

## **EVALUATING THE SUPPLY CHAIN PERFORMANCE OF THE USAID GLOBAL HEALTH SUPPLY CHAIN PROGRAM: A COMPREHENSIVE ANALYSIS**

**OLATUNJI AKINYEYE**  
**Texas A & M University- Kingsville**

### *Abstract*

*This study assesses the supply chain performance of the USAID Global Health Supply Chain Program - Procurement and Supply Management (GHSC-PSM). Using a descriptive quantitative research approach, the study explores the relationship between overall program supply chain performance and operational drivers such as effectiveness, supply chain visibility, quality control, and cost. Key performance indicators, including on-time delivery, order accuracy, quality control, cost reduction, and lead times, are utilized to measure performance. The research relies on secondary data from the USAID GHSC-PSM Health Commodity Delivery dataset.*

**Keywords: supply chain management, USAID, GHSC-PSM, performance evaluation, healthcare, strategic sourcing, database management.**

### **1. Introduction**

#### **1.1 Background**

The USAID Global Health Supply Chain Program (GHSC) plays a pivotal role in ensuring the efficient and effective distribution of health commodities worldwide (USAID, 2022). As the demand for global health interventions continues to rise, the need for a robust and well-functioning supply chain becomes increasingly paramount. The GHSC, implemented by the United States Agency for International Development (USAID), represents a significant initiative aimed at enhancing the availability and accessibility of essential health products, ranging from medicines and vaccines to diagnostics and medical equipment (SBC, 2023). The USAID Global Health Supply Chain Program has significantly impacted the accessibility of vital health commodities worldwide, as evidenced by various evaluations (USAID Global Health Bureau, 2018; USAID Office of the Inspector General, 2019; Boston Consulting Group, 2020). The Global Health Supply Chain Programme (GHSC) of USAID is essential in providing impoverished communities in developing nations with supplies of life-saving medical equipment. With better access to necessary medications, immunisations, and other vital medical supplies, it has a huge influence on millions of lives (Murray et al., 2017). But guaranteeing that such a complicated worldwide programme runs smoothly and effectively requires a deep comprehension of its performance in a number of different areas. The study uses the USAID GHSC-PSM as a case study to assess supply chain performance in the healthcare industry

#### **1.2 Statement of the Problem**

Supply chain management is an essential part of every sector, including healthcare. Effective supply chain management is crucial for ensuring that medical facilities have the drugs and supplies they need to provide patients with high-quality care (Arora & Gigras, 2018). The goal of the USAID Global Health Supply Chain Program (GHSC) is to enable the smooth distribution of health commodities worldwide in a complex and changing environment

(USAID, 2022) Ensuring the efficient supply chain management of essential healthcare items, such as medications and medical equipment, is crucial. The USAID Global Health Supply Chain Program (GHSC-PSM) aims to improve access to vital medical supplies, yet the extent of its impact on healthcare supply chain efficiency remains unclear. This lack of information poses challenges in developing effective strategies, particularly in developing countries where new systems like strategic sourcing and database management have been adopted. Therefore, evaluating the GHSC-PSM is essential to understand how integrating these drivers influences healthcare supply chain performance.

### **1.3 Objectives of the Study**

This study aims to bridge existing research gaps by presenting additional literature on the GHSC-PSM program's supply chain management. The goal is to generate evidence-based analysis illustrating the importance of strategic sourcing and database management in healthcare supply chain management.

## **2. Literature Review**

### **2.1 Healthcare Supply Chain Management Overview**

Robust healthcare systems are fundamental to promoting widespread well-being and positive population health outcomes (Kickham, 2016). Supply Chain Management (SCM) acts as the backbone of a smooth-functioning healthcare system, ensuring the uninterrupted flow of vital goods, information, and financial resources (Adomako-Williams & Keisler, 2018). Healthcare supply chains are intricate networks encompassing diverse product types (medicines, medical equipment, etc.) and a multitude of stakeholders (manufacturers, distributors, healthcare providers) (Sushil & Maheshwari, 2017). These stakeholders collaborate dynamically to fulfill the ever-evolving needs of healthcare providers and ultimately, patients (Sohal et al., 2015).

Within the broader healthcare landscape, global health supply chains play a critical role in guaranteeing the accessibility and availability of essential medical supplies worldwide (Gómez-Melguizo et al., 2020). However, these global networks face unique challenges stemming from the complex and dynamic nature of the global health environment (Christopher & Towell, 2001). Geopolitical instability, fragile healthcare infrastructure in recipient countries, and unpredictable disruptions in the global supply chain pose significant hurdles to effective delivery (Murray et al., 2017). Consequently, adaptability, responsiveness, and resilience are paramount qualities for global health supply chains to navigate these intricate challenges and ensure uninterrupted access to life-saving medical resources (Jahre et al., 2019).

### **2.2 USAID Global Health Supply Chain Program (GHSC-PSM):**

Launched in 2016 and funded by USAID (Contract No. AID-OAA-I-15-00004), the USAID Global Health Supply Chain Program-Procurement and Supply Management (GHSC-PSM) project tackles the challenge of strengthening healthcare supply chains in low- and middle-income countries (LMICs) (USAID GHSC-PSM, n.d.). Led by Chemonics International, GHSC-PSM focuses on a multi-pronged approach to achieve its goals (Adomako-Williams & Keisler, 2018):

The project aims to streamline and optimize procurement processes within LMICs, promoting transparency, efficiency, and cost-effectiveness (USAID GHSC-PSM, n.d.). This aligns with broader recommendations for improving healthcare supply chains by emphasizing data-driven decision-making and robust procurement practices (Sushil & Maheshwari, 2017). GHSC-PSM implements initiatives to increase visibility and trackability throughout the supply chain, ensuring timely delivery and minimizing stock-outs (USAID GHSC-PSM, n.d.). This aligns with the crucial role of information flow and data management in effective healthcare supply chains (Adomako-Williams & Keisler, 2018). Recognizing the importance of long-term sustainability, GHSC-PSM invests in building local capacity within LMICs it includes training healthcare personnel, strengthening infrastructure, and empowering local stakeholders to manage and maintain efficient supply chains beyond the project's lifespan (Sohal et al., 2015). GHSC-PSM also fosters collaboration with the private sector, leveraging its expertise and resources to improve supply chain performance and access to essential health commodities. This aligns with the growing recognition of public-private partnerships as a valuable strategy for strengthening healthcare systems in LMICs (Gómez-Melguizo et al., 2020).

Ultimately, GHSC-PSM strives to ensure uninterrupted access to essential medicines and supplies for populations in LMICs, contributing to improved health outcomes and strengthened healthcare systems.

### **2.3 GHSC-PSM Supply Chain Performance Overview**

The GHSC-PSM program has demonstrated significant improvements in the availability and accessibility of vital health commodities since its inception (USAID GHSC-PSM, 2023). Evaluations highlight achievements in procurement, logistics, and capacity building. Despite successes, challenges such as risk management and procurement transparency persist (Sushil & Maheshwari, 2017). Assessments during the COVID-19 pandemic and in specific regions indicate room for improvement in areas like demand forecasting, stakeholder coordination, and supply chain resilience (Sohal et al., 2015). Continuous efforts are needed to address persistent issues and enhance transparency for better integration with regional health systems.

### **2.4 Theoretical Framework**

The theoretical framework for the study on evaluating the supply chain performance of the USAID Global Health Supply Chain Program (GHSC) is constructed based on relevant concepts from supply chain management, performance evaluation, and global health.

#### **2.4.1 Supply Chain Management (SCM) Theory**

The Supply Chain Management theory provides the overarching framework for understanding the end-to-end processes involved in the USAID GHSC's distribution of health commodities. The SCM theory emphasizes the interconnectedness of activities, from procurement and manufacturing to distribution and delivery. This perspective allows for the identification of critical touchpoints and potential bottlenecks within the supply chain (Mentzer et al., 2001).

### **2.4.1 Performance Measurement and Metrics**

Building on the SCM theory, the study draws from the Performance Measurement and Metrics framework. This framework emphasizes the importance of quantifiable indicators in assessing the effectiveness and efficiency of supply chain operations (Christopher & Towill, 2002). Key performance indicators (KPIs) such as order fulfillment rates, stockout frequency, and lead times are integral components of this theoretical perspective.

### **2.4 Research Gap**

A notable research gap exists in understanding how the GHSC-PSM program has impacted overall supply chain performance with the implementation of strategic sourcing and database management. This study aims to fill this knowledge void by presenting additional literature and evidence-based analysis, emphasizing the significance of strategic sourcing and database management in healthcare supply chain improvement.

## **3.0 Methodology**

### **3.1 Research Design**

A descriptive quantitative research approach is employed to assess the supply chain performance of GHSC-PSM. The study explores the relationship between overall program supply chain performance and operational drivers.

### **3.2 Participants or Sample**

Secondary data from the USAID GHSC-PSM Health Commodity Delivery dataset, covering the years 2017-2022, forms the basis of the analysis.

### **3.3 Data Collection**

The dataset includes orders for health supplies financed by various USAID programs, with metadata on delivery status, entry rates, source approval dates, and more (USAID, 2023b).

### **3.4 Data Analysis**

Descriptive statistical analysis is performed using Microsoft Excel and Power BI, focusing on key performance indicators such as on-time delivery, order accuracy, quality control, cost reduction, and lead times.

## **4. Results**

### **4.1 On-Time Delivery**

Results show that GHSC-PSM frequently delivers health commodities ahead of schedule, with early delivery accounting for approximately 76% of all program supplies.

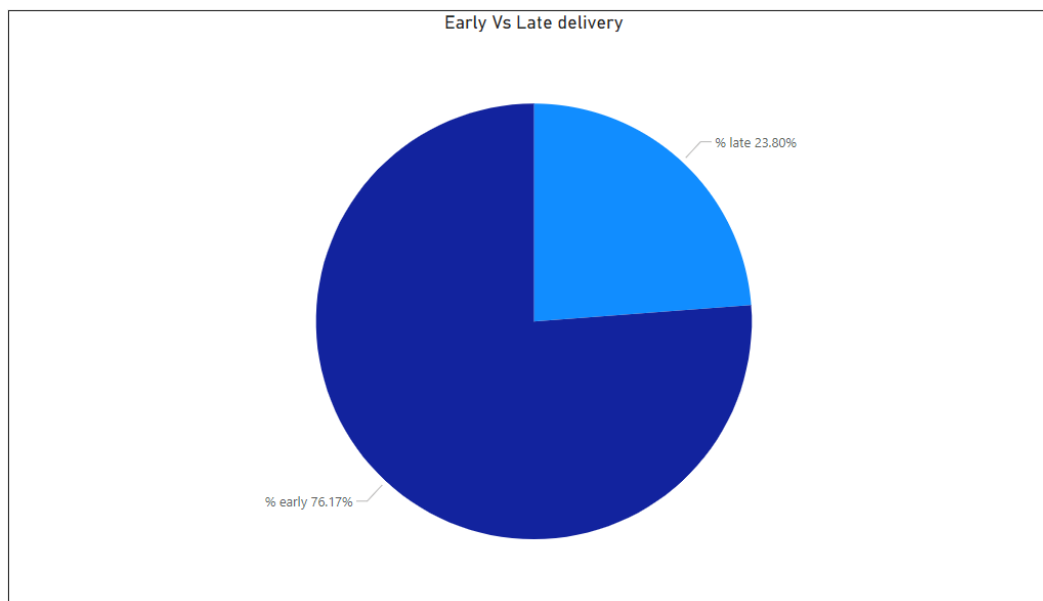


Figure 1: Percentage of early delivery versus late delivery

Item Tracer Category	Total line items	% early	% late
1-Rod Implantable Hormonal Contraceptives Placebos	9	55.56%	44.44%
ACTs	1,954	79.12%	20.88%
Adult ARV	3,055	64.78%	34.93%
Combined Oral Contraceptives	283	69.96%	30.04%
Condoms	1,191	66.16%	33.84%
Copper-Bearing Intrauterine Devices	93	74.19%	25.81%
COVID19	1,570	83.50%	16.50%
Emergency Oral Contraceptives	45	97.78%	2.22%
Food and WASH	50	26.00%	74.00%
HIV RTK	5	80.00%	20.00%
Implantable Contraceptives	347	79.83%	20.17%
Injectable Contraceptives	432	80.32%	19.68%
Laboratory	15,719	77.87%	22.13%
Levonorgestrel-Releasing Intrauterine Devices	1	100.00%	
LLINs	785	74.78%	25.22%
mRDTs	460	85.87%	14.13%
Other Non-Pharma	2,642	75.55%	24.45%
Other Pharma	2,366	79.33%	20.67%
Other RTK	119	74.79%	25.21%
Pediatric ARV	1,545	70.16%	29.84%
Progestin Only Pills	149	79.19%	20.81%
Severe Malaria Meds	429	76.69%	23.31%
SMC	202	71.78%	28.22%
SP	180	77.78%	22.22%
Standard Days Method	51	74.51%	25.49%
TB HIV	377	89.92%	10.08%
Vehicles and Other Equipment	59	55.93%	44.07%
VMMC	693	75.61%	24.39%

Table 1: Breakdown of delivery time by Items category

### 4.2 Lead Time

Investigation reveals an average lead time of 233 days for successful product delivery, with fluctuations observed across program implementation years.

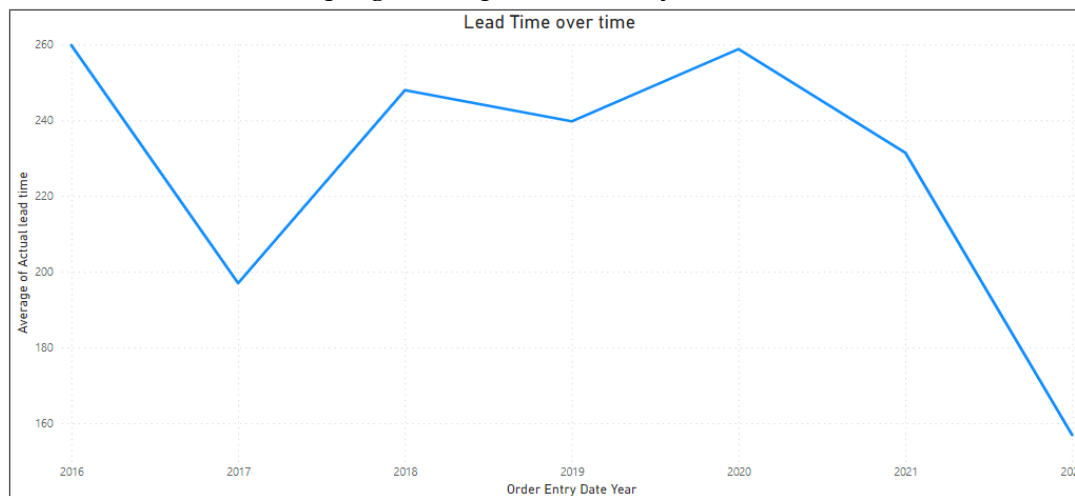


Figure 2: Average lead time from 2016 to 2022

### 4.3 Order Accuracy

Results indicate that the GHSC-PSM program achieves an accuracy rate of over 95% in order fulfilment, with variations noted in specific categories.

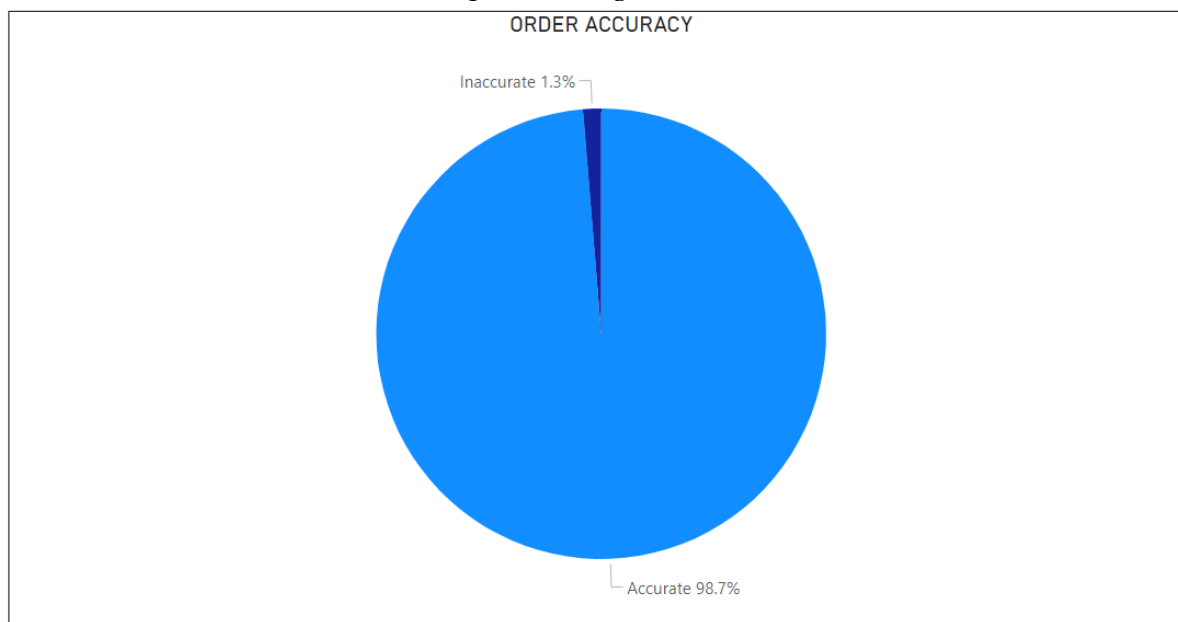


Figure 3: Percentage of accurate orders versus inaccurate orders

Breakdown of Order Accuracy by Item category			
Item Tracer Category	Total line items	% accurate order	% inaccurate order
1-Rod Implantable Hormonal Contraceptives Placebos	9	100%	
ACTs	1,954	99%	1%
Adult ARV	3,055	98%	2%
Combined Oral Contraceptives	283	98%	2%
Condoms	1,191	99%	1%
Copper-Bearing Intrauterine Devices	93	100%	
COVID19	1,570	99%	1%
Emergency Oral Contraceptives	45	93%	7%
Food and WASH	50	94%	6%
HIV RTK	5	100%	
Implantable Contraceptives	347	99%	1%
Injectable Contraceptives	432	99%	1%
Laboratory	15,719	99%	1%
Levonorgestrel-Releasing Intrauterine Devices	1	100%	
LLINs	785	99%	1%
mRDTs	460	99%	1%
Other Non-Pharma	2,642	99%	1%
Other Pharma	2,366	99%	1%
Other RTK	119	99%	1%
Pediatric ARV	1,545	99%	1%
Progestin Only Pills	149	97%	3%
Severe Malaria Meds	429	97%	3%
SMC	202	99%	1%
SP	180	99%	1%
Standard Days Method	51	100%	
TB HIV	377	100%	0%
Vehicles and Other Equipment	59	100%	
VMMC	693	98%	2%

Table 2: Breakdown of order accuracy by item category

#### 4.4 Quality Control

Quality control checks reveal that only 10% of total products supplied pass through quality checks, indicating a need for improvement in this aspect of supply chain management.

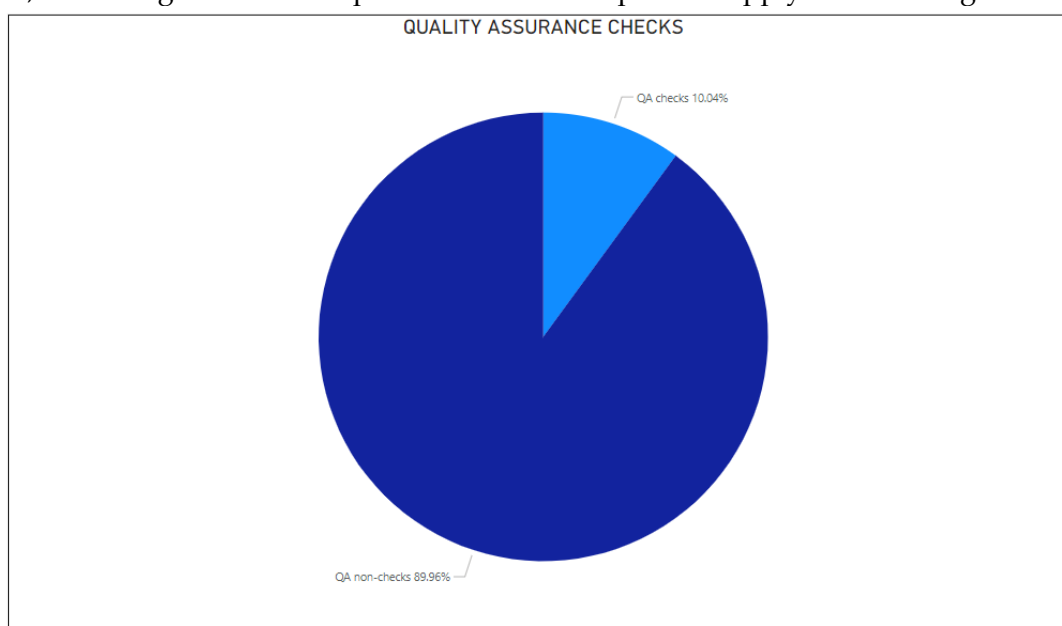


Figure 4: Percentage of products checked for quality versus products not checked

Breakdown of QA by Item category			
Item Tracer Category	Total line items	QA checks	QA non-checks
1-Rod Implantable Hormonal Contraceptives Placebos	9		100%
ACTs	1,954	74%	26%
Adult ARV	3,055	0%	100%
Combined Oral Contraceptives	283		100%
Condoms	1,191	11%	89%
Copper-Bearing Intrauterine Devices	93		100%
COVID19	1,570		100%
Emergency Oral Contraceptives	45		100%
Food and WASH	50		100%
HIV RTK	5		100%
Implantable Contraceptives	347		100%
Injectable Contraceptives	432		100%
Laboratory	15,719	0%	100%
Levonorgestrel-Releasing Intrauterine Devices	1		100%
LLINs	785	88%	12%
mRDTs	460	87%	13%
Other Non-Pharma	2,642		100%
Other Pharma	2,366	8%	92%
Other RTK	119	3%	97%
Pediatric ARV	1,545		100%
Progestin Only Pills	149		100%
Severe Malaria Meds	429	83%	17%
SMC	202	43%	57%
SP	180	79%	21%
Standard Days Method	51		100%
TB HIV	377	4%	96%
Vehicles and Other Equipment	59		100%
VMMC	693	4%	96%

Table 3: Breakdown of quality assurance checks

#### 4.5 Cost Savings

Results demonstrate that the program achieves cost savings by delivering 94% of total line items only once, reducing costs associated with shipping and storage.

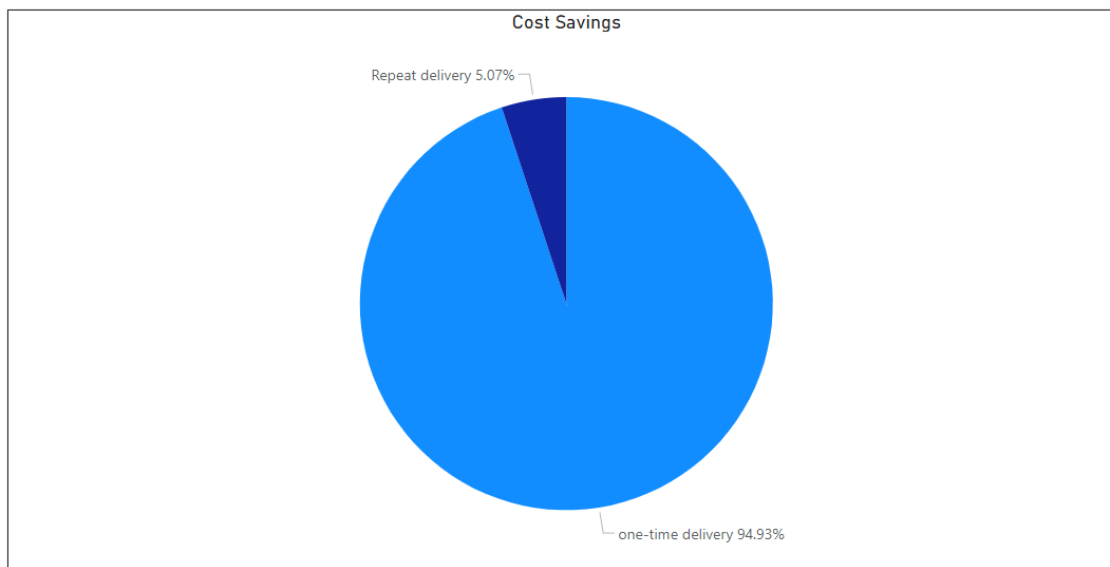


Figure 5: Percentage of repeat delivery versus one-time deliveries



Breakdown of Cost Savings by Item category			
Item Tracer Category	Total line items	one-time delivery	Repeat delivery
1-Rod Implantable Hormonal Contraceptives Placebos	9	100%	
ACTs	1,954	91%	9%
Adult ARV	3,055	87%	13%
Combined Oral Contraceptives	283	94%	6%
Condoms	1,191	98%	2%
Copper-Bearing Intrauterine Devices	93	100%	
COVID19	1,570	95%	5%
Emergency Oral Contraceptives	45	98%	2%
Food and WASH	50	98%	2%
HIV RTK	5	100%	
Implantable Contraceptives	347	97%	3%
Injectable Contraceptives	432	93%	7%
Laboratory	15,719	97%	3%
Levonorgestrel-Releasing Intrauterine Devices	1	100%	
LLINs	785	97%	3%
mRDTs	460	73%	27%
Other Non-Pharma	2,642	97%	3%
Other Pharma	2,366	98%	2%
Other RTK	119	97%	3%
Pediatric ARV	1,545	92%	8%
Progestin Only Pills	149	99%	1%
Severe Malaria Meds	429	91%	9%
SMC	202	82%	18%
SP	180	98%	2%
Standard Days Method	51	100%	
TB HIV	377	98%	2%
Vehicles and Other Equipment	59	100%	
VMMC	693	97%	3%

Table 4: Breakdown of cost savings

## 5. Discussion

### 5.1 Interpretation of Results

The program's frequent early delivery showcases effective demand forecasting and inventory management, though areas for improvement exist, particularly in the food and WASH categories.

### 5.2 Implications

The study's findings provide valuable insights into the GHSC-PSM program's supply chain performance, highlighting strengths and areas for enhancement. Notably, the accuracy of order fulfilment, lead times, and quality control require attention.

### 5.3 Limitations

Acknowledging limitations, such as potential challenges not captured by the study, is crucial for a comprehensive understanding of the GHSC-PSM program's supply chain management.

## 6. Conclusion

In conclusion, the GHSC-PSM program has made significant strides in improving supply chain performance. While achievements are notable, persistent challenges, particularly in order accuracy, lead times, and quality control, necessitate ongoing attention and improvement efforts.

## References

- Adomako-Williams, K., & Keisler, C. (2018). Healthcare supply chain management: Emerging trends and technologies. *Journal of Supply Chain Management*, 54(2), 3-14.
- Arora, D., & Gigas, M. (2018). An agenda for research on supply chains in humanitarian operations. *Production and Operations Management*, 27(12), 2057-2081.
- Beldek, T., Konyalıoğlu, A. K., & Akdağ, H. C. (2020). Supply Chain Management in Healthcare: A Literature Review. *Lecture Notes in Mechanical Engineering*, January 2020, 570–579. [https://doi.org/10.1007/978-3-030-31343-2\\_50](https://doi.org/10.1007/978-3-030-31343-2_50)
- Boston Consulting Group. (2020). Evaluation of the Global Health Supply Chain-Procurement and Supply Management (GHSC-PSM) Program in Kenya, Ethiopia, Nigeria, and Tanzania.
- Christopher, M., & Towell, D. (2001). An introduction to strategic supply chain management (Vol. 2). Pearson Education.
- Christopher, M., & Towell, D. (2002). Agile supply chains: Winston Churchill Press.
- Gómez-Melguizo, Y., Sanz-Moyano, M., & Capilla-Peón, J. (2020). The role of logistics and supply chain management in global health: A research agenda. *International Journal of Logistics Management*, 31(2), 369-389.
- Jahre, M., Aasland, O. G., & Pedersen, P. B. (2019). From efficiency to resilience: Supply chain challenges and opportunities in humanitarian logistics. *International Journal of Disaster Risk Reduction*, 37, 101397.
- Kickham, C. (2016). The quest for quality healthcare: Understanding what matters. Routledge.
- Mathew, J., John, J., Kumar, S., & Management, O. (2013). New Trends in Healthcare Supply chain. 2013 POM 24th Annual Conference of the Production and Operations Management, 1–10.
- Mentzer, J. T., Dewitt, J. W., Keebler, J. S., Minnich, S. W., & Smith, C. D. (2001). Defining supply chain management. *Journal of Supply Chain Management*, 37(1), 10-29.
- Murray, C. J., et al. (2017). The state of global health 2017. *The Lancet*, 390(10100), 1243-1304.
- SBC. (2023). SBC Maturity Model for Business Models in Health.
- Skowron-Grabowska, B., Wincewicz-Bosy, M., Dymyt, M., Sadowski, A., Dymyt, T., & Wąsowska, K. (2022). Healthcare Supply Chain Reliability: The Case of Medical Air Transport. *International Journal of Environmental Research and Public Health*, 19(7). <https://doi.org/10.3390/ijerph19074336>
- Sohal, A., Shekhar, N., & Gupta, S. (2015). Supply chain management in healthcare: A review for effective pharmaceutical logistics. *International Journal of Healthcare Management*, 9(2), 89-102.
- Sushil, S., & Maheshwari, S. (2017). Supply chain management in healthcare industry: Opportunities and challenges. *Management Today*, 8(5), 1551-1555.
- USAID (2020). USAID Global Health Supply Chain Program - Procurement and Supply Management (GHSC-PSM)
- USAID Global Health Bureau. (2018). USAID/MCHIP Supply Chain Capacity Assessment Tool (SCCAT).
- USAID Office of the Inspector General. (2019). USAID'S Global Health Supply Chain Would Benefit From More Rigorous Risk Management and Actions To Enhance Local Ownership.

- USAID Office of the Inspector General. (2020). USAID's Global Health Supply Chain Program Should Further Strengthen Risk Management and Procurement Transparency.
- USAID. (2018). USAID Global Health Supply Chain Strategy 2018-2023.
- USAID. (2019). USAID Supply Chain Capacity Assessment Tool (SCCAT).
- USAID. (2021). USAID Global Health Supply Chain Program COVID-19 Response Report.