Assessment of Health Supply Chain Risks in Uganda: The Case of Uganda Health Supply Chain Project

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Abstract: *This study aimed at assessing risks affecting Health supply chains in Uganda using a case of Uganda Health Supply Chain project. The theoretical framework onto which this study was anchored was the normative decision theory of risk management. A cross-sectional study design was adopted employingthe quantitative research approach. Asample population of 196 was used and primary data was collected using self-administered questionnaires and analyzed using STATA statistical program. Descriptive data was presented in form of graphs and frequency distribution tables. It was later analyzed and interpreted using percentages, frequencies, means, and standard deviations. The study results revealed that the greatest health supply chain risks faced by health supply chain programs in Uganda were; Financial-related risks such as cost overruns; and End user-related risks such as poor quality health commodities, poor feedback mechanisms and loss of patient lives. Other major risks discovered by the study included demand and supply-relatedrisks resulting from supplier unpredictability such as stock outs; Procurement-related risks such as long lead-times and inadequate technical input; and distribution and Storage-related risks. Environmental-related risks such as accidents, bad weather and political instability were the least faced risks. The study concluded that health supply chains in Uganda are troubled by a multitude of risks, and therefore the study recommended that,after a clear understanding of risks affecting health supply chains has been uncovered, carefully-tailored standard risk management processes can be establishedwithin health supply chain projects to improve the functionality of Uganda's health supply chain management systems.*

Keywords: Health supply chain risks, Health supply chain projects, Risk management, Health supply chain management system

1. Introduction

Without a functional health supply chain management system, a country's health system is confronted with extensive problems of patient dissatisfaction, increasing cost of health services due to cost overruns, high levels of stock-outs of medical supplies, poor quality healthcare commodities in health facilities and poor quantification mechanisms for needed medical commodities, among others (Ali *et al.,* 2012)

Health supply chain risks are a major disruption of the functionality of any health supply chain management system.

These disruptions can be managed by instituting standard risk management processes, but, however, inadequate assessment and lack of knowledge of the risks affecting Health supply chain projects in Africa has greatly affected any plans to establish these standard risk management processes (Besner *et al.*, 2012)

According to Larson (2015) a health supply chain risk is any uncertain condition or event, that if it occurred, it has negative or positive effects on the health supply chainproject objectives. He further defines risk management as the process of identification, analysis, planning, conducting risk response and control in a project, with the ultimate aim of reducing the probability of impact of negative events and increasing the probability of impact of positive events.

This study therefore made a detailed assessment of risks affecting health supply chain projects in Uganda, with an overall aim of increasing the understanding of health supply chain risks troubling the Uganda Health supply chain system in order to aid the establishment of standard risk management processes in all health supply chain programs in Uganda

2. Methods

2.1 Study setting

Uganda Health Supply Chain program (UHSC) is one of the many Health supply chain programs supporting the Ministry of Health (MOH) in Uganda. Its main role is to support the Ugandan government through the MOH to enhance Uganda's supply chain system through improving accessibility, availability, affordability, and appropriate use of good quality EMHS to Uganda's population. UHSC supports Uganda's supply chain and logistics in 129 districts. Its main administration is situated in Bugolobi, Nakawa Division, Kampala.

2.2 Study design

A cross sectional study design was adopted for this study employing the quantitative method. (Amin, 2005)

2.3 Study population

The composition of the study population was 284 UHSC project staff (officers and Medicine management supervisors) and 100 end users i.e. patients in health facilities in districts supported by UHSC, totaling to 384

2.4 Sample size

The sample size of UHSC staff and end users that participated in this study was determined using the Yamane (1967) formula and was 196

2.5 Data collection methods

Questionnaire survey
The study employed a questionnaire survey method using a semi structured and pretested questionnaire to collect data that is quantitative in nature (Amin, 2005).

2.6 Document review

The study reviewed project records in the UHSC data base, these were used to verify information given by staff. They were used as secondary data sources. The researcher also reviewed different documents like text books, journals and internet containing information about risk management and performance of health supply chain projects. The purpose of this method was to enable the researcher collect independent verifiable data and information and also provide a reasonable procedure to identify, analyze and decode full information obtained from those documents

2.7 Data analysis

All questionnaires that were filled-in were crosschecked for completeness and comprehensiveness by the researcher.

Incomplete information were filled in appropriately, and this was done before leaving the field. All collected questionnaires were numbered and questions coded in preparation for entry into computer. STATA statistical program was the main statistical program used for analysis of the study data.

Descriptive statistics presentation, analysis and interpretation
Descriptive statistics helped in describing the data characteristics (Sekaran 2003). Descriptive data mainly including data univariate in nature such as Age, sex, years of work, level of management and others, it was presented in form of graphs, pie charts, bar chart and frequency distribution tables. It was later analyzed and interpreted using percentages, frequencies, means, and standard deviations.

3. Results

3.1 Risks inherent in Uganda's Health Supply Chain projects

This section presents the Risks inherent in Uganda's health supply chain (HSC) projects. Respondents were asked to indicate the extent to which Uganda's health supply chain projects were faced by a number of risks with a scale of Low extent and great extent as indicated in the table 1 below.

Table 1: Risks inherent in Uganda's Health Supply Chain projects

	Questionnaire indicators	Responses				
		Great extent		Low extent		
		N	%	N	%	Mean
1.	Environmental related risks • *accidents* • *bad weather* • *political instability*	6	3.82	151	96.18	0.038
2.	Demand and supply risks resulting from supplier unpredictability • *stock outs*	155	98.73	2	1.27	0.987
3.	Procurement related risks • *Long lead-times* • *Inadequate technical input*	155	98.73	2	1.27	0.987
4.	Distribution and storage related risks • *Insufficient storage stores* • *Insufficient transportation means* • *Poor security* • *Inadequate communication*	155	98.73	2	1.27	0.987
5.	End user related risks • *poor quality commodities* • *poor feedback mechanisms* • *loss of patient lives*	157	100	0	0	1
6.	Financial related risks • *cost overruns*	157	100	0	0	1

Source: Primary source; N: Frequency

Findings showed that the major risks faced by HSCs in Uganda were; End user related risks i.e. poor quality commodities, poor feedback mechanisms, loss of patient lives etc., 100% (157) and Financial related risks i.e. cost overruns 100% (157) both with Mean = 1, all the respondents affirmed that these were the major risks affecting HSCs in Uganda. This high trend of end user and

financial related risks can be explained by the absence of formal risk management systems for management of end user and financial related risks. Therefore this calls for a need to adopt good risk management practices within Uganda's health supply chain system.

This was followed by Demand and supply risks resulting from supplier unpredictability i.e. stock outs 98.73% (155) with Mean = 0.987, Procurement related risks i.e. long lead-times, inadequate technical input 98.73% (155) with Mean = 0.987, Distribution and storage related risks i.e. insufficient storage store, insufficient transportation means, poor security, inadequate communication 98.73% (155), Mean = 0.987 . This high trend can still be explained by inadequacy of available risk management systems to manage demand and supply risks, procurement related risks and distribution and storage related risks and hence the need to adopt good risk management practices within Uganda's health supply chain system.

The least faced risk was the Environmental related risks i.e. accidents, bad weather and political instability 3.82% (6), with Mean = 0.038

4. Conclusion

In conclusion, the study revealed that the greatest risks faced by Health supply chain programs in Uganda were financial related risks i.e. cost overruns, insufficient finances; followed by end user related risks such as poor quality commodities and poor feedback mechanisms, then followed by demand and supply risks resulting from supplier unpredictability such as stock outs; Procurement related risks; Distribution and storage related risks. Environmental related risks such as accidents, bad weather and political instability were the least faced risks. The study found out that these troubled the functionality of Uganda's Health supply chain system.

Therefore, this study offereda detailed understanding the risks affecting HSC projects in Uganda which consequently can improve the process of risk management for improved functionality of Uganda's Health supply chain system

5. Recommendation

The study recommended that with a clear understanding of risks affecting HSCs in Ugandanow after being uncovered by the study:

- Carefully tailored standard risk management practices i.e.risk planning practices, risk identification practices, risk analysis practices, and risk response and control can be established at each level of the supply chain i.e. production or manufacture, sourcing, planning and selection, forecasting and quantification, procurement, distribution, storage up to consumption.
- There is need to establish capacity building systems for risk management and sensitization systems for HSC risks for all staff in HSC projects
- The a need to establish follow-up mechanisms for HSC risk management
- There is a need to fully adopt the risk management process to control risks in Uganda's Health supply chain system.

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