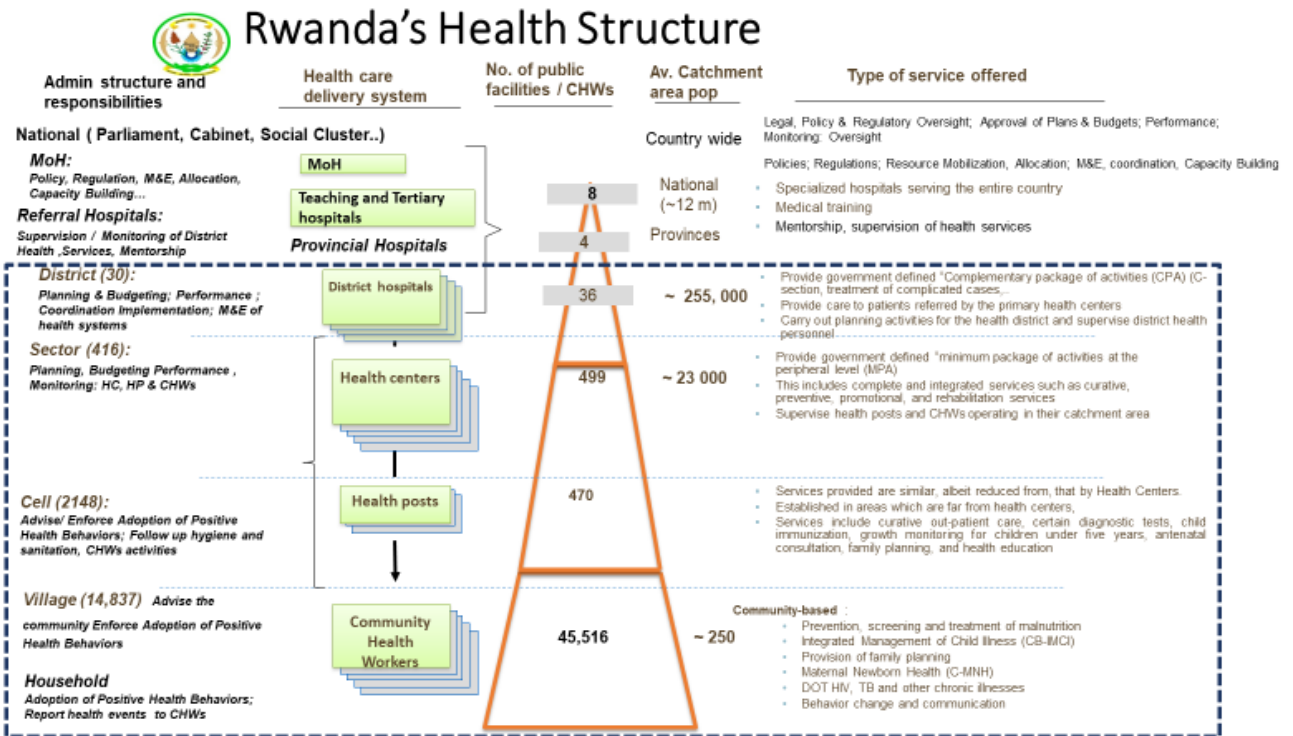


Figure 2 :Organisational chart of the health sector and Health Care Pyramid Diagram (12)

## 1.1. Definition of the key concepts

### 1.1.1. The Private Health Sector

Private health sector refers to any institution that lies outside the direct/immediate control of the government. The private health sector is a subgroup of a country's health system. It is generally composed of non-public ownerships, including for-profit moneymaking institutions/companies; nonprofitmaking and faith-based institutions(8). In most of the African countries in Sub-Saharan region, the private health sector played a significant role in serving the necessities of the population and provision of essential health services(15).

### 1.1.2. Public-Private Partnerships

Public-Private Partnerships (PPPs) are defined as a long-term contract between a private company and a government entity, for providing a public asset or service, in which the private company bears significant risk and management responsibility, and remuneration is linked to performance. The extent of sharing the risks between the public and private companies is not standardised ; it is based on the level of capital committed by the private companies (1, 9).

Public–private partnerships also refer to ongoing agreements between government and private sector organizations in which the private organization participates in the decision-making and production of a public goods or services that has traditionally been provided by the public sector and in which the private sector shares the risk of that production (16). It is important to emphasize that PPPs is one of forms of private sector companies’ involvement in health systems. The PPP initiatives are common in other sectors such as infrastructure(15) and education (16).

### **1.1.3. Health Supply Chain Management**

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"(Kumurya, A. S, 2015, 62-72)(17). Supply chain management captures the logistics activities plus the coordination and collaboration of staff, levels, and functions (18). Logistics activities are operational components of supply chain management and include activities such as quantification, procurement, inventory management, transportation and fleet management, and data collection and reporting (17).

**Project** is defined a set of related activities over an established timeline and budget intended to achieve a developmental objective, which is defined through outputs. (19)

## **1.2. Problem Statement**

Internationally, Governments from both developed and developing countries consider the public-private partnerships (PPPs) as one of the important mechanisms to expand access to quality health services, enhance the health financing system and leverage managerial capacity from the private sectors (8). This increased interests in PPPs can be attributed to several reasons including the escalating costs of providing health care services; increases in chronic diseases; inadequate public health infrastructure, medicine shortages, limited capacity of the public sector to meet the health needs of the population and rapidly changing and advancing medical technologies (17).

PPPs comprised of a wide range of engagements and Areas for instance, the preliminary provision of capital by the private companies was a key component of many PPPs, especially those in the health supply chain. (4)

In the conducted in India by Bharti Birla and Udit Taneja, it was found that the healthcare infrastructure was incapable of meeting health sector goals and was largely dominated by disjointed and unconnected strategies, and lack of resources (20).

The Government of Rwanda has attained the declaration of Abuja of allocating 15% of the budget of the government allocated to health sector, and set a functional and affordable health insurance system for community (5).

The Ministry of Health gives the oversight initiative and coordination to guarantee that the health area accomplishes its intended goals and objectives through its projects and establishments. The private companies are just in part associated with normal conferences with the MOH. HSSP IV strengthens this partnership through quarterly coordination gatherings for discuss various issues (5).

PPPs that involve formal government institutions, contracting with the private sector can be used to support any part of the pharmaceutical supply chain management (production, procurement, import/export, storage, distribution, research and development) to the public sector once needed.

The Development Partners (DPs) in Rwanda provide development support to the entire health sector, with emphasis on institutional capacity building more especially in Policy, Governance and Infrastructure; prevention and control of infectious diseases; health security; and health system strengthening in all the health system building blocks (5).

For the present health sector to be increasingly successful and sustainable in a declining external financing and donation, at that point the private sector needs to assume a crucial role in connecting the financing gap.

In spite of the fact that Rwanda's intense and visionary national authority recognizes the role of the private sector in the development of the nation particularly in health sector and has started endeavours to help it, a lot of work stays to increase and strengthen private sector support to reach the 5% goal as set in HSSP III. The private companies have has a key role to play in both attaining efficiency and generating new capitals in the health systems including health supply chain, ultimately contributing to positive public health outcomes(8).

However, according to HSSPIV, there was outstanding challenges including the important external financing of the sector, which was not sustainable. There was also an outstanding challenge of limited capacity in terms of internal revenues to address issues related to supply

chain capabilities at different levels(5). There was also an issue where private sector in supply chain management were not involved in the aforementioned challenges.

It was thus crucial to conduct the study to evaluate various aspects regarding the PPPs in Health supply chain management in Rwanda and came up with the findings and recommendations that may help decision makers and stakeholders to streamline the implementation of PPPs towards effective financing in health supply chain management in Rwanda.

### **1.2.2. Study Questions**

Below are the questions that were considered important and relevant to this study

- i. What are different/various Areas of PPPs existing in Health Supply Chain management (HSCM) at both national and peripheral levels in Rwanda?
- ii. What are the benefits of PPPs and available opportunities in Health Supply Chain management in Rwanda?
- iii. What are the major challenges that hinder private sector engagement in HSCM in Rwanda?
- iv. What are strategies to improve PPPs in HSCM in Rwanda?

### **1.3. Justification of the study**

The Government of Rwanda achieved the declaration of Abuja of government distributing 15% of the budget allocated to health, and put a functional and affordable health insurance system for community(5).

PPPs involving formal government (MPPD of RBC, district pharmacies and public hospitals) contracting with the private sector can be used to support any part of the pharmaceutical supply chain and equipment (research and development, production, procurement, import/export, storage and distribution) to the public sector during stock-outs or when needed.

The Development Partners provide financial support to the entire health sector, which includes capacity development of institutions (especially in Policy making, governance and infrastructure); prevention of infectious diseases Malaria, Tuberculosis etc.; health security and health systems strengthening (5).

According to the GOR vision in attaining and maintaining the health sector indicators including those of health supply chain management and the outstanding challenges existing in health sector,

the study assessed the status of PPPs in Health supply chain management in Rwanda and came up with the findings and recommendations that may help the decision makers and stakeholders to streamline the implementation of PPPs.

#### **1.4. Study area**

The study was carried out at the Ministry of Health, Medical Procurement and Production Division (MPPD), Rwanda Biomedical Center (RBC) Divisions, District Pharmacies, and Wholesale Pharmacies. At those selected sites, the respondents answered the questions prepared.

#### **1.5. LITERATURE REVIEW**

##### **1.5.1. Public-Private partnerships in developed countries**

In the study that was conducted in Canada by David Barrows, Ian Macdonald and Atipol Supapol, they found out that PPP was an appropriate Area in designing and building of hospitals and the delivering of non-clinical services for more than a half (61%). The big number of respondents also indicated that they did not have a working knowledge on PPPs (56%) (21).

According to the study that was carried out in India by researchers namely Bharti Birla and Udit Taneja from India, it was found that the healthcare infrastructure was incapable of meeting health sector goals and ultimately was dominated by fragmented and unconnected strategies, and lack of financial resources. There was limited reach and scope of public health services with health providers working in isolation. And it was found that there was an urgent need to develop an alternate system for healthcare delivery in the form of PPPs (20).

In the research done by Bharti Birla and Udit Taneja in India on assessment of the efficiency of various Areas of PPPs, it was discovered that PPPs would be helpful in setting up the monitoring and assessment frameworks and policies of government, private sector players as well as global and national donor organizations (22).

In the study done in Udyapur, Nepal by DHO, it was discovered that the private companies were providing and issuing health commodities to health facilities like hospitals, health centres etc. according to the route and time fixed by the DHO.

It was further found those health products/commodities were shipped or transported to health facilities and treated with necessary safety measures. The engagement of the private companies in the health supply chain management diminished outstanding tasks of the DHO and the HFs

staffs. Besides, resources were spared in at peripheral as a result of giving of health logistics support by the private companies was redirected in other different aspects of health services. The private sector contributed in the improvement of the quality health services delivery (22).

According to study that was conducted in Iran by Ahmad Sadeghi et el, the strategies to develop and promote PPPs in the provision of hospital services in Iran were the changes in policies and laws, socio-cultural changes, improvement of mechanisms and current processes, and financial and capital capacity building (23).

It was also found that Private sector supply chain managers have proven to consistently deliver health goods and services in a wide range of settings, and they are part of the solution to many issue in PPPs of health supply chain management. This wide range of private sector engagements; played an important role in strengthening supply chain management for health and creating collaborations between the public and private companies that required a well-designed policy and strategic plan, a common understanding of the benefits of engaging private sector, and the ability to shape answers to domestic environments (23).

From the study conducted by Global Health Group at the University of California, San Francisco in partnership with PwC Global Healthcare in relation to public-private partnerships (PPPs) in health, it was found that the private partner was primarily role for:

- Finance; refers to financing or co-financing the capital cost
- Maintain: refers to maintenance of the buildings and equipment that were needed to provide specific clinical services including health supply chain services to population
- Operate & Deliver: management and supply of specific clinical services including supply of equipment
- Design: This involves the design of buildings based on requirements established by the government
- Build: This involves construction of new, or renovation of existing, facilities
- Deliver: This involves management and delivery of clinical including HSCM and support service(24)

In this study, it was also found that the most important enabling factors or conditions for PPPs in healthcare were

- Political will
- Legislative and regulatory framework

- Transparency
- Public sector capability
- Contract completeness, flexibility and governance
- Comprehensive stakeholder engagement (24)

According to the study that was carried out in Germany by Claudia Reim, it was discovered that PPPs projects confronted challenges specifically; management of the PPP where the partnership could collapse just because the management of project had gone wrong and leading to delivery delays and cost overruns. The issue of conflict of interest; the private and public sectors establish totally various priorities coming from their diverse worth frameworks. Other difficulties/challenges involved were accountability, risk management, regulation and transaction costs (25).

In the study that was conducted in Iran by Ehsan Zarei, Tara Moghaddasfar , Vahid Eidkhani , it was found that the challenges that faced PPPs in health sector were complexity, low-quality evaluation, lack of transparency, insufficient coordination, insufficient financial resources, neglecting justice and public interest, lack of flexibility, lack of experience and practical knowledge, lack of appropriate risk assessment, inadequate cooperation of stakeholders, partner choice restrictions, and paying insufficient attention to the staff. These findings were similar to those of this study with addition of more other challenges (26).

From the study that was conducted by United Nations Commissions globally on PPPs in Health supply chain, it was found that PPPs increased availability of affordable, quality medicines and health supplies, ensured quality of health commodities, improved the effective use of health commodities and increased funds and resources for health commodities and medicines (27).

PPPs helped in the accessibility of medicines, medical supplies and medical equipment through their procurement from private sector. The activities related to the procurement ensured that the correct products were available in the country and ready for delivery when deemed needed. The procedures and processes for the procurement, helped to achieve the six rights of logistics (18).

For sustainable and viable PPPs, there were standards for successful PPPs including; plan appropriately for PPPs, make a mutual vision, comprehend the stakeholders and partners, be sure about the risks and benefits for all parties involved, set up a clear and reasonable decisional making approaches, ensure all parties get their work done, keep constant and organized

leadership, provide information early and regularly, discuss a fair, deal structure, and create faith as a principal worth (28).

In the most nations worldwide, supply chains base vigorously on the private companies for delivery of medicines, medical supplies and medical equipment, their supply, and offering of crucial valuable services. In any event, when the health system itself was only institutions from public, the activities related to health supply chains worked well in guaranteeing consistent availability and accessibility of excellent quality medicines, medical devices as well as medical equipment (29).

From the research that was carried out in Rwanda by United States Agency for International Development (USAID), through African Strategies for Health (ASH) Project, it was found that examples of private sector engagements and health PPPs in Rwanda that were between MOH and One Family Health involved 92 health posts and private providers; MOH and Faith Based Organizations (FBOs) included hospitals and health centers; The public institution MPPD and private wholesale companies have partnerships in the delivery for medicines, medical supplies and medical equipment (30).

### **1.5.2. Public-Private partnerships in low-income countries**

In the study that was conducted in South Africa, by Ken Mathu, it was found that his study established that the business acumen or commercial initiative applied by PPP projects through supply chain collaboration and integration enhanced public sector delivery, and therefore, PPPs were a more appropriate Area than the prevailing public-sector supply chain processes(31). In that study, it was found that the respondents replied that the private sector gave security in that they executed the project effectively and efficiently within cost, on time, and to the specifications. However, the government could open doors, provide legislation, get things passed, but they rarely could execute(31).

According to the research that was directed in Senegal, it was discovered that health supply chains were essential to viable provision of health care services in all concerned institutions including private, public, and faith based. Health facilities from public encountered the issue of the stock out of medicines, medical devise and equipment and this resulted to limited access of such products to people (32). The immediate intervention in the supply in health supply chain scheme



in public organizations, employing private companies, was organized to solve challenges and decrease stock outs at hospitals, health centres etc. and guarantee continuous quality delivery of services to patients (32).

From the study that was conducted in Sub-Saharan Africa (Tanzania, Uganda and Kenya) by Kyla Hayford, Lois Privor-Dumm and Orin Levine on enhancing availability and access to essential medicines and medical supplies via PPPs, the challenges of stock outs as a result of poor product inaccessibility and distribution were found. Therefore, strategic actions and measures of the PPPs were necessary. These were standardized data for follow up of performance of essential medicines delivery systems, development of partnerships to share skills and knowledge on delivery or distribution practices, infrastructure for distribution, boost studies conduction and product innovation to reduce the distribution hindrances for essential health commodities accessibility and availability (33).

Based on the research that was conducted by Alfred Mihayo in Tanzania on the importance of PPPs in enhanced health care services delivery for older people, it was revealed that PPPs led to decreased distance, increased availability of medicines and medical supplies, removed cost of services, augmented service types, decreased service time, and enhanced reliability of services (34). The five PPPs elements as adopted and modified include the following; participants, cooperation, financial resource, durability and sharing (34).

In the study that was carried out in Sri Lanka, Zambia and Uganda by Caines, Karen and Louisiana Lush, it was found that the engagement of multi-national pharmaceutical organizations in tropical disease medicine access, PPPs contributed to better medicines availability very significantly in the three countries where the research was carried out, with negligible negative side-effects if any. In Zambia, there was expansion of access and availability to Coartem® at a reduced/affordable price through chosen private pharmacies and retail outlets (35).

The study that was conducted by Africa Health Forum in various countries like Brazil and Gambia, there were empowering agents of governments and establishments to utilization of PPPs Area in the health supply chain, keen to improve activity of public health services and to improve access to greater quality services and medicines and medical supplies, chance to impact private investment for the good of general public health services delivery, wish to formalize plans with private companies and non-profit making organizations who convey a significant portion of

public health services delivery and increasingly potential partners for public as private companies develops (36).

In that study that was conducted by Africa Health Forum in Gambia, it was found that the Ministry of Health's partnership with Riders produced a highly reliable and cost effective national health transport network (36).

In the study that was conducted by Reynaers, A.M. & Z. Van der Wal (2017), it was found that the study used the rating of agreeing and disagreeing. The majority disagreed with the statement that there are PPP differences management between public and private.(37)

### **1.5.3. Public-Private partnerships in Rwanda**

Like in other countries, in Rwanda the public institutions on their own cannot attain their mandates of supplying medicines, medical supplies, medical equipment, services, infrastructure, without involving the private companies. Therefore, for better achieving the targets in relation of various health aspects especially in health supply chain management, private companies have the a key role to play and hence a need to have public-private partnerships in place (12).

The Government of Rwanda thought about that the private companies could pay a significant job in supporting quickened provision of key national investments in all viewpoints through Public Private Partnerships (PPPs). PPPs advantages of the economy of the nation by giving quality infrastructure, goods including pharmaceutical ones, services and help in accomplishing GOR's objectives in Vision 2020, Vision 2050 and the EDPRS (3)

The Government of Rwanda (GOR), its advancement accomplices, and key partners perceive the significance of expanding private sector engagement (PSE) in health as a way to open/accessible, fair, effective, and improved delivery of health services (11).

Access to affordable drugs, vaccines, other health products, well equipped medical supplies/equipment and infrastructure was serious to the effective running of any health scheme. Enhancing provision, forecasting, procurement, supply, and maintenance (in the case of medical equipment) may help achieve productivities within a health system and this was a sector that appropriately admits itself to PPPs (11).

According to the research that was carried out at MPPD by Majoro Juvenal on the availability of health commodities for public sector in Rwanda, it was found out that different procurement procedures/methods were used at MPPD namely to procure pharmaceutical products and medical equipment from private companies both at national and international levels. In case of unavailability of pharmaceutical products at MPPD, with the approval of the Minister of Health, district pharmacies proceeded to purchase them from private wholesale pharmacies (38).

#### **1.5.4. Public-Private partnerships in Health Sector**

There were various vital instances of PPPs in the profit making service delivery field like the One Family Health social franchise Area, that was building private health posts run by the nurses with high education certificates (A2 nurses) and these offered crucial health including health supply chain management. More to that, selective private institutions/facilities do engage in PPPs to improve public health, including services delivery for Tuberculosis, malaria, HIV/AIDS, the Immunization, and blood transfusions. The majority of aforementioned programs, the private providers that do participate benefit from training and access to free or affordable commodities(30)

The faith-based health organizations/facilities are composed of hospitals and health centres. For instance, for the 42 district hospitals in Rwanda, about 15 (35.7%) were possessed and run by faith-based organizations (FBOs). These health facilities were generally situated in remote areas and offer health services to poor population, a stark contrast to the profit making providers (8).

For the case of Health centres (HCs), Faith-Based Organizations make a total of about 40% of the around 450 health centres in the country. The health care faith -based providers were mostly supported by the government because of their location and population coverage which these stand for a good positive example of the first PPPs in the health sector (8).

Most of private wholesale pharmacies had contracts (through GOR tenders) public institutions/MPPD and district pharmacies and these were responsible to supply medicines, medical supplies and medical equipment to the public institution in case of shortage or stock-outs.

In health sector especially in health supply chain management, the Government of Rwanda pertained with Abbott Company in installing laboratory equipment, supply of medical devices and reagents to health facilities in Rwanda.

The GOR also pertained for the accessibility, availability and distribution of Hepatitis C health commodities to patients with Hepatitis C. This involves also the medical devices used in the screening of this condition. The patients with Hepatitis C get the health commodities at extremely reduced cost of treatment.

## **1.6. Objectives**

### **1.6.1. Main Objective**

The main objective of this research/study was to evaluate the status of Public-Private Partnerships (PPPs) in Health Supply Chain Management in Rwanda.

### **1.6.2. Specific Objectives**

The specific objectives of this research were namely:

- i. To describe different areas of PPPs current in Health Supply Chain management (HSCM) in Rwanda.
- ii. To determine benefits of PPPs and available opportunities in HSCM in Rwanda
- iii. To identify challenges that hinder private sector engagement in HSCM in Rwanda.
- iv. To identify strategies to improve PPPs in HSCM in Rwanda.

## CHAPTER 2: MATERIAL AND METHODS

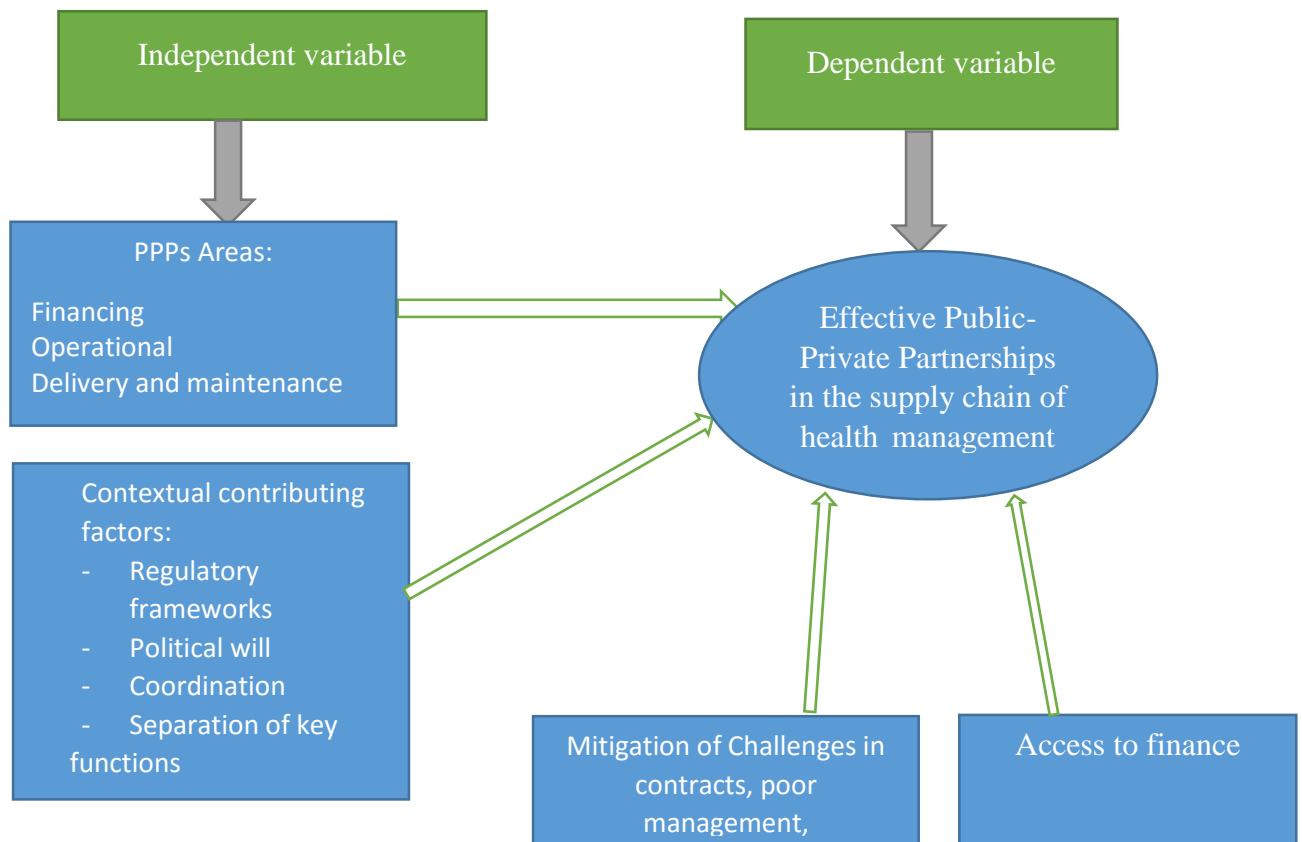
### 2.1. Study Design

The study design used was descriptive, cross-sectional and quantitative research design. This study design guided the process of data collection, processing, analysis and discussion of the results. This study design was found appropriate, as it enabled the gathering of expected data for the research/study and its narrative.

### 2.2. Methods

#### 2.2.1. Study variables/Conceptual framework

This study included the conceptual framework that was established based on the literature that involved PPPs. The effective Public-Private Partnership in HSCM was considered as the dependent variable for this study. For this to be attained, there should be in place various PPPs Areas like financing, operational of activities, delivery of goods and maintenance. The existing of regulatory framework, political will, effective PPP coordination and separation of key functions between public and private sector were taken to be the contextual contribution factor for effective PPPs in HSCM. Similarly, access to financing also improved the PPPs in HSCM. However, there are challenges like issues of contracts, poor management of PPPs etc. that need to be mitigated in order to achieve effective PPPs in HSCM.



*Figure 3: Conceptual framework of the study developed based on the existing literature related to PPP in health.*(34, 40)

### **2.2.2. Analysis plan of each objective**

Each objective had corresponding responses from the participants of the study. After collecting data with target respondents, the data entry was done using MS Excel. These data were exported into SPSS for further analysis. The analysis plan included descriptive analysis, univariate and Bivariate analysis as seen on data analysis section 2.5.

### **2.3. Study population**

The people who involved in this study were the experts, health professionals and individuals with good understanding/familiar with PPPs from institutions namely the Ministry of Health (MOH), RBC divisions, District Pharmacies and Private Wholesale Pharmacies. The managers and or key professionals from such institutions were purposively selected. The study population were 103 people.

#### **2.3.1 Sample size**

The sample size of this study was determined based on the Slovin's formula shown below

$$n = \frac{N}{(1 + Ne^2)}$$

where

n was the sample size,

N was the population size

and

e was the margin of error chosen by the researcher

$$n = \frac{103}{(1 + 103 \times 0.05^2)} = 75$$

The sample size of this study was 75 respondents from relevant government and non-government actors including faith based organizations and private pharmacies. This sample size (n=75) was chosen based on the precision level  $\pm 5\%$  and confidence level 95%.

The table below indicates the distribution of study participants in aforementioned institutions.

Table 1: Distribution of study population and sample size

Institutions Of Target	Population Size	Number of Selected Participants	Relative share in the sample size (%)
MOH	3	2	2.7
RBC Divisions	15	10	13.3
DISTRICT PHARMACIES	40	30	40.0
WHOLESALE PHARMACIES	44	32	42.7
FAITH BASED ORGANIZATION	1	1	1.3
Total	103	75	100

### 2.3.2. Sampling technique

This study used a non-probability sampling techniques known as purposive sampling. Here the participants were selected depending on their position in the selected institutions, years of experience, gender and capacity to provide the richest information regarding the research question. The study participants include experts and professionals of the health system and individuals familiar with PPPs in HSCM from both public and private sectors.

### 2.3.3. Inclusion and exclusion criteria

#### 2.3.3.1. Inclusion criteria

The study involved health institutions that were engaged in PPPs in HSCM in Rwanda. The participants of the study were the experts, health professionals and individuals with good understanding of/familiar with PPP from both public and private institutions. They include policy makers, implementers as well as other stakeholders from the private sectors. These were selected among GoR institutions such as MOH, MPPD, RCB (HIV/AIDS & STIs Diseases, TB & other respiratory diseases, MCCH Divisions), District Pharmacies and private wholesale pharmacies.

#### 2.3.3.2. Exclusion criteria

The institutions/companies that were not involved in the public private partnerships in health supply chain management were not considered in this study. This study was also not conducted in hospitals, health centres, clinics, dispensaries, health posts and community because of their limited involvement in PPP in HSCM.

## **2.4. Material**

### **2.4.1. Data Collection Techniques and instruments**

Data collection in this study included a semi-structured questionnaire designed to answer to the objectives of the study. After consenting (appendix 1), the questionnaires were given to respondents who read and understood the questions set and later wrote the appropriate responses in the space provided in the questionnaire. The questions were organised according to research topic to ensure that the research questions or objectives were covered throughout the questionnaire (appendix 2).

Participants were asked to rate a text message that was related to their experience with the implementation of PPPs in HSCM in Rwanda. They were asked to indicate what extent they agree or disagree with the information provided. Response options were from 1 (strongly disagree) to 5 (strongly agree) Likert scale and the positive responses were summed to produce an overall score for each scale. This five-point scale (ranging 1-5 point) was largely used in other studies conducted in low-middle income countries (40) to determine the perception of participants on influence of PPPs on provision of infrastructure (41). It is important to note that some questions were open ended with yes or no options. The data collection lasted for one month and a half (mid-July and August 2019)

## **2.5. Data Analysis**

After collecting data with target respondents, the data entry was done using MS Excel. These data were exported into SPSS for further analysis. The analysis plan included descriptive analysis, univariate and Bivariate analysis

### **2.5.1. Univariate Analysis**

For both categorical and numerical data, summary statistics were produced to describe the collected data and provide general information or insight about the study variables. Results in form of frequencies and percentage were produced and presented into tables, pie charts and graphs.

As previously mentioned, rates ranged from 1-5 meant strongly disagree and strongly agree respectively. When the score was 4- 5, they were considered as positively agreeing to the statement and the score 1-2 were considered disagreeing to the statement. The 3 scores were neutral and not considered for comparison.



### **2.5.2. Bivariate analysis**

A Bivariate method was used to scrutinize if there was significant difference in meeting up the expected results between Public and Private in partnering in the Health Supply Chain Management. similarly, evidence from bivariate analysis indicate whether there was a difference in terms of challenges encountered when implementing partnership in the Health Supply Chain Management. There T. Test statistic was used and the significance level was set at 5% and 10% to ascertain if there is difference or not in key variables.

### **3.6. Ethical Considerations**

The ethical consideration was sought to ensure that the study conducted did not cause any harm to participants. The confidentiality was kept for all the participants that filled the questionnaires in the study. All data were collected with consent. Analysis of the data was presented in a way that excludes the possibility of the identification of individuals. The approval clearances were given by the university, Institutional Review Board and National Health Research Committee (see appendices 3 and 4)

### 3. RESULTS

#### 3.1. Sociodemographic characteristics of respondents

This section provides a description of socio- demographic characteristics of participants in this the study as displayed in the table below. Most of the study respondents worked in public institutions and represented about 56 %. Among the respondents, majority were male 67 (89.3%) while female represented only 10.7%. The results of gender were due to the fact that the companies that involve in HSCM PPPs had more male experts than female. Regarding the age group, more than half respondents (57%) were aged between 35- 45 years while those aged between 25-35 years represented about 37.3%. only 5.3% of respondents were above 45 years old. Regarding the education attainment, the majority were bachelor’s holders (73.6%) and the rest were master’s holders. About the work experience, more than a half (53.3%) of the respondents had work experience of between 5-10 years in those companies and this demonstrated the richness of the information that was provided by those respondents.

*Table 2: Sociodemographic characteristics of respondents*

Characteristics	Private		Public		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
<b>Sex</b>						
Female	3	4.0	5	6.7	8	10.7
Male	30	40.0	37	49.3	67	89.3
<b>Age</b>						
25- 35 years	17	22.7	11	14.7	28	37.3
35- 45 years	15	20	28	37.3	43	57.3
>45 years	1	1.3	3	4	4	5.3
<b>Education Levels</b>						
Degree (A0)	23	30.7	32	42.7	55	73.3
Masters	10	13.3	10	13.3	20	26.7
<b>Work experience</b>						
1-5 years	7	9.3	1	1.3	8	10.7
5-10 years	16	21.3	24	32	40	53.3
> 10 years	10	13.3	17	22.7	27	36.0

### 3.2. STUDY RESULTS (FOR EACH SPECIFIC OBJECTIVE)

#### 3.2.1. Areas of PPPs in Health Supply Chain Management in Rwanda

This section outlines main findings related to different areas of PPPs in HSCM according to the respondents' perceptions. Overall, the delivery area of health commodities was the most reported area of PPP in HSCM at about 99%. The supply of IT supplies and equipment area (operate) represented 53% of the respondents. The finance area in HSCM in Rwanda was reported by respondents at 52%. This involves finance of HSCM activities in terms of money and health commodities. The maintenance area represented 40% of the respondents. In designing of projects, this was reported to be 35% whereas for build area, construction of health facilities/buildings was the least reported by respondents with 31%. There different Areas used in HSCM in Rwanda are as shown on figure 4 below.

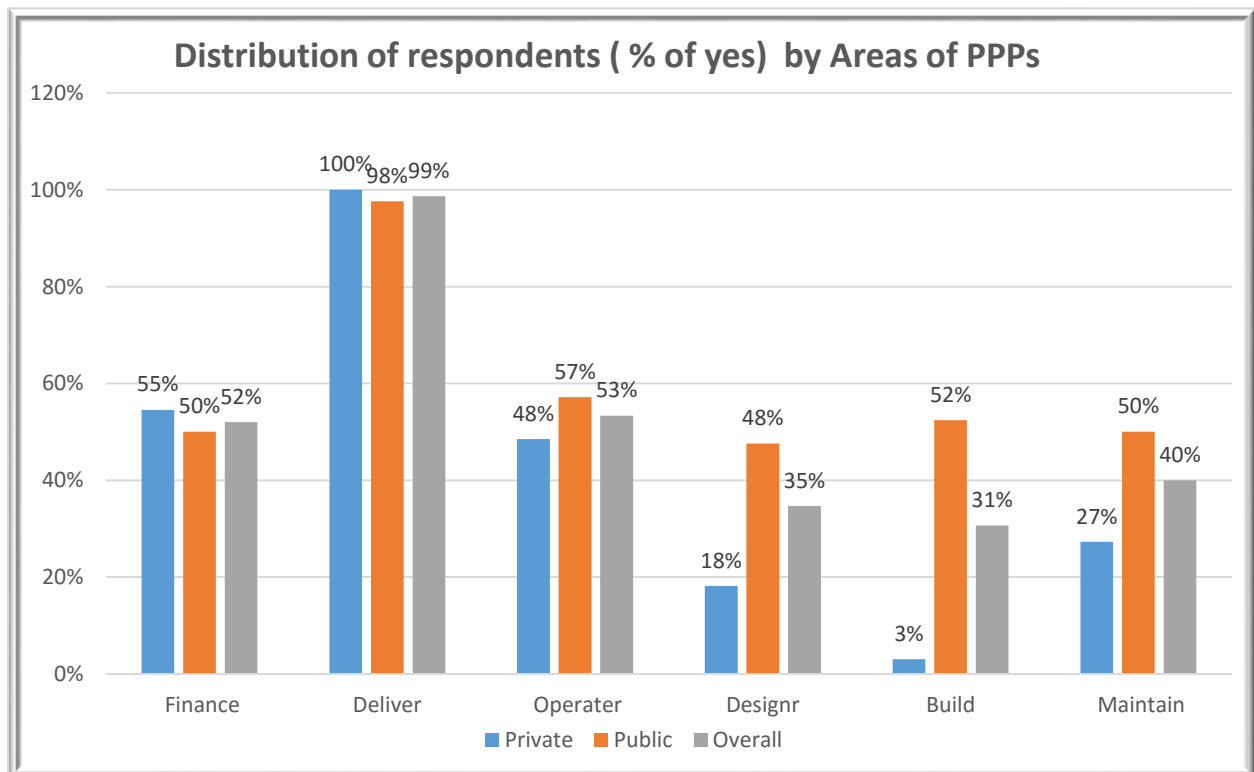


Figure 4: Distribution of respondents (% of yes) by Areas of PPPs in Health Supply Chain Management in Rwanda

### 3.2.2. Contributions of institutions to PPPs in HSCM

This section describes the perspective of the respondents with regard to the contributions of different institutions (both private and public) to PPPs in HSCM in Rwanda. The majority of the respondents representing 99% reported that PPPs contributed to the availability of health commodities. More than four fifth (84%) showed that PPPs improve cost effectiveness to patients in terms of treatment cost. PPPs have contributed in transportation services for pharmaceutical products and the was indicated by respondents representing 71%. Less than a half (49%) showed that PPPs are involved in financing of HSCM projects. The contribution of PPPs on infrastructure was least reported (36%). The figure 5 below shows the contribution of the company in PPPs

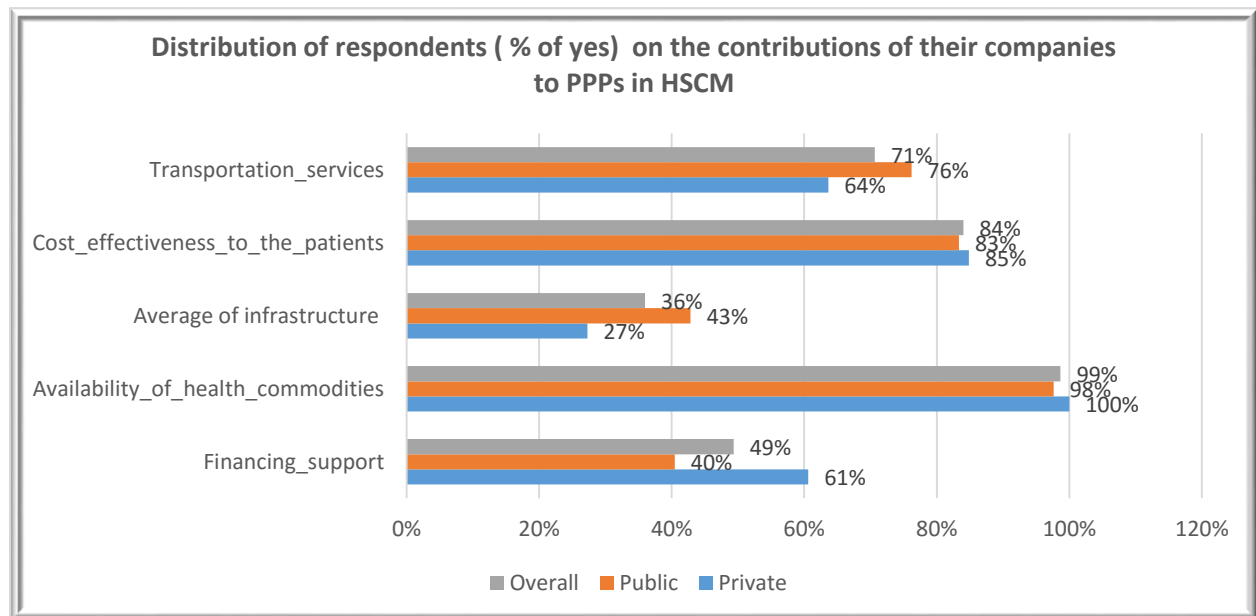


Figure 5: Distribution of respondents (% of yes) on the contributions of their companies to PPPs in HSCM

### 3.2.3. The benefits of the PPPs in Health Supply Chain in Rwanda

This study explored the views of participants with regard to the benefits of PPPs in HSCM in Rwanda. Findings revealed that nine in ten (90.6%) of the respondents reported that PPPs have resulted to the availability of medicines, medical devices and medical equipment (health commodities) whereas 82% of respondents reported transportation services as also the main contribution of PPPs in HSCM in Rwanda. Similarly, almost 80 % of respondents reported that the PPPs have improved the cost effectiveness in treatment of diseases (e.g. availability of hepatitis C medicines at a lower cost). More than three quarters (77.4%) of the respondents agreed that PPPs have resulted to the improved financing of health supply chain projects, while three

fifth (62.6%) of the total number of the study interviewed reported that PPPs in HSCM contributed to availability of health infrastructure. The table below indicates the views of participants in relation to the benefits in HSCM.

*Table 3: The benefits of the PPPs in health supply chain management in Rwanda*

Rates (1-5, with 1 as strongly disagree and 5 as Strongly agree)	Private		Public		Grand Total		Final decision (rate 4&5 combined)
	Number	Percentage	Number	Percentage	Number	Percentage	
<b>Financing of health supply chain projects</b>							
1=Strongly disagree	0	0.0%	5	6.7%	3	4.0%	
2	0	0.0%	5	6.7%	3	4.0%	
3	13	17.3%	9	12.0%	11	14.7%	
4	39	52.0%	33	44.0%	35	46.7%	77.4%
5=strongly agree	22	29.3%	23	30.7%	23	30.7%	
<b>Availability of health commodities</b>							
2	0	0.0%	2	2.7%	1	1.3%	
3	5	6.7%	7	9.3%	6	8.0%	
4	11	14.7%	20	26.7%	16	21.3%	90.6%
5	59	78.7%	46	61.3%	52	69.3%	
<b>Health infrastructure</b>							
1	7	9.0%	1	1.3%	3	5.0%	
2	0	0.0%	7	9.3%	4	5.0%	
3	20	27.0%	22	29.3%	21	28.0%	
4	28	36.0%	23	30.7%	25	33.3%	62.6%
5	20	27.0%	22	29.3%	22	29.3%	
<b>Cost effectiveness to the patients</b>							
1	2	3%	0	0%	1	1	
2	4	9%	4	5%	5	7	
3	0	0%	16	21%	9	12	
4	32	42%	29	38%	30	40	80%
5	33	45%	27	36%	30	40	
<b>Transportation services</b>							
1	2	3%	1	2%	2	3%	
2	5	6%	4	5%	4	5%	
3	9	12%	7	10%	8	11%	
4	32	42%	43	57%	38	51%	82%
5	27	36%	20	26%	23	31%	
<i>Note: We have combined the 4<sup>th</sup> and 5<sup>th</sup> score rate to inform the decision</i>							

### 3.2.4. Opportunities available for PPPs in Health Supply Chain Management in Rwanda

This part illustrates the opportunities that do exist for smooth implementation of the PPPs in HSCM in Rwanda. The more than nine tenth (94.7%) reported that the political will from the government is the enabling factor for implementation of PPPs in HSCM. The majority of the respondents (92%), also reported that the existence of active private pharmaceutical institutions is key for the effective running of PPPs in HSCM. Four fifth of the respondents indicated that a well-structure health supply chain (82.7%) and Universal health coverage (80%) are crucial for the implementation of PPPs in HSCM. The least reported opportunity was the e-health systems (e-procurement, online importation) representing 76%. The table below shows the opportunities available for the implementation of PPPs in HSCM in Rwanda and their rating.

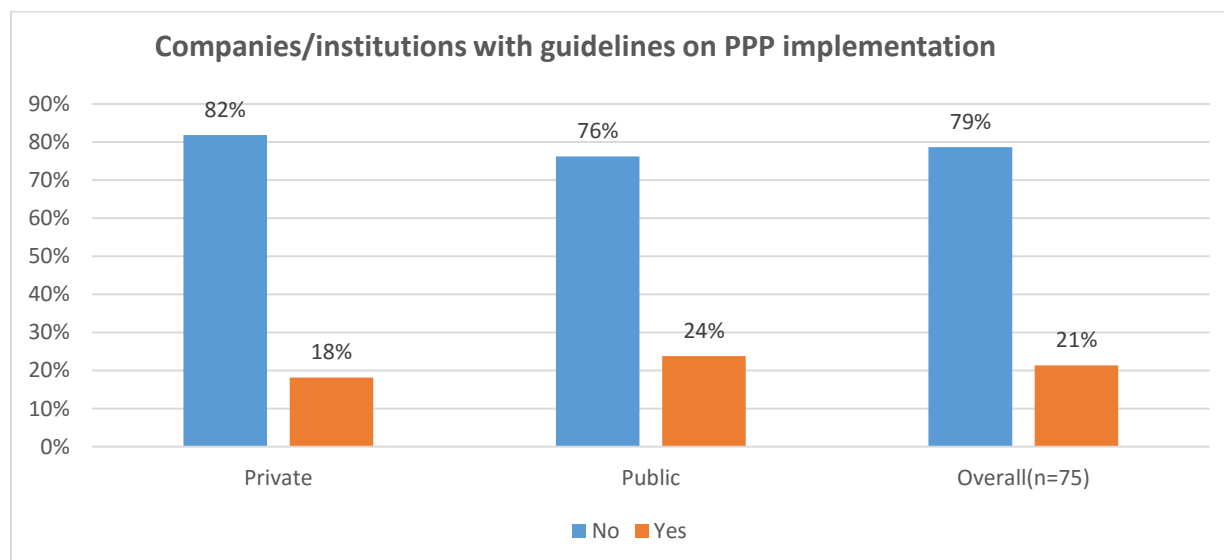
Table 4: Opportunities available for PPPs in Health Supply Chain Management in Rwanda

Rates (1-5, with 1 as strongly disagree and 5 as Strongly agree)	Private		Public		Grand Total		Final decision (rate 4&5 combined ) in %
	Number	Percentage	Number	Percentage	Number	Percentage	
<b>Political will</b>							
3	5	6.7	4	5.3	4	5.3	
4	16	21.3	23	30.7	20	26.7	94.7
5	54	72.0	48	64.0	51	68.0	
<b>Well-structure health supply chain</b>							
1	2	2.7	0	0.0	1	1.3	
2	5	6.7	5	6.7	5	6.7	
3	9	12.0	5	6.7	7	9.3	
4	34	45.3	36	48.0	35	46.7	82.7
5	25	33.3	29	38.7	27	36.0	
<b>Active private pharmaceutical sector</b>							
3	7	9.0	5	7.1	6	8.0	
4	34	45.5	32	42.9	32	42.7	92.0
5	34	45.5	38	50.0	37	49.3	
<b>Universal health coverage</b>							
1	2	2.7	0	0.0	1	1.3	
2	2	2.7	0	0.0	1	1.3	
3	16	21.3	10	13.3	13	17.3	
4	23	30.7	36	48.0	30	40.0	80.0

5	32	42.7	29	38.7	30	40.0	
<b>e-health systems (e-procurement, online importation)</b>							
1	0	0.0	4	5.3	2	2.7	
2	0	0.0	16	21.3	9	12.0	
3	2	2.7	11	14.7	7	9.3	
4	25	33.3	26	34.7	26	34.7	76.0
5	48	64.0	18	24.0	31	41.3	
<i>Note: We have combined the 4<sup>th</sup> and 5<sup>th</sup> score rate to inform the decision</i>							

### 3.2.5. Companies/institutions have practice guidelines on PPP implementation

This section was seeking the existence of guidelines possessed by institutions in regard to the implementation of PPPs in HSCM in Rwanda. Most of the respondents (79%) indicated that they did not have guidelines or procedures in place for managing implementation of PPPs. Only 21% of the respondents showed that they did possess guidelines on the PPPs implementation. The figure below shows the findings on guidelines availability for PPPs implementation



**Figure 6: Institutions that have practice guidelines on PPP implementation**

### 3.2.6. PPP projects/activities in health supply chain management meet their expected results

This section shows the results for the PPPs projects that were executed. The majority of the respondents indicated that the PPPs projects in HSCM that met their expected results during implementation and this represented 72% of the respondents.

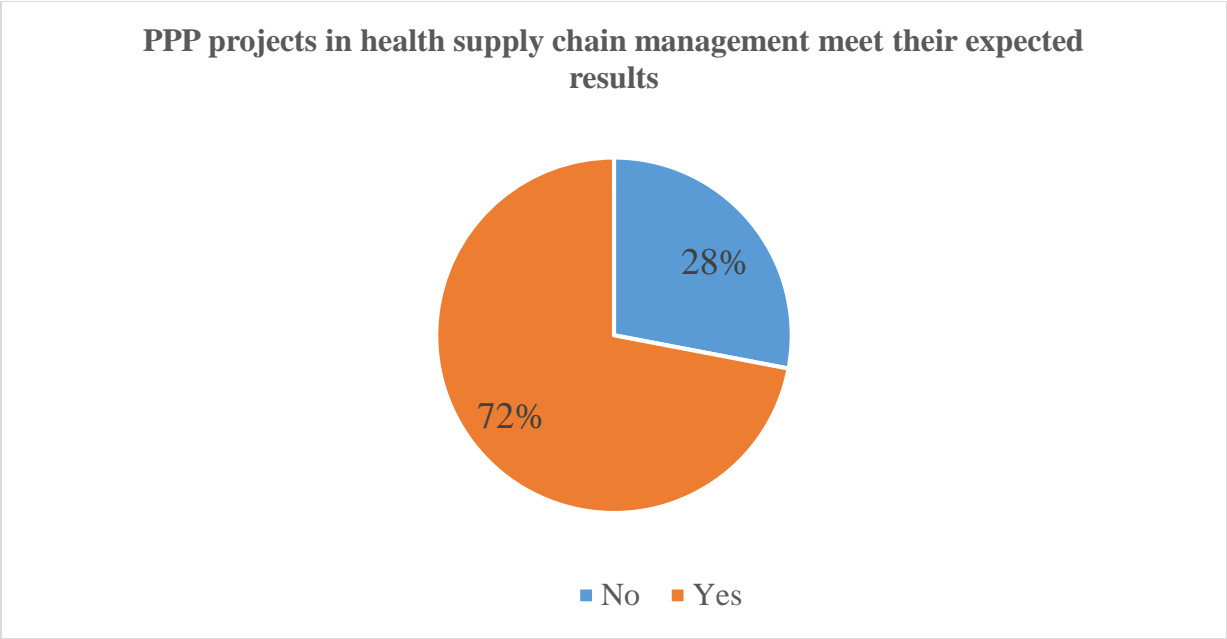


Figure 7: PPP projects in health supply chain management meet their expected results

**3.2.7. Existence of challenges encountered when implementing PPPs in health supply chain management (HSCM) in Rwanda**

This section was indented to find out from the participants’ views if there exist challenges in execution of PPPs in HSCM. Most of the respondents representing 95 % agreed that there were impediments in the execution of PPPs Projects as shown in the figure below.

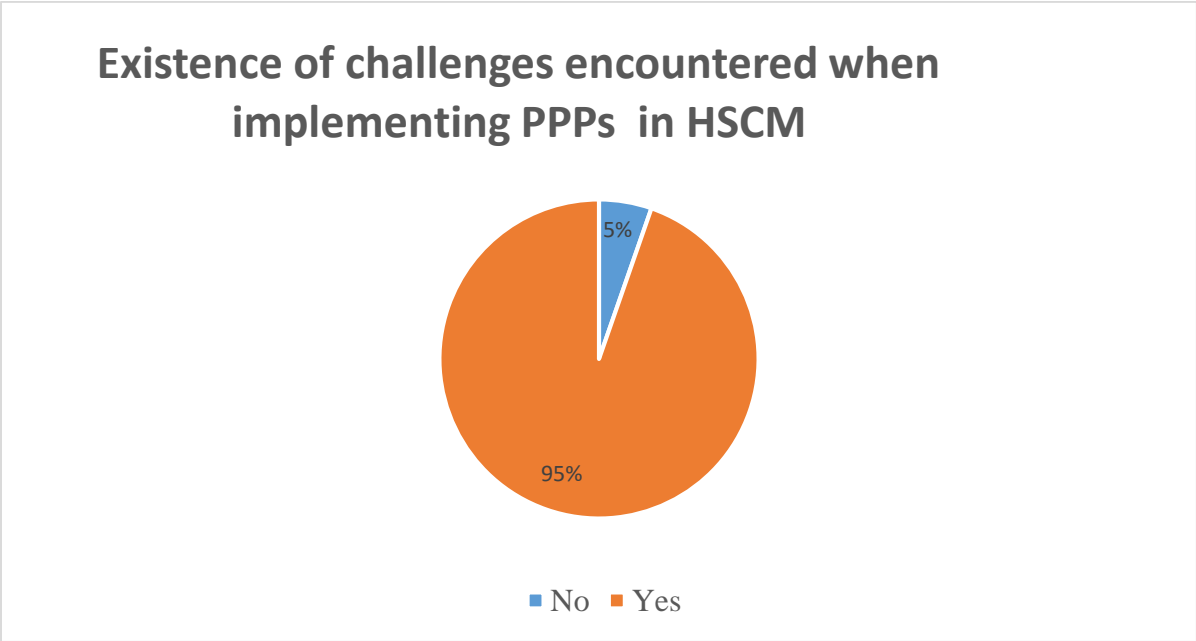


Figure 8: Existence of challenges encountered when implementing PPPs in HSCM in Rwanda



### 3.2.8. Challenges that hinder private sector engagement in HSCM in Rwanda

This part demonstrates the point of views on existing challenges hindering the implementation of PPPs in HSCM. The most critical challenge highlighted by respondents was inadequate discussion and no formal platforms or systems engage both public and private. The respondents showed that there was insufficient information sharing between public and private and this was representing 83.7%. Another major issue was complex procurement requirements for medical products and equipment by public institutions in private sector and this represented 73.3% of the respondents. Ineffective management/coordination and clear roles and responsibilities between Public institutions and key stakeholders was also another issue that was reported by 67.6% of the respondents. The challenges of contracts including delay payment, clauses favouring one part etc. was pointed out to be hindering the implementation of PPPs in HSCM representing 64.8% of the respondents. The least issue reported was lack of regulations/laws about PPPs in HSCM representing 58.1 % of the respondents. The table below shows the details of the challenges.

Table 5: Challenges that hinder private sector engagement in HSCM in Rwanda

Rate (1-5, with 1 as strongly disagree and 5 as Strongly agree)	Private		Public		Grand Total		Final decision (rate 4&5 combined) in %
	Number	Percentage	Number	Percentage	Number	Percentage	
<b>Lack of Regulations/laws about PPPs in HSCM</b>							
1	2	3.1	0	0.0	1	1.4	
2	12	15.6	14	19.0	13	17.6	
3	26	34.4	11	14.3	17	23.0	
4	28	37.5	32	42.9	30	40.5	58.1
5	7	9.4	18	23.80	13	17.6	
<b>Limited dialogue and no formal platforms or systems for public and private engagement (Information Sharing)</b>							
2	7	9.4	11	14.3	9	12.2	
3	5	6.3	2	2.4	3	4.1	
4	19	25.0	32	42.9	26	35.1	83.7
5	45	59.4	30	40.5	36	48.6	
<b>Ineffective coordination and clarity of roles and responsibilities between Public institutions and key stakeholders</b>							
1	5	6.3	0	0.0	2	2.7	
2	14	18.8	7	9.5	10	13.5	
3	12	15.6	13	16.7	12	16.2	
4	35	46.9	36	47.6	35	47.3	67.6

5	9	12.5	20	26.2	15	20.3	
<b>Contracting Issues</b>							
1	0	0.0	4	4.8	2	2.7	
2	12	15.6	12	16.7	12	16.2	
3	9	12.5	14	19.0	12	16.2	
4	31	40.6	27	35.7	29	37.8	64.8
5	23	31.3	18	23.8	20	27.0	
<b>Complex procurement requirements for medical Products and equipment by public institutions</b>							
1	0	0	2	2.4	1	1.3	
2	9	12.1	9	11.9	9	12.0	
3	13	18.2	5	7.1	9	12.0	
4	16	21.2	25	33.3	21	28.0	74.6
5	37	48.5	34	45.2	35	46.6	
<i>Note: We have combined the 4<sup>th</sup> and 5<sup>th</sup> score rate to inform the decision .</i>							

### 3.2.9. Measures that can be put in place to improve PPPs in health supply chain management in Rwanda

This section shows the respondents' views on the measures/strategies to improve the PPPs in HSCM through mitigation of the aforementioned challenges. The majority of the respondents (93.3%) reported that for PPPs in HSCM to be more effective, there should be effective management/coordination of such PPPs. Again there should be high improved dialogue and formal platforms as reported by 90.6% of the respondents. More than four fifth reported that enhancing transparencies from all partners involved in PPPs would lead to effective implementation of PPPs and this was reported by 89.3% of the respondents. The respondents also indicated that trust between parties in PPPs (84.0%) and appropriate risk allocation (financial) (81.3%) will lead to improved performance of PPPs in HSCM. The respondents also mentioned that there should be laws and regulations about PPPs in HSCM that are flexible to all parties and make known by concerned people. This was reported by 65.4% of the respondents. Finally, the issue of contracts was indicated to be solved by having well prepared contract document with equally shared risks and this was reported by respondents representing 64.0%.

Table 6: Measures that can be put in place to improve PPPs in health supply chain management in Rwanda

Rates (1-5, with 1 as strongly)	Private		Public		Grand Total		Final decision (rate 4&5 combined) in %
	Number	Percentage	Number	Percentage	Number	Percentage	

disagree and 5 as Strongly agree)							
<b>Foster transparency from all partners</b>							
3	14	18.2	4	4.8	8	10.7	
4	11	15.2	28	38.1	21	28.0	89.3
5	50	66.7	43	57.1	46	61.3	
<b>Appropriate risk allocation (financial)</b>							
2	0	0.0	4	4.8	2	2.7	
3	9	12.1	14	19.0	12	16.0	
4	32	42.4	18	23.8	24	32.0	81.3
5	34	45.5	39	52.4	37	49.3	
<b>Effective management/coordination of PPPs</b>							
2	2	3.0	2	2.4	2	2.7	
3	7	9.1	0	0.0	3	4.0	
4	25	33.3	20	26.2	22	29.3	93.3
5	41	54.5	53	71.4	48	64.0	
<b>Trust between parties in PPPs</b>							
2	4	6.1	4	4.8	4	5.3	
3	9	12.1	7	9.5	8	10.7	
4	32	42.4	14	19.0	22	29.3	84.0
5	30	39.4	50	66.7	41	54.7	
<b>Well prepared contract document</b>							
1	2	3.0	0	0.0	1	1.3	
2	11	15.2	9	11.9	10	13.3	
3	21	27.3	13	16.7	16	21.3	
4	30	39.4	28	38.1	29	38.7	64.0
5	11	15.2	25	33.3	19	25.3	
<b>Put and make aware laws and regulations about PPPs in HSCM</b>							
1	0	0.0	1	2.4	1	1.3	
2	11	15.2	9	11.9	10	13.3	
3	18	24.2	13	16.7	15	20.0	
4	30	39.4	29	38.1	29	38.7	65.4
5	16	21.2	23	30.9	20	26.7	
<b>Improved dialogue and formal platforms</b>							
2	2	3.0	7	9.5	5.0	6.7	
3	2	3.0	2	2.4	2.0	2.7	
4	25	33.3	36	47.6	31.0	41.3	90.6
5	46	60.6	30	40.5	37.0	49.3	
<i>Note We have combined the 4<sup>th</sup> and 5<sup>th</sup> score rate to inform the decision .</i>							

### 3.2.10. Key Variables Tested

Table 7: Key Variables tested

Key Variables	Private		Public		Difference	P-value
	Number (33)	(% yes)	Number (42)	(% yes)	(% yes)	
Practices and guideline to implement PPPs	6	18.2	10	23.8	5.6	0.561
Achieve results from PPPs in HSCM	27	81.8	27	64.3	-17.5	0.096
Encountered challenges to implement PPPs in HSCM	31	93.9	40	95.2	1.3	0.807

Using the standard  $\alpha = 0.05$  cut-off, the null hypothesis is rejected when  $p < .05$  and not rejected when  $p > .05$ . Note that the  $p$ -value does not, in itself, support reasoning about the probabilities of hypotheses but is only a tool for deciding whether to reject the null hypothesis. Therefore, from the table above,  $p > .05$  and thus the null hypotheses were accepted. Thus, there were no practical guidelines to implement PPPs in HSCM. Results from PPPs in HSCM were achieved. And the respondents encountered challenges to implement PPPs in HSCM.

### 3.2.11. Experiences shared about PPPs in HSCM

The respondents shared their experience or testimony not captured in the questionnaire about PPPs in HSCM. One said that PPPs in supplying of hepatitis C; PPP in supplying Non Communicable Diseases medicines, & PPP with Abbott in distribution of lab reagents for Viral Load, Biochemistry & Haematology contributed allot for health public. Another said leasing of medical equipment where health facilities do purchase them and but rather the reagents.

Another replied that PPPs in faith based organizations has led to accomplishment of missions. Others said that successfully implemented collaboration between DP and private health posts by putting them into the same conditions as other public health facilities and for example during active distribution we transport health commodities for them together with the health commodities of the health centres they belong to. PPP in regards with health supply chain management is a key approach to increase supply chain performance through readily commodity availability and accessibility to the public.

## **4. DISCUSSION**

### **4.1. Different Areas of PPPs in Health Supply Chain Management in Rwanda**

This study found that different areas of PPPs exist in HSCM in Rwanda. These PPP areas include Finance, Maintain, Operate & Deliver, Design and Build. The most predominant PPP area was, the delivery of health commodities, representing 99 %. Other areas were the supply of IT supplies and equipment (operate) (53%), the finance area (52%) the maintenance area (40%), designing of projects (35%) and build area, construction of health facilities/buildings (31%).

Similar findings were seen in the study that was conducted in Canada by David Barrows, Ian Macdonald and Atipol Supapol, where it was found that PPPs were involved in designing and building areas of hospitals and the delivery of non-clinical services which was reported at 61%. However, these results are different from those of this study in relation to areas like financing, delivery and maintenance as these were not discovered in PPPs of that study.

Furthermore, the similarity of findings of this study was seen in the study that was conducted in Udyapur, Nepal by District Health Office (DHO), where they came up with the findings that the private companies were involved in delivering and distributing medicines and medical supplies to health facilities. It was also found that such medicines and medical supplies were transported and taken with indispensable intentions (22). In this study the wholesale private pharmacies were involved in the supply, distribution and transportation of medicines and medical supplies to public institutions.

The results of this study were also similar to those of the study that was conducted by Global Health Group from University of California, San Francisco in partnership with PwC Global Healthcare(24) in as far as public-private partnerships (PPPs) in health was concerned. It was found that the private institutions had the mainly in charge for; providing financial support or co-financing the capital cost or project, maintenance of buildings and equipment required to offer health supply chain management services, organization and provision of specific HSCM services; delivery of equipment, the design of the facilities, building of new, or renovation of existing, buildings (24). In this study the private companies involved in the maintenance and building of health facilities like health posts where the Ministry of Health worked in collaboration with development partners like One Family Health Project.

The results of this study showed that they are similar to those of the study that was conducted in Rwanda by USAID African Strategies for Health (ASH) Project(30), where it was found that

Private sector engagement and health PPPs in Rwanda for instance between MOH and One Family Health resulted in construction of 92 health posts; availability medicines and other services for malaria, HIV and AIDS, EPI programs and private providers played a key role. The MOH and faith-based organization hospitals and health centers were built under the PPPs framework; MPPD and private wholesale pharmacies involved PPPs for medicines and medical supplies delivery (30).

#### **4.2. Contributions of their companies to PPPs in HSCM in Rwanda**

The findings of this study showed the perception of respondents with regard to the contribution of their respective institutions in PPPs. Overall, respondents agreed that PPPs contributed in different dimensions of HSCM, including availability of health commodities (99%), cost effectiveness of treatment to patients (85%), transportation services (71%), finance (49%) and health infrastructure (36%). These findings of this study were consistent with previous studies conducted in LMICs. According to the research carried out in Nepal by District Health Office (DHO) (22), it was found that the private companies were in charge for delivering and distributing medicines and medical supplies to health facilities including hospitals and health centers. It was found that medicines and medical supplies were transported and taken with required attention to the respective health facilities (22).

Similarly, evidence from this study corroborates existing evidence in Rwanda. A recent study commissioned by USAID, African Strategies for Health (ASH) Project (30) found that the private sector engagement in HSCM has supported to the improvement of the maintenance (for instance medical equipment), procurement and distribution of health commodities. PPPs also aided to gain efficiencies within the Rwandan's health system (11). The findings of this study also indicate that the private investors were also actively involved in maintenance and supply of equipment (here referred to as maintenance and supply/operate Area). For example, evidence revealed that the Government of Rwanda signed a contract arrangement with Abbott Company in installing laboratory equipment, supply of medical devices and reagents to health facilities in Rwanda (42). Furthermore, some private wholesale pharmacies had a formal contract/framework agreement (through GOR public tenders) with the MPPD and district pharmacies to support the supply of essential and non-essential medicines and medical supplies to those institutions during shortage or stock-outs (10).

### **4.3. Benefits of PPPs in HSCM in Rwanda**

From the results of this study, the respondents revealed that there were benefits of using PPPs in HSCM in Rwanda. The benefits that the respondents indicated were availability of health commodities (90.6%), transportation services involved in HSCM (82%), cost effectiveness to patients in relation to their treatment (80%), financing of health supply chain projects (77.4%), and Health infrastructure (62.6%). The Government of Rwanda has benefited from HSCM PPPs where cost of treatment for some health conditions has been reduced. These include treatment of Hepatitis C condition where the private sector plays a role in availability, accessibility and affordability of the medicines to treat such condition. The private sector also plays a role in financing of HSCM activities organized by the public health institutions by supplying medicines or providing funds for such activities. Private pharmacies have also been seen in distribution and transportation of medicines to district pharmacies free of charge in implementing the HSCM PPPs.

Similar study that was conducted by Caines, Karen and Louisiana Lush in Sri Lanka, Uganda and Zambia (35), found that the involvement of various pharmaceutical companies through PPPs aided to effective medicines availability very significantly in those three concerned study countries (35). In Zambia, there was also expansion of access to malaria drug Coartem® at an affordable price via partnership with private pharmacies and retail outlets that were selected (35).

The results of this study were also similar to the study that was conducted by Africa Health Forum in Gambia, where it was found that the MOH's partnership with Riders made a greatly reliable and cost effective countrywide health transportation network (36).

Furthermore, in the research that was carried out in Tanzania by Alfred Mihayo about the role of PPPs in improved health care services, it was revealed that PPPs resulted to decreased distance, to accessibility and availability of medicines and medical supplies, annulled the cost of services, improved kinds of services delivered, decreased service time, and augmented service reliability. These results were similar to those of this study especially on accessibility and availability of medicines and medical supplies and decreased cost of services. However, differences appeared on financing, health infrastructure and transportation services that were not indicated in that research of Alfred Mihayo (34). In Rwanda for instance, the PPPs have led to cost effectiveness to patients. The patients at first could not afford the hepatitis C medicines. They were expensive

and not accessible. With PPPs, the Hepatitis C medicines were made accessible, available and affordable to the patients and hence real sense of cost effectiveness to patients as a result of PPPs. This was also in line with the GOR vision 2020 where PPPs contributed to the economy scale of the country by providing quality infrastructure, services delivery and pharmaceutical products, and helped in achieving GOR's goals/objectives in Vision 2020, Vision 2050 and the EDPRS (3).

The GOR also has done tremendous efforts in implementing PPPs in HSCM especially in the availability of health commodities at affordable cost for instance hepatitis C health commodities and these available in selected wholesale pharmacy (ies). There has been also signing agreement between GOR with private companies in construction of health facilities for instance, health posts that have been build country wide especially in remote areas.(30) This is also in line with the results of this study.

The findings of this research were similar to some of the finding of the study conducted by UN commissions(27) globally on PPPs in Health supply chain, where it was found that PPPs augmented availability of reduced cost quality medicines and medical supplies and ensuring their sustainable quality, enhanced the effective use of medicines and medical supplies and increased funds and resources for health commodities and medicinal devices (27).

#### **4.4. Opportunities available for PPPs in Health Supply Chain Management in Rwanda**

This study found out that there were opportunities available for the implementation of PPPs in HSCM in Rwanda. These include the political representing 94.7% of respondents, active private pharmaceutical sector (92%), a well-structure health supply chain (82.7%), of a well-functioning e-health systems (e.g. e-procurement, online importation) and high enrolment and health insurance schemes, representing 76% and 80% respectively. The GOR is dedicated to offer a smooth environment for the investment in all sectors including HSCM. This has led to private pharmacies to frequently opening and operating and hence able to contribute in PPPs of HSCM.

The study conducted by Global Health Group at the University of California, in relation to public-private partnerships (PPPs) in health care, it came up with some similar opportunities for PPPs in HSCM. In that study, it was found that the Key enabling conditions or opportunities for PPPs in healthcare were; political will, legislative and regulatory framework, transparency, public sector



capacity, contract completeness, flexibility and governance and Broad stakeholder engagement.(24).

#### **4.5. Company/institution have practice guidelines on PPP implementation**

The results of this study revealed that from all respondents, the availability of guidelines on the PPPs implementation was at 21%. Most of the respondents (79%) replied that they had no guidelines on how to deal with PPPs HSCM projects. This is an issue as the implementation of the PPPs would be difficult and reach the expected targets.

Similarly, in the study that was conducted in Canada by David Barrows, Ian Macdonald and Atipol Supapol, which found out that the majority of respondents did not have a working knowledge on PPPs (56%) (21).

#### **4.6. PPP projects/activities in health supply chain management meet their expected results**

The findings of this study found that the implementation of PPPs projects in HSCM that met their expected results as indicated by 72% of the respondents. This is an indication that the PPPs in HSCM are crucial to public at large.

In the study that was conducted in South Africa, it was found that the respondents the private sector gave security in that they executed the project effectively and efficiently within cost, on time, and to the specifications. However, the government can open doors, provide legislation, get things passed, but they rarely can execute (31).

#### **4.7. Existence of challenges encountered when implementing PPPs in health supply chain management (HSCM) in Rwanda**

The findings of this study came up with 95 % of the respondents indicating that there were challenges in the implementation of PPPs Projects.

According to the study that was conducted in Canada by Professor David Barrows Professor Ian Macdonald and Professor Atipol Supapol, it was found that PPP arrangements used in resulted in issues/challenges especially in the delivery of care by 58% and contracts by 24% (21).

Furthermore, and similarly in the study that was conducted in Iran by Ehsan Zarei, Tara Moghaddasfar, Vahid Eidkhani, it was found that there were challenges that faced PPPs in health

sector including the complexity, low-quality evaluation and irregular supervision, lack of transparency, and inadequate coordination (26).

#### **4.8. Challenges that hinder private sector engagement in HSCM in Rwanda**

The findings of this study indicated that there were challenges in the implementation of PPPs projects in HSCM. These were limited dialogue and no formal platforms or systems for public and private engagement (Information Sharing) (83.7%), complex procurement requirements for medical Products and equipment by public institutions (73.3%), ineffective coordination and clarity of roles and responsibilities between Public institutions and key stakeholders (67.6%), contracting Issues (64.8%) and lack of regulations/laws about PPPs in HSCM (58.1 %). These challenges bring attention that need to be considered so that they can be mitigated and hence have smooth PPPs in HSCM.

This was to some extent similar to the study that was conducted in Canada by Professor David Barrows Professor Ian Macdonald and Professor Atipol Supapol, where it was found that PPP arrangements used to design, build, finance and maintain Brampton Civic Hospital resulted in issues/challenges with the delivery of care by 58% and Contracts by 24% (21).

In the study that was conducted in Germany, it was found that PPPs projects faced challenges namely; poor management of the PPPs, conflicts of interests between the public and the private sectors, accountability, risk management, costs of regulation and transaction costs (25). The results of that study were difference to this one except for poor management of PPPs that was also identified in this study.

Similar results were found in the study that was conducted in Iran by Ehsan Zarei, Tara Moghaddasfar , Vahid Eidkhani , it was found that the challenges that faced PPPs in health sector were complexity, low-quality evaluation and supervision, lack of transparency, inadequate coordination, neglecting justice and public interest, lack of flexibility, lack of experience and practical knowledge, insufficient financial resources, lack of appropriate risk assessment, inadequate cooperation of stakeholders, partner choice restrictions, and paying insufficient attention to the staff (26).

In the study that was conducted by UN Commissions globally on PPPs in Health supply chain, the challenges were lack of control over resources, delayed decision making by public sector,

contracting issues, payment terms and information sharing issues (27). These were somehow similar to those of this study like issues of contracting, and information sharing.

#### **4.9. Measures that can be put in place to improve PPPs in health supply chain management in Rwanda**

The findings of this study showed that there are measures/strategies to improve the PPPs in HSCM and these were to enhance effective management/coordination of PPPs (93.3%), to improved dialogue and formal platforms (90.6%), to foster transparencies from all partners (89.3%), trust between parties in PPPs (84%), appropriate risk allocation (financial) (81.3%), put and make aware laws and regulations about PPPs in HSCM (65.33%) and well prepared contract document (64%). Though there were challenges in implementing PPPs in HSCM, the respondents gave their views on the measures that could be taken to mitigate the existing challenges.

The results of this study were similar to the study that was conducted in Iran by Ahmad Sadeghi, Omid Barati, Peivand Bastani, Davood Daneshjafari, and Masoud Etemadian, where it was found that the strategies to develop and promote PPPs in the provision of hospital services in Iran were the changes in policies and laws, socio-cultural changes, improvement of mechanisms and current processes, and financial and capital capacity building (23).

Similar findings to this study were also found in the study that was conducted by UN Commissions(27) globally on PPPs in Health supply chain, where it was found that the strategies or measures to improve PPPs in HSCM were to start with realistic vision of what can be attained, build partnership based on the mutual trust, foster transparency from all parties, demonstrate commitment from PPPs, learn from other sectors, advocate for changes (27).

#### **4.10. Experiences shared about PPPs in HSCM**

The respondents shared their experience or testimony not captured in the questionnaire about PPPs in HSCM. One said that PPPs in supplying of hepatitis C; PPP in supplying Non Communicable Diseases medicines, & PPP with Abbott in distribution of lab reagents for Viral Load, Biochem & Hematology contributed allot for health public. Another said leasing of medical equipment where health facilities do purchase them and but rather the reagents. Another replied that PPPs in faith based organizations has led to accomplishment of missions.

Others said that successfully implemented collaboration between DP and private health posts by putting them into the same conditions as other public health facilities and for example during active distribution we transport health commodities for them together with the health commodities of the health centers they belong to. PPP in regards with health supply chain management is a key approach to increase supply chain performance through readily commodity availability and accessibility to the public. All these experiences were valid as supported for instance, by Memorandum of Understanding between MoH and Abbot company (42).

## **5. CONCLUSION AND RECOMMENDATIONS**

### **5.1. Conclusion**

From the study results, it was found that private sector through PPPs plays a great role in the health supply chain management in Rwanda. The engagement of the private sector can increase the financial support in terms of financing the projects of HSCM, delivery or supply of health commodities and equipment. Through PPPs in HSCM, there has been also effective and affordable cost of treatment to patients, availability of medicines and accessibility of health services. Thus the GOR should keep on use of PPPs when appropriate.

For the purpose of taking the advantages of potentially, new opportunities and resources, there was a need to mention the existing partnerships and successful PPPs and to focus on developing new partnerships that can advance country-level goals in HSCM. However, there were challenges that hinder the implementation of PPPs in HSCM which should be resolved for the benefit of the concerned parties and the public general.

Therefore, with PPPs in HSCM, there may be sustainable financial support, affordability of treatment costs to patients and availability of medicines and equipment in public. This calls for the public decision makers in different levels to greatly and always consider the involvement of private sector in HSCM.

### **5.2. RECOMMENDATIONS**

#### **5.2.1. Recommendations to the GOR**

- Promote and enhance significant engagement of all private companies in the development of HSCM PPP policies, laws, regulations and guidelines so as to guarantee awareness, ownership of the PPPs.
- Strengthen the coordination and collaboration between the public and private sectors in HSCM on regular basis so that private sector is participative in health sector activities especially financing.
- Establish and discover the possibility for privatization of medicines procurement and distribution both national and internationally by public institutions.

### **5.2.2. Recommendations to Private Sector**

- Promote and participate in the formulation of policies, laws, regulations and guidelines on PPPs especially in HSCM
- Potentially initiate and enhance their contributions especially financial support in HSCM PPPs
- Advocate for awareness, ownership and participation in PPPs of HSCM

### **5.2.3. Recommendations to other researchers**

- Conduct further research on PPPs in SCHM in un covered study areas

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## **7. APPENDICES**

## **APPENDIX 1: INFORMED CONSENT**

### **Participation information and consent form for Key Informants**

**Title of study:** Evaluation of Public-Private Partnerships (PPPs) in Health Supply Chain Management in Rwanda

#### **Name and contact information of principal investigator**

BYOMUHANGI EVARISTE

University of Rwanda

EAC Regional Centre of Excellence for Vaccines, Immunization and Health Supply Chain Management

#### **Introduction**

I am conducting a study about Evaluation of Public-Private Partnerships (PPPs) in Health Supply Chain Management in Rwanda. I would like to tell you about this study being conducted. The purpose of this consent form is to give you the information that you will need to help you decide whether or not to participate in the study. Please feel free to ask any questions about the purpose of the research, what happens if you participate in the study, the possible risks and benefits, your rights as a volunteer, and anything else you would like to know about the research. When we have answered all your questions to your satisfaction, you may decide to be in the study or not. This process is called 'informed consent'. Once you understand and agree to be in the study, I will request you to write your name and sign on this form. Your decision to participate is entirely voluntary and you may withdraw from the study at any time without necessarily giving a reason for your withdrawal. Refusal to participate in the study will not affect the services you are entitled to in your institution.

#### **Purpose**

The study will evaluate PPPs in Health supply chain management in Rwanda and come up with the findings and recommendations that will help the decision makers and stakeholders to streamline the implementation of PPPs.

## **Procedure**

This study will include visiting sites where participants work. The participant will be asked to participate in an interview. I am inviting you to take part in this activity, because I feel that your experience can contribute much to my understanding about the PPPs in Health supply chain management in Rwanda. If you accept, you will be asked several questions related to the study topic. You will not be asked any personal or sensitive questions or share any knowledge that you are not comfortable sharing. I anticipate that this interview will last for about thirty minutes.

## **Benefits**

There will be no direct benefit to you from participating in this activity.

## **Risks**

Your participation in this research is voluntary. It is your choice whether to participate or not. If you choose not to participate, there will be no negative consequences to you. If you decide to participate, you may change your mind at any time and withdraw with no negative consequences. The risks associated with participating in this activity are therefore deemed minimal.

## **Privacy and confidentiality**

We will not share information about you and your institution/company to anyone outside of the team undertaking this activity. The information that we collect will be kept private. All collected data will be stored in a database accessible only by the principal investigator. Any information about you and your institution/company will be identified by a number on it instead of your name/your company. You do not have to take part in this activity if you do not wish to do so, and choosing to participate will not affect your job.

## **Study approval**

This proposal has been reviewed and approved by CMHS Institutional Review Board (IRB) whose task it is to make sure that research participants are protected from harm. If you wish to find out more about the ethics committee, please contact the Chairperson of the CMHS IRB (0788 490 522) and the Deputy Chairperson (0783 340 040) and Rwanda Medical Research Center.

For any questions about any part of the study, you may contact BYOMUHANGI Evariste, the Principal investigator. Tel: 0788681650 email: [byomevariste@gmail.com](mailto:byomevariste@gmail.com)

## CONSENT FORM (STATEMENT OF CONSENT)

### Participant's statement

I have read this consent form. I have had the chance to discuss this research study with a study researcher. I have had my questions answered to my satisfaction in a language that I understand. The risks and benefits have been explained to me. I understand that my participation in this study is voluntary and that I may choose to withdraw at any time. I freely agree to participate in this research study. I understand that all efforts will be made to keep information regarding my personal identity confidential.

### Print name of participant

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### Signature of participant

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### Date

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### Day/month/year

### Researcher's statement

I, the undersigned, have fully explained the relevant details of this research study to the participant named above and believe that the participant has been given an opportunity to ask questions about the activity, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

**Researcher's Name:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_

## APPENDIX 2: QUESTIONNAIRE FOR THE STUDY

### "EVALUATION OF PUBLIC-PRIVATE PARTNERSHIPS (PPPs) IN HEALTH SUPPLY CHAIN MANAGEMENT IN RWANDA"

*Public-Private Partnerships (PPPs) is defined as a long-term contract between a private company and a government entity, for providing a public asset or service, in which the private company bears significant risk and management responsibility, and remuneration is linked to performance.*

#### **Name and contact information of principal investigator**

BYOMUHANGI EVARISTE, STUDENT AT UNIVERSITY OF RWANDA, CMHS

Tel: +250788681650, Email: [byomevariste@gmail.com](mailto:byomevariste@gmail.com)

The following questionnaire will be completed with voluntary participation noted as consent.

#### **PART I: DEMOGRAPHIC FEATURES OF INTERVIEWEE**

**Name of company:** .....

**Province:** .....

**District:** .....

**Sector:** .....

**Date:** .....

1. **Type of organization:** Public   
Private

2. **SEX:** Male   
Female

3. **Please indicate your age:**

- a) Below 25 years   
b) Between 25- 35 years   
c) Between 35- 45 years   
d) Above 45 years

**4. What is your level of education?**

- a) Certificate (A2)
- b) Advance diploma (A1)
- c) Degree (A0)
- d) Masters
- e) Other (specify) .....

**5. What is your working experience?**

- a) Less than a year
- b) Between 1-5 years
- c) Between 5-10 years
- d) Above 10 years

**PART 2: PUBLIC PRIVATE PARTNERSHIPS (PPPs) IN HSCM**

**6. What are different Areas of PPPs existing at your company in health supply chain management?**

<b>PPP Areas</b>	<b>Description</b>	<b>Yes</b>	<b>No</b>
Finance	Financing or co-financing of the project		
Deliver	Delivery and management of Health commodities		
Operate	Supply of applicable equipment and IT		
Design	Design of the project, including design of the infrastructure and care delivery Area		
Build	Construction or renovation of facilities included in the project		
Maintain	Maintenance of hard infrastructure (facilities as well as equipment as applicable)		



**7. What are the benefits of the PPPs in health supply chain management in Rwanda?**

Benefits of PPPs	RATES (1-5, with 1 as strongly disagree and 5 as Strongly agree)				
	5 Strongly agree	4 Agree	3 Neutral	2 Disagree	1 Strongly disagree
Financing of health supply chain projects (purchase of medicines)					
Availability of health commodities					
Health infrastructure (Accessibility of health services to public)					
Cost effectiveness to the patients					
Transportation services (eg. of health commodities)					

**8. What are your company's contributions PPPs in health supply chain management in Rwanda?**

Company contributions to PPPs	YES	NO
Health Financing support		
Availability of health commodities		
Health infrastructure (Accessibility of health services to public)		
Cost effectiveness to the patients		

Transportation services (eg. of health commodities)		
Other (Please specify): .....		

**9. What are the opportunities available for PPPs in Health Supply Chain Management in Rwanda?**

Opportunities available for PPPs	RATES (1-5, with 1 as strongly disagree and 5 as Strongly agree)				
	5 Strongly agree	4 Agree	3 Neutral	2 Disagree	1 Strongly disagree
Political will					
Well-structured health supply chain					
Active private pharmaceutical sector					
Universal health coverage					
e-health systems (e-procurement, online importation etc)					
Other (Please specify).....					

**10. Does your company/institution have practice guidelines on PPP implementation?**

- Yes
- No

**11. Do PPP projects in health supply chain management end up meeting their expected results?**

- Yes
- No

**12. Are there any challenges encountered when implementing PPPs in health supply chain management (HSCM) in Rwanda?**

Yes

No

**13. If yes, what are the challenges that hinder private sector engagement in HSCM in Rwanda?**

<b>CHALLENGES</b>	<b>RATES (1-5, with 1 as the least and 5 as highest)</b>				
	5 Strongly agree	4 Agree	3 Neutral	2 Disagree	1 Strongly disagree
Lack of Regulations/laws about PPPs in HSCM					
Limited dialogue and no formal platforms or systems for public and private engagement (Information Sharing)					
Ineffective coordination and clarity of roles and responsibilities between Public institutions and key stakeholders					
Contracting Issues					
Complex procurement requirements for medical Products and equipment by public institutions					

**14. What measures that can be put in place to improve PPPs in health supply chain management in Rwanda?**

<b>Measures that can be put in place to improve PPPs in HSCM</b>	<b>RATES (1-5, with 1 as the least and 5 as highest)</b>				
	5 Strongly agree	4 Agree	3 Neutral	2 Disagree	1 Strongly disagree
Foster transparency from all partners.					
Appropriate risk allocation (financial)					
Effective management/coordination of PPPs					

Trust between parties in PPPs					
Well prepared contract document					
Put and make aware laws and regulations about PPPs in HSCM					
Improved dialogue and formal platforms					

**15. Any experience/testimony with PPP health supply chain management projects that you would like to share?**

.....

.....

**I thank you so much for your kind participation in this study!**

### APPENDIX 3: APPROVAL FROM CMHS INSTITUTIONAL REVIEW BOARD (IRB)



UNIVERSITY of  
RWANDA

COLLEGE OF MEDICINE AND HEALTH SCIENCES  
DIRECTORATE OF RESEARCH & INNOVATION

#### CMHS INSTITUTIONAL REVIEW BOARD (IRB)

Kigali, 19<sup>th</sup>/07/2019

**BYOMUHANGI Evariste**  
School of Public Health, CMHS, UR

#### Approval Notice: No 351/CMHS IRB/2019

Your Project Title *"Evaluation of Public-Private Partnerships (PPP) In Health Supply Chain Management in Rwanda"* has been evaluated by CMHS Institutional Review Board.

Name of Members	Institute	Involved in the decision		
		Yes	No ( Reason)	
			Absent	Withdrawn from the proceeding
Prof Kato J. Njunwa	UR-CMHS	X		
Prof Jean Bosco Gahutu	UR-CMHS	X		
Dr Brenda Asiimwe-Kateera	UR-CMHS	X		
Prof Ntaganira Joseph	UR-CMHS	X		
Dr Tumusiime K. David	UR-CMHS	X		
Dr Kayonga N. Egide	UR-CMHS	X		
Mr Kanyoni Maurice	UR-CMHS		X	
Prof Muryanshongore Cyprien	UR-CMHS	X		
Mrs Ruzindana Landrine	Kicukiro district		X	
Dr Gishoma Darius	UR-CMHS	X		
Dr Donatilla Makamana	UR-CMHS	X		
Prof Kyamanywa Patrick	UR-CMHS		X	
Prof Condo Umutesi Jeannine	UR-CMHS		X	
Dr Nyirazinyoye Laetitia	UR-CMHS	X		
Dr Nkeramihigo Emmanuel	UR-CMHS		X	
Sr Maliboli Marie Josée	CHUK	X		
Dr Mudenge Charles	Centre Psycho-Social	X		

After reviewing your protocol during the IRB meeting of where quorum was met and revisions made on the advice of the CMHS IRB submitted on 19<sup>th</sup> July 2019, **Approval has been granted to your study.**

Please note that approval of the protocol and consent form is valid for **12 months.**

Email: [researchcenter@ur.ac.rw](mailto:researchcenter@ur.ac.rw)

P.O Box 3286 Kigali, Rwanda

[www.ur.ac.rw](http://www.ur.ac.rw)


You are responsible for fulfilling the following requirements:

1. Changes, amendments, and addenda to the protocol or consent form must be submitted to the committee for review and approval, prior to activation of the changes.
2. Only approved consent forms are to be used in the enrolment of participants.
3. All consent forms signed by subjects should be retained on file. The IRB may conduct audits of all study records, and consent documentation may be part of such audits.
4. A continuing review application must be submitted to the IRB in a timely fashion and before expiry of this approval
5. Failure to submit a continuing review application will result in termination of the study
6. Notify the IRB committee once the study is finished

Sincerely,

Date of Approval: The 19<sup>th</sup> July 2019

Expiration date: The 19<sup>th</sup> July 2020

  
Professor GAHUTA Jean Bosco  
Chairperson Institutional Review Board,  
College of Medicine and Health Sciences, UR



Cc:

- Principal College of Medicine and Health Sciences, UR
- University Director of Research and Postgraduate Studies, UR

## APPENDIX 4: APPROVAL FROM NATIONAL HEALTH RESEARCH COMMITTEE

Republic of Rwanda



MINISTRY OF HEALTH

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National Health Research Committee  
Ref: NHRC/2019/PROT/045

To: **Evariste BYOMUHANGI**  
Principal Investigator

### Scientific Review Approval Notice

With reference to your request for approval of the Research Protocol entitled; "Evaluation of Public-Private Partnerships (PPPs) in Health Supply Chain Management in Rwanda."; We are pleased to inform you that, following a thorough review and critical analysis of your proposal (NHRC/2019/PROT/045), your Research Protocol has been approved by National Health Research Committee.

However,

- 1) Changes amendments on approach and methodology must be submitted to the NHRC for review and approval to validate the changes.
- 2) Submission to NHRC of final results is mandatory
- 3) Failure to fulfill the above requirements will result in termination of study

Once again National Health Research Committee appreciates your interest in research and requests you to submit this proposal to the National Ethics Committee (NEC) and then share a copy of the approval letter from them.

Your final approval reference number is NHRC/2019/PROT/045.

Sincerely,

**Dr. Parfait UWALIRAYE**  
Chairperson of NHRC

Date: 06/07/2019