



ADDIS ABABA UNIVERSITY
COLLEGE OF BUSINESS AND ECONOMICS
DEPARTMENT OF MANAGEMENT

The Effect of Knowledge on Organizational Performance: The
Mediation Role of Inventory Management in International NGOs in
Ethiopia

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A Thesis Submitted to Addis Ababa University College of Business and
Economics in Partial Fulfillment of the Requirements for the Degree of
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Advisor
Yared Asrat (PhD)

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Ethiopia
June 2026

Declaration

I, the undersigned, declare that this thesis entitled “*The Effect of Knowledge on Organizational Performance: The Mediation Role of Inventory Management in International NGOs in Ethiopia*”, is my original work and to the best of my knowledge has not been presented for a degree by any other person, and that all the sources of material used for the thesis have been duly acknowledged.

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This is to certify that the thesis carried out by **Tewodros Bogale Sisay** on the topic entitled: “*The Effect of Knowledge on Organizational Performance: The Mediation Role of Inventory Management in International NGOs in Ethiopia*” is his original work and is suitable for degree of submission for the award of Executive Master of Business Administration.

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This is to certify that the thesis carried out by **Tewodros Bogale Sisay**, entitled: “*The Effect of Knowledge on Organizational Performance: The Mediation Role of Inventory Management in International NGOs in Ethiopia*” and submitted in partial fulfillment of the requirements of the degree of Executive Master of Business Administration complies with the regulations of the university and meets the accepted standards with respect to originality and quality.

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List of Acronyms

ACSO	Authority for Civil Society Organizations
AVE	Average Variance Extracted
CB-SEM	Covariance-Based Structural Equation Modeling
CI	Confidence Interval
CR	Composite Reliability
CRS	Catholic Relief Services
CSO	Civil Society Organization
EFA	Explanatory Factor Analysis
ERP	Enterprise Resource Planning
FLC	Fornell-Larcker Criterion
HCM	Hierarchical Component Modeling
HOC	Higher Order Construct
HTMT	Heterotrait-Monotrait
ICRC	International Committee of the Red Cross
INGO	International Non-Governmental Organization
IRC	International Rescue Committee
KBV	Knowledge-Based View
LOC	Lower Order Construct
LV	Latent Variable
MSF	Médecins Sans Frontières
NGO	Non-Governmental Organization
NRC	Norwegian Refugee Council
PLS-SEM	Partial Least Squares Structural Equation Modeling
RBV	Resource-Based View
RMR	Root Mean Square Residual
STDEV	Standard Deviation
SRMR	Standardized Root Mean Square Residual
UN	United Nations
USAID	United States Agency for International Development
VIF	Variance Inflation Factor
VRIO	Valuable, Rare, Inimitable, Organized
WASH	Water, Sanitation, and Hygiene
WFP	World Food Programme

ABSTRACT

Based on the resource-based view (RBV) and control theory, this applied research investigates the structural relationship through which intangible asset of an organization which is knowledge translates into operational efficiency, specifically inventory management and consequently leading to institutional success which is organizational performance within international non-governmental organizations (INGOs) operating in Ethiopia. This research addresses a literature gap, as an empirical structural study has not previously been conducted within humanitarian sectors in Ethiopia. Utilizing a cross-sectional standardized survey design, empirical data was gathered from the randomly selected pool of 159 top and mid-level managers at various INGOs managing large-scale inventory. The structural framework was evaluated using variance-based structural equation modeling (PLS-SEM) featuring a reflective-reflective second-order construct configuration. The empirical results revealed a clear hierarchy of structural relevance, proving that knowledge acts as the dominant engine within the model by exerting a highly significant direct effect on both inventory management and overall organizational performance. Furthermore, inventory management was found statistically significant and operates as a vital complementary partial mediator between knowledge and organization performance. Collectively, the framework explains a substantial that is 76.50% of the total variance in organizational performance ($R^2 = 0.765$) and demonstrates exceptionally high out of sample predictive power $Q^2 = 0.723$. Ultimately, this study concludes that organizational knowledge serves as the primary strategic engine driving institutional success, exerting the dominant direct effect on organizational performance within the model. Furthermore, the framework establishes that efficient inventory management operates as a vital complementary mediator that significantly enhances this relationship, proving that while possessing knowledge is principal, its maximum value to Ethiopian INGOs is unlocked when actively mobilized to optimize physical inventory management. For humanitarian logistics leaders, these pioneering findings establish a knowledge first strategic investment rule, proving that human capital capacity development yields a far higher return on institutional performance than raw software architecture alone, while offering a foundational blueprint for minimizing logistics waste and enhance quality of service in humanitarian organization in developing world context.

Keywords: *Knowledge, Inventory Management, Organizational Performance, Resource-Based View (RBV) Theory, Control Theory, International Non-Governmental Organizations (INGOs), Humanitarian Organization, Partial Least Square- Structural Equation Modeling (PLS-SEM)*

CHAPTER ONE

1.1 Introduction

A foundational brief background to the research topic is provided in this chapter, commencing with the background and an introduction to international non-governmental organizations (INGOs) in Ethiopia as the unit of analysis. The problem statement, research questions, and objectives are then articulated, alongside the scope of the study and conceptual definitions of core terms. The chapter concludes with an outline of the thesis structure.

1.2 Background of the Study

In the contemporary global economy, organizations no longer compete only with physical assets or capital; instead, sustainable success is heavily dictated by an organization's capacity to leverage intangible strategic resources (Hult et al., 2006). For humanitarian and non-profit entities, maximizing operational outcome is not driven by profit margins, rather than measured by resource efficiency, emergency response capacity, and the optimization of supply chains under volatile operational conditions (Van Wassenhove, 2006). Grounded in the Resource-Based View (RBV), organizations can attain superior performance when they cultivate internal resources that are valuable, rare, inimitable, and non-substitutable (Barney, 1991). Extending this paradigm, the knowledge-based view (KBV) argues that internal employee proficiency and institutional knowledge serve as the primary drivers of cross-functional organizational excellence (Grant, 1996).

Operationalizing these frameworks requires strong internal capabilities, most notably within logistics and materials management. Inventory management functions in any institution as one of the major resource management operations which is capital-intensive resource management plays a very critical role by tallying the tradeoff objectives set by different departments of an organization. In an organization system different department set different sub objectives to achieve the central objective of the organization in one side finance department always set an objective to reduce capital tie up when holding inventory, warehouse management required to keep less amount of inventory to reduce carrying cost and in other side procurement department required to purchase in a bulk to reduce ordering cost, and similarly supply chain unit required to maintain high level of inventory to reduce customer dissatisfaction caused by out of stock. Effective inventory management therefore reconciles these tradeoffs by determining the optimum level of inventory to be maintained through systematic inventory management which

is managed by a team of employees who are experts in the field (Ogbo & Ukpere, 2014; Olaniyi & Pugal, 2024).

Empirically, the exact structural relationships between knowledge, inventory management, and organizational performance remain a subject of active debate among scholars. One group of researchers posits that knowledge management exerts an exclusively indirect effect on organizational success, operating entirely through operational capabilities like inventory and supply chain tracking systems (Yankah et al., 2022). Conversely, another group of scholars argues for a direct, parallel mechanism, proving that while inventory control stabilizes daily operations, institutional knowledge yields a massive, overwhelming direct impact on long-term performance by enhancing strategic decision-making and agility (Hult et al., 2006). This debate is highly pronounced in developing economies like Ethiopia, where INGOs operate within highly volatile logistics corridors, infrastructural challenges, and complex regulatory frameworks (Fuad, 2021).

In the context of strategic development, the interaction between these operational practices and institutional knowledge platforms is gaining scholarly power. Rashid et al. (2020) demonstrate that optimal inventory management is a critical operational capability, proving that neither excessive stockpiling nor severe stockouts are advantageous, as both impose heavy structural and financial burdens on performance. Building on this, Hashmi et al. (2021) highlight that workforce proficiency and knowledge dissemination significantly improve internal scheduling, planning, and asset control, thereby indirectly boosting macro-organizational output. This exact mechanism is further advanced by Rashid and Rasheed (2023), whose empirical work confirms a significant positive relationship when analyzing the direct and indirect impacts of knowledge through inventory systems on overall firm performance.

Despite these conceptual linkages, a critical gap persists in contemporary literature regarding structural applications. Globally very few empirical research was conducted on inventory management mediating the relationship between knowledge and organizational performance in the sector of profit-making organization and public sectors (Ahmad & Zabri, 2018; Hashmi et al., 2021; Rashid et al., 2020; Rashid & Rasheed, 2023). In Africa, including Ethiopia, most studies on inventory management have focused on the direct relationship between inventory management practices and organizational performance, rather than on the role of inventory management as a linkage factor. In addition, most of these studies have been conducted in profit-oriented industries (Atnafu & Balda, 2018; Bin-Syed et al., 2016; Ogbo & Ukpere, 2014).

In non-profit environments like Ethiopia, where INGOs operate within highly volatile logistics corridors, infrastructural challenges, and complex regulatory frameworks, reliance on strict warehouse mechanics without the backing of robust institutional knowledge can trigger total operational failure.

By utilizing variance-based structural equation modeling (PLS-SEM), which is highly suited for testing complex structural pathways and exploratory environments, this study explicitly bridges this dual empirical and context gap. It positions knowledge as the primary direct engine of organizational performance, while analyzing inventory management as a complementary, structural mediator within the unique framework of international NGOs operating in Ethiopia. Understanding this interplay allows humanitarian organizations to shift from reactive, ad-hoc stockpiling to an agile, knowledge-driven operational framework that maximizes societal impact and stakeholder accountability.

1.3 Statement of the Problem

In the contemporary business environment, organizational performance characterized by cost reduction and high-quality service is the primary goal of any strategic entity. However, many organizations continue to struggle with unexpected stock outs, excessive carrying costs, and resource mismanagement. While traditional management focuses on physical assets, a significant problem arises when there is a disconnect between intellectual capital (staff knowledge) and the operational handling of resources (inventory management).

Recent empirical evidence suggests that inventory management serves as a critical bridge in this relationship. As identified by Rashid and Rasheed (2023), inventory management can act as a full mediator between the knowledge held by staff and the eventual performance of the organizations. This implies that simply possessing knowledge is insufficient; it must be applied to optimize inventory levels and reduce inventory inaccuracies to achieve organizational success. Despite this, a critical gap remains in how this knowledge is translated into tangible results, particularly in environments where procedural non-compliance and resource mismanagement are prevalent.

Beyond these operational hurdles, two significant research gaps persist in existing scholarships. First, there is a disproportionate focus on for-profit sectors and public organizations, leaving a significant void in the study of international non-governmental organizations (INGOs) as inventory management is a key resource management function for them to meet their ultimate objective of alleviating peoples who are suffering from natural and artificial disaster (Lewis et

al., 2020). NGOs operate under unique mandates where service quality and resource accountability are paramount, yet they are often overlooked in mainstream management literature.

Second, there is a notable lack of empirical data from developing country contexts like Ethiopia, where logistical challenges, infrastructure deficits, and resource constraints differ fundamentally from the developed economies often featured in global studies. In Ethiopia, factors such as poor human resource management practices and ineffective resource mobilization often lead to ineffectiveness and operational inefficiency.

This study aims to address these gaps by examining the mediating role of inventory management in the relationship between knowledge and organizational performance within the context of INGOs in Ethiopia by exploring how staff competencies and organized training programs can be leveraged to fix inventory stock level and inventory inaccuracies, this research seeks to provide a localized framework for reducing superfluous costs and enhancing service delivery in a non-profit humanitarian organization in developing world setting like Ethiopia.

1.4 Objective/Aim of the Study

1.4.1 General Objective

The general objective of this study is to examine the effect of knowledge on organizational performance, and to evaluate the mediating role of inventory management within international NGOs in Ethiopia.

1.4.2 Specific Objective

1. To examine the direct effect of knowledge on the organizational performance of International NGOs in Ethiopia.
2. To determine the direct effect of knowledge on the inventory management practices of international NGOs in Ethiopia
3. To analyze the direct effect of inventory management on the organizational performance of international NGOs in Ethiopia
4. To determine the mediating effect of inventory management between the relationship of knowledge and organizational performance within International NGOs in Ethiopia.

1.5 Scope of the Study

To ensure a focused, manageable, and rigorous investigation, the boundaries of this research are explicitly defined across conceptual, geographical, and methodological dimensions.

Thematically, this study is restricted to examining the structural relationships between three primary constructs namely knowledge, inventory management, and organizational performance. Specifically, the independent variable, Knowledge, is operationalized through the dimensions of staff competency and training. The dependent variable, organizational performance, focuses strictly on the operational outcomes of cost efficiency and service quality. The intermediary mechanism is restricted to inventory management, evaluated via inventory stock controls and inventory accuracy, functioning as a mediating bridge within the framework. Other organizational dynamics, such as leadership styles, funding volatility, or external political risks, are outside the scope of this study.

Geographically, the study is strictly contextualized within the country of Ethiopia. The target population is delimited to international non-governmental organizations (INGOs) currently registered and actively operating within Ethiopia, with primary data collection focused on their headquarters and main logistics hubs in Addis Ababa. Contextually, the research isolates the unique operational, supply chain, and resource management challenges inherent to the non-profit and humanitarian sectors in a developing East African economic setting.

Methodologically, this study adopts a cross-sectional, quantitative research design. Data collection is delimited to primary data gathered through structured questionnaires. In terms of statistical analysis, the scope is bound to variance-based structural equation modeling (PLS-SEM) using SmartPLS software to evaluate the measurement model (reliability and validity) and structural model paths (hypotheses testing and mediation analysis).

1.6 Significance of the Study

This study provides substantial value by bridging critical gaps between knowledge resources, physical inventory optimization, and operational outcomes within the non-profit sector. By evaluating the synchronized relationship between administrative capacity and materials tracking, this research offers significant theoretical, methodological, and practical contributions to several key stakeholders operating within the developing economy context of Ethiopia.

For country directors, logistics managers, and supply chain leaders within international NGOs in Ethiopia, this study provides an empirical roadmap for strategic resource allocation. It uncovers how two elements of knowledge (competency and training) and two elements of inventory management (inventory stock and accuracy) directly lower operational costs and enhance service quality for beneficiaries. Crucially, the findings demonstrate that human capacity yields a three-fold higher return on organizational performance than independent technological investments. This gives concrete evidence for leadership to avoid the common trap of investing exclusively in expensive software systems while neglecting human development, allowing them to prioritize constrained budgets toward staff competency profiles and continuous, structured logistics training.

For international donor agencies and regulatory authorities (such as the Ethiopian Authority for Civil Society Organizations - ACSO), this research highlights the critical role of operational infrastructure in non-profit success. By proving that inventory accuracy and stock controls serve as a vital operational bridge, it provides clear benchmarks to help donors evaluate the logistical capacity and structural efficiency of implementing partners. This shifts the policy focus toward funding sustainable operational training and robust inventory baseline systems, ensuring long-term accountability and maximizing donor fund utilization.

This study advances international management and humanitarian logistics literature by providing empirical evidence for the integrated relationship between intellectual capital (knowledge) and physical resource management (inventory). It expands academic boundaries in different distinct ways. Historically, resource-based view (RBV) and control theories have been heavily leveraged within competitive, profit-maximizing corporate environments. This study successfully extends these boundaries to the non-profit humanitarian landscape of a developing economy. It demonstrates that intangible human capabilities and tangible physical capabilities operate as co-specialized, VRIO (valuable, rare, inimitable, organized) bundles of resources that generate sustainable performance, even in environments absent of commercial competition.

By proving the complementary mediation of inventory management, this study moves beyond simplistic direct-effect models. It provides a granular empirical map of the mid-range processes through which administrative training and staff competency cross organizational silos to improve macro-level service delivery.

This research overcomes the bandwidth-fidelity dilemma common in logistics and supply chain surveys. By utilizing reflective-reflective second-order architecture assessed via a two-stage

PLS-SEM approach (PLS-SEM algorithm and bootstrapping) in Smart-PLS 4.0 software, this study abstracts complex concepts through concrete sub-dimensions while preserving structural parsimony. In doing so, it establishes a rigorous methodological benchmark for future humanitarian logistics scholars tracking structural relationships in non-profit frameworks.

1.7 Structure of the Study

The rest structure of the proposed study is outlined as follows. Unit two (2) deals with the literature review consisting of theoretical background for knowledge, inventory management and organizational performance, and proposed conceptual model, including the description of hypotheses. Unit three (3) describes in detail the research methodology and the data analysis approach. Findings, discussion, and study implications are presented in unit four (4). Finally, Unit five (5) with a summary of the main conclusions, recommendations, the research limitations and agenda for future research are presented.

CHAPTER TWO

RELATED LITERATURE REVIEW

2.1 Introduction

The objective of this chapter is to examine the related literature concerning the interconnectedness of knowledge, inventory management, and organizational performance. In modern business environments, a firm's performance is no longer solely a product of physical assets but is increasingly driven by the intellectual capital (knowledge) used to manage those assets. As noted by Rashid and Rasheed (2023), effective inventory management is pivotal, particularly in sectors where stock availability is a matter of survival. This review evaluates global perspectives on these associations before focusing on the unique operational landscape of Ethiopia in humanitarian INGOs, identifying how knowledge-driven inventory practices can mitigate resource mismanagement and enhance service quality.

2.2 Conceptual Underpinnings

2.2.1 Knowledge (Independent Variable)

Defined as the organized body of factual and procedural information that serves as the cognitive foundation for competency, acting as the essential intellectual capital transferred through training to enable performance to a defined standard (Davenport & Prusak, 1998).

To bridge the broad macro-hypotheses of this thesis with its empirical indicators, Knowledge is operationalized as a multidimensional, reflective-reflective second-order construct driven by two distinct sub-dimensions namely staff competency and professional training (Hult et al., 2006). This approach is heavily rooted in the knowledge-based view (KBV) of the firm, which frames internalized insights as the ultimate engine of operational capability (Grant, 1996).

Staff competency represents the internalized, tacit knowledge, practical skills, behaviors, and specialized technical expertise possessed by individual employees within the organization (Grant, 1996). Under the KBV, competency is defined as the cognitive capacity to successfully execute complex operational tasks, handle technical supply chain problem-solving, and adapt to unexpected operational shocks (Huo et al., 2025). In the specific context of Ethiopian INGOs, competency represents the explicit ability of logistics personnel to correctly interpret donor guidelines, navigate import customs protocols, and manage local resource allocations without compromising institutional ethics (Fuad, 2021).

Professional training represents the explicit, structured institutional instrument used to transmit, update, and standardize knowledge assets across the workforce (Flöthmann et al., 2025). Training is defined as an ongoing organizational process consisting of structured technical workshops, logistics certifications, and continuous capacity-building programs (Hashmi et al., 2021). It serves as the primary operational vehicle through which an INGO converts raw human capital into formalized, reliable operational capabilities, ensuring that warehouse teams are fully literate in modern database tools, safety standards, and humanitarian compliance mandates (Tomasini & Van Wassenhove, 2009).

Staff competency and professional training form a symbiotic, co-specialized bundle of intellectual capital assets (Hult et al., 2006). Professional training acts as the exogenous catalyst that directly shapes, expands, and updates individual staff competency levels over time (Luoyi & Guang, 2018). Together, they reflect the total cognitive resource base (knowledge) available to the firm. Without continuous training, existing staff competencies rapidly decay due to technological shifts; conversely, without a baseline of competent staff, structured training fails to translate into organizational capability (Gámez-Pérez et al., 2025). This tight conceptual coupling fully justifies their integration as sub-dimensions under the second-order knowledge construct.

2.2.2 Inventory Management (Mediating Variable)

The strategic control of inventory stock levels and the maintenance of inventory accuracy, serving as the operational mechanism that synchronizes physical resource availability with information integrity to ensure that organizational resources are neither wasted through excess nor compromised by shortages (Chopra & Meindl, 2007).

Inventory Management cannot be evaluated as an abstract pillar; it is operationalized as a reflective-reflective second-order construct defined by two highly integrated operational sub-dimensions namely inventory stock and inventory accuracy (Hult et al., 2006; Yankah et al., 2022).

Inventory stock (level) refers to the physical management, volumetric tracking, and safety optimization of tangible goods stored within an organization's warehouse network (Rossit et al., 2022). It involves calculating reorder points, adjusting safety stock boundaries, and balancing material holding expenditures against the acute operational risk of stockouts (Jonsson & Mattsson, 2023). In humanitarian operations, stock control directly dictates whether emergency

relief supplies, medical kits, and nutritional resources are held in optimal quantities to absorb local distribution delays without expiring in the warehouse (Wild, 2018).

Inventory accuracy represents the degree of strict alignment, data synchronization, and data integrity existing between physical warehouse counts and digital ledger records within an ERP or stock card system (Abdolazimi et al., 2021). Accuracy is defined as the minimization of variances, tracking discrepancies, and data errors within the inventory information system caused by shrinkage, spoilage, or administrative oversight (Sharma, 2022). High record accuracy ensures that procurement officers, program directors, and field logistics teams possess a completely transparent, trustworthy view of available relief supplies, preventing double-ordering or phantom stock outlays (Yankah et al., 2022).

Inventory stock (level) and inventory accuracy represent the dual physical and informational pillars of a functional supply chain (Wild, 2018). As established by control theory, physical stock levels cannot be optimized unless the informational records driving the reorder algorithms are completely accurate (Sharma, 2022). Conversely, maintaining accurate digital records is mathematically impossible without disciplined physical stock handling routines and regular cycle audits (Abdolazimi et al., 2021). Together, these two sub-dimensions comprehensively reflect the structural competence of the inventory management mechanism, validating its role as a key second-order variable in the model (Hult et al., 2006).

2.2.3 Organizational Performance (Dependent Variable)

The aggregate measure of institutional success, defined by the ability to maximize service quality (effectiveness) while simultaneously minimizing or optimizing operational cost (efficiency). It represents the synergy where streamlined internal processes (low cost) directly enable superior and reliable output for stakeholders (high quality) (Drucker, 2013).

Organizational performance is captured as a reflective-reflective second-order construct evaluated through two distinct operational sub-dimensions namely operational cost efficiency and service quality delivery (Hult et al., 2006).

Operational cost efficiency represents the continuous minimization of administrative overhead, material handling waste, demurrage penalties, and holding costs within the logistics network (Tempelmeier, 2011). In commercial firms, this targets profit expansion; however, within the non-profit sector, cost efficiency reflects strict fiduciary compliance and resource stewardship (Ogbo & Ukpere, 2014). It captures how successfully an INGO stretches limited donor funds,

ensuring maximum capital is directed to field programs rather than being consumed by operational waste or holding inefficiencies (Van Wassenhove, 2006).

Service quality delivery captures the overall effectiveness, reliability, speed, and responsiveness of the organization's outputs relative to stakeholder expectations (Neely et al., 1995). In humanitarian frameworks, service quality is defined as delivering the right relief supplies, to the right beneficiaries, at the right location, exactly when needed (Kovács & Spens, 2007). It measures the institutional capacity to respond to sudden regional crises with agile, dependable distribution chains that maximize beneficiary satisfaction and donor trust (Van Wassenhove, 2006).

Operational cost efficiency (the internal inputs) and service quality delivery (the external outputs) form the holistic definition of Performance within non-profit landscapes (Bititci et al., 1997). An INGO that minimizes costs by severely compromising delivery speed fails its humanitarian mandate; conversely, an INGO that achieves flawless delivery quality at an unsustainable, wasteful cost will rapidly face donor withdrawal (Tomasini & Van Wassenhove, 2009). Thus, these sub-dimensions must be modeled together as co-reflective dimensions of the second-order organizational performance construct (Hult et al., 2006).

2.2.3.1 Defining Performance Management and Performance Measurement

When exploring literature on performance management and performance measurement, this topic has been and remains highly significant both to researchers and operational practitioners (Bititci et al., 1997; Neely et al., 1995).

To establish a baseline understanding, a precise definition serves as an ideal starting point. performance management has been defined as a process by which the company manages its performance in line with its corporate and functional strategies and objectives (Bititci et al., 1997, p. 523). More practically, performance management can be conceptualized as the continuous administrative process of creating, adjusting, and executing organizational business plans both effectively and efficiently (Kaplan & Norton, 2001).

This process systematically initiates with the formulation of operational budgets and long-term plans tied directly to overarching strategic goals; these initiatives are subsequently allocated critical resources by managers based on comprehensive financial and capacity assessments (Kaplan & Norton, 2001). The subsequent operational phase is to execute these plans while maintaining an explicit focus on identifying, measuring, and developing workforce performance.

While developing and informing strategies throughout the institutional hierarchy represents a core mandate of performance management, the most structurally relevant domain to this research design is performance measurement.

2.2.3.2 Why Performance Measurement

Performance measurement has exerted a tremendous impact on management architecture over the last few decades (Neely et al., 1995). According to contemporary research, there are three primary reasons why performance measurement functions as an essential corporate mechanism

1. Simplification of Corporate Complexity

Modern organizations are highly complex, making them inherently difficult to govern. Performance measurement transforms reality into simplified numerical concepts that can be easily communicated, visualized, and acted upon, which is the foundational key to successful management (Lebas, 1995).

2. Benchmarking and Evaluation

Performance measures play an imperative role in driving institutional success by providing the objective data needed to evaluate historical outcomes and benchmark results against similar competitor or non-profit peer organizations (Camp, 1989; Stewart, 1995).

3. Operational Feedback Loops

Performance measurement plays the vital role of a feedback loop within an organization's structural framework; it facilitates empirical assessments of whether strategic plans were accurate while revealing how effectively execution was carried out (Bititci et al., 1997; Bongsug, 2009).

The critical insight underpinning these assertions is that implementing a performance measurement system will not inherently improve organizational performance on its own. Rather, it facilitates informed decision-making and enhances administrative control over core processes. The structural business information attained through measurement represents the true, actionable value of the system.

2.2.4 Conceptual Relationships Among Constructs

Knowledge directly drives physical inventory management performance. Well-trained professionals handle warehouse optimization algorithms effectively. Conversely, inventory management directly influences macro-level organizational outcomes. Accurate stock records minimize obsolete material holding charges. Therefore, inventory management functions as a mediating bridge. It converts internal employee knowledge into tangible service quality. Intangible competencies require physical mechanisms to yield institutional.

According to Hatefi, & Torabi (2013), Inventory Management is defined as a framework employed in firms in controlling their interest in inventory, It includes the recording and observing of stock level, estimating future requests, and settling on when and how to arrange. On the other hand, Deveshwar and Dhawal (2013) proposed that inventory management is a method that companies use to organize, store, and replace inventory, to keep an adequate supply of goods at the same time minimizing cost indicates that effective inventory management is essential in the operation of any business. Thus, keeping stock is used as an important strategy by companies to meet customers' needs without taking the risk of frequent shortages while maintaining high service level.

Prior studies highlight that qualified human factor is important for the adoption of sophisticated management practices, Ahmad & Zabri, (2018), thus it may increase firm performance. Expertise and knowledge are the management skills that any organization should acquire (Ogbo & Ukpere, 2014). Kotzab and Teller (2005) argued that the lack of qualified personnel and knowledge regarding the demand and the inaccuracy of virtual and real stock in the stores caused inefficiency in inventory management. A study by Ayad (2008) found that different stores within the same companies and different departments within the same stores delivered different results, mainly due to human factors, specifically in terms of critical thinking, functional knowledge and leadership.

The literature suggests that inventory management has a significant link with performance and the important role of knowledge and competent human factor in assisting the running of inventory management towards enhancing performance. The allocation of tasks, the decision-making processes, the behavior of the personnel involved in the inventory system, as well as communication processes appear to be important contextual factors when analyzing and redesigning inventory systems. These literatures demonstrated that knowledge and adequate

training in managerial practices initiated the adoption of systematic managerial practices for achieving higher performance level (Ahmad & Zabri, 2018).

According to Kaplan and Norton (2001), organizational performance is a multi-dimensional construct where operational cost and service quality act as critical indicators of efficiency and effectiveness. Furthermore, as established by the KSA Model, Badea et al., (2015), the foundation of this performance is the knowledge acquired by staff through structured training, which ultimately manifests as professional competency.

Inventory management is the mediating process of balancing inventory stock levels and maintaining inventory accuracy through the application of technical knowledge. It serves as the bridge that transforms staff expertise into organizational success by ensuring that the right items are available at the right time, thereby optimizing operational costs and guaranteeing service quality (Chopra & Meindl, 2007).

2.3 Theoretical Foundation

Theories have imperative importance to answer the research questions in quantitative research (Creswell & Creswell, 2018). Therefore, resource-based view and control theory was used to find the effect of variables.

2.3.1 Resource-Based View Theory

RBV theory had emerged through "firm resources and sustained competitive advantage" written by (Barney, 1991). It was widely cited to develop RBV theory based on Wernerfelt (1984) "resource position barriers" by explaining the approaches to sustain a unique position in viable situations. Besides, the RBV theory has two main conjectures. The first is, within an industry, the organizational resources may differ, and the second is, across organizations, those resources might not be entirely mobile. The main emphasis of RBV theory is on the resources and capabilities that could involve efficient procedures and processes, contracts, capital, machinery, technology, skills, abilities, employee knowledge, and brand names (Wernerfelt, 1984).

Implication of the Resource-Based View Theory

According to Shibin et al., (2017), RBV theory overcomes the challenges in inventory control by emerging the significant resources, which contributes indirectly or directly to achieve better organizational performance through organizational resources. RBV theory could also be implied individually to know the procedures, processes, competencies, capabilities, and skills to remove

deficiencies. RBV Theory focuses on resources and capabilities, which include well organized procedures/processes, conventions, investment, equipment, tools, expertise, abilities, and staff data (Wernerfelt, 1984).

RBV Theory overwhelms the inventory control intricacy over recognizing the considerable resources that enhance organizational performance. Further, RBV Theory helps firms in amplifying agility, compliance, and ally with the supply chain management requirements. Firms' unique resources, allocation strategy, and limited ability not only create a competitive edge for the firm but also enhance its performance (Shibin et al., 2017).

2.3.2 Control Theory

Axsater (1985) expressed that control theory attributes and encompasses an impact on relevant areas of inventory control by designing and utilizing the inventory control systems. Further, this theory demonstrates the importance of feedback and its dynamical effects, which are essential for inventory control and production. According to Axsater (1985), this theory has three areas, which are classified to contribute to inventory control, namely, non-linear deterministic systems, linear stochastic systems, and linear deterministic systems. For enhanced and efficient operations of any organization, systematic substantial internal control is a crucial part, which ensures reliable, long term managerial and financial reporting with target achievement. Therefore, application of control theory in inventory control could be a leading endeavor (Wei, 2012).

2.4 Empirical Evidence

According to Rashid and Rasheed (2023), The study titled " Mediation of inventory management in the relationship between knowledge and firm performance" investigated the integrated relationship between intellectual capital and physical resource operations. The objective was to examine if inventory capabilities fully mediate the link between workforce knowledge and firm outcomes. Utilizing a structural path design, they found that staff insights significantly improve stock availability, which subsequently reduces organizational overhead costs. They concluded that raw knowledge assets remain latent until translated through precise physical tracking workflows. This study directly relates to this thesis by providing the baseline hierarchical structural architecture for testing the knowledge-inventory-performance path within non-profit frameworks.

Hashmi et al. (2021), The study investigated the direct and indirect impacts of capacity building on supply chain performance networks. The primary objective was to evaluate how employee operational expertise mitigates physical stockouts in volatile environments. Their empirical findings revealed that continuous

training programs directly upgrade data synchronization between warehouse nodes and purchasing offices. They concluded that standardized logistics routines eliminate material waste and maximize delivery predictability. This study is highly relevant to this thesis because it supports the critical linkage between staff development (training) and structural material tracking metrics.

Ahmad and Zabri (2018), The study examined the implementation of advanced resource management practices within emerging operational settings. The objective was to determine whether qualified human factors accelerate the successful adoption of sophisticated control software. Their results proved that an acute shortage of specialized material-handling capabilities represents the primary barrier to tracking accuracy. They concluded that technical competency profiles directly dictate firm baseline efficiency. This research supports this thesis by justifying why competence and training are modeled as foundational exogenous dimensions driving inventory success.

Furthermore, the Study of Ogbo and Ukpere (2014) investigated inventory management practices and organizational performance within developing economic regions. The objective was to evaluate the direct relationship between material control strategies and corporate survival boundaries. Their empirical data showed that effective stock management eliminates tied-up capital and directly maximizes stakeholder satisfaction. They concluded that organizations must actively train their workforces to achieve optimal stock balances. This study provides a vital geographic and contextual bridge for this thesis by validating the direct performance impact of inventory accuracy in Ethiopia context.

2.5 Research Gap

Mainstream supply chain and management literature suffers from a significant profit-centric bias. A vast majority of structural models are validated exclusively within commercial manufacturing or public sectors. Consequently, international non-governmental organizations (INGOs) remain heavily overlooked in mainstream empirical research. INGOs operate under completely different structural setups. They prioritize service delivery reliability over market capitalization or profit optimization, and their logistics systems navigate strict annual donor budgets and explicit regulatory administrative expenditure ceilings. This research directly addresses this sectoral void by examining whether corporate resource models hold valid within humanitarian boundaries.

The current understanding of inventory dynamics relies heavily on empirical observations from developed economies. These environments enjoy highly stable infrastructure, seamless customs processing, and readily available technological systems. In contrast, developing nations like Ethiopia present severe operational constraints. INGOs in Ethiopia face lengthy freight customs

delays, infrastructural deficits, and acute logistics talent shortages and existing Ethiopian logistics studies focus almost exclusively on simple direct paths within manufacturing firms. No empirical study has modeled the structured mechanism through which internal human assets overcome physical supply barriers within the Ethiopian humanitarian ecosystem.

A major methodological limitation in current operations literature is the overreliance on simplistic direct effect testing and many studies jump directly from human capital assets to macro-level organizational performance. This leaves the mid-range operational processes unmapped, and it assumes that simply amassing knowledge automatically yields organizational performance. This study addresses this process gap and positions inventory management as a vital, reflective-reflective second-order mediating construct. In doing so, it maps the exact physical pathway through which internal capabilities can enhance operational performance.

2.6 Conceptual Framework and Research Hypotheses

2.6.1 Conceptual Framework

Conceptual framework is a "mental map" that connects various dimensions of the research process, including the researcher's prior knowledge, interests, theory, and data analysis (Hair et al., 2020).

The structural model is the component that explores the causal links between variables, allowing for the testing of theoretical hypotheses in a complex phenomenon (Hair et al., 2020).

This study used the RBV and control theory in a way to adopt a research model from prior empirical studies. Figure 2.1 demonstrates a reflective-reflective type of higher-order hierarchical model with one higher order independent construct encompasses two lower order constructs (subconstructs), one dependent construct encompasses two lower order constructs, and one mediator encompasses two lower order constructs to examine the mediation effect between the exogenous and endogenous variables, and attempted to test four hypotheses (direct hypothesis: H1, H2, and H3; and hypothesis related to mediation H4).

Knowledge: - The independent (exogenous) variable encompassing staff competencies and organized training programs as a second order construct.

Inventory Management: - The mediating variable measured by the levels of inventory stocks and the percentage of inventory accuracy as a second order construct.

Organizational Performance: - The dependent (endogenous) variable determined by operational costs and overall service quality as a second order construct.

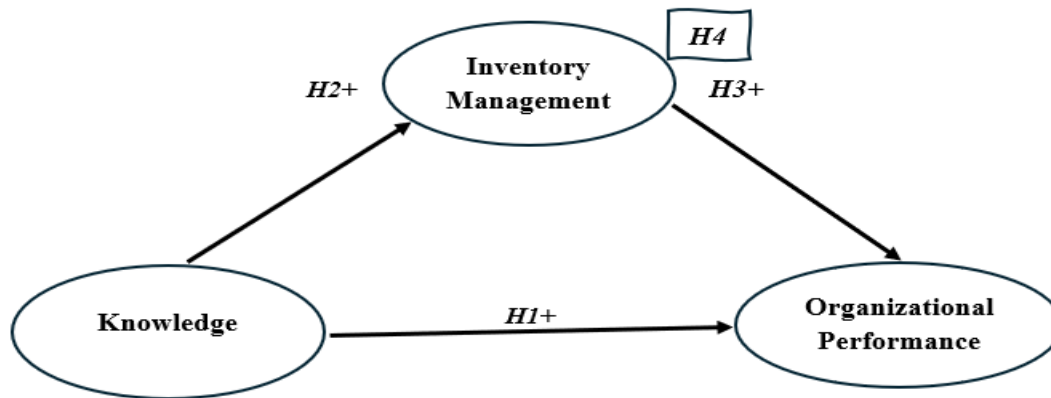


Figure 2.1 Proposed Model (An Adoption of Rashid, A., & Rasheed, R. 2023)

2.6.2 Hypotheses

H1. Knowledge has a significant positive effect on organizational performance. There is a direct effect of knowledge on organizational performance.

The theoretical link between internal human capabilities and strategic success is heavily anchored in the Resource-Based View (RBV), which argues that employee skills act as valuable, rare, and non-substitutable organizational assets (Barney, 1991; Wernerfelt, 1984). Competent, and well-trained staff do not merely manage routine tasks; they actively improve operational productivity, boost job satisfaction, and reduce costly workforce turnover rates (Drucker, 2013). Empirically, contemporary management literature establishes that individual workforce knowledge directly dictates self-efficacy and broad structural achievements. Within macro-development and humanitarian paradigms, when organizations implement rigorous personnel mentoring systems, they dramatically raise their operational baseline (Ferris et al., 2007). Complementing this perspective, control theory offers a vital structural lens for evaluating system performance. According to Axsater (1985), control theory is diversified and contributes to several fields, including healthcare, economics, applied mathematics, engineering, and management. Further, Axsater (1985) expressed that control theory attributes and encompasses an impact on relevant areas of inventory control by designing and utilizing the inventory control systems. This theory demonstrates the importance of feedback and its dynamical effects, which are essential for inventory control and production. Specifically, this framework consists of three

analytical areas classified to contribute to inventory control: non-linear deterministic systems, linear stochastic systems, and linear deterministic systems (Axsater, 1985). For enhanced and efficient operations of any organization, systematic substantial internal control is a crucial part, which ensures reliable, long term managerial and financial reporting with target achievement. Therefore, the application of control theory in inventory control could be a leading endeavor Wei (2012), showing that cultivating a robust repository of shared technical knowledge functions as an immediate prerequisite for driving superior organizational performance.

Researchers recommended that knowledgeable employees are strategic assets, and they should mentor their subordinates. Subsequently, performance does not happen randomly but is a combination of motivation, relevant knowledge, skills, and individual domains. Despite differing paradigms, the importance of a knowledgeable workforce is common (Rehman et al., 2019).

H2. Knowledge has a significant positive effect on inventory management. There is a direct effect of knowledge on inventory management.

The precise handling of physical resource streams relies explicitly on the baseline competencies and continuous training opportunities afforded to supply chains (Ahmad & Zabri, 2018; Waters, 2003). In volatile logistics landscapes, qualified professionals who hold specific functional knowledge are crucial for executing strategic safety stock settings, structural warehouse planning, and replenishment policies (Rehman et al., 2019).

Conversely, an acute deficit of specialized material-handling talent consistently fosters massive store inefficiencies, planning blind spots, and catastrophic data discrepancies between virtual systems and physical yards (Ayad, 2008; Kotzab & Teller, 2005). Proponents of inventory optimization demonstrate that targeted staff training programs minimize workplace waste, remove process barriers, and build compliance (Olaniyi & Pugal, 2024). Thus, cultivating deep operational expertise serves as the foundational mechanism required to build and maintain high-precision tracking environments.

Naidoo and Wu (2011), researched 570 inventory control experts from New Zealand, Australia, the United States, and the United Kingdom and established that the designated staff could professionally plan and control the inventory effectively if knowledge had been imparted to them. Though the knowledgeable labor force is a preference of every business, and implausible unskilled and non-professional staff negatively influences the business from planning to execution.

H3. Inventory management has a significant positive effect on organizational performance.

There is a direct effect of inventory management on organizational performance.

Sustainable firm performance is imperative and is closely linked with organizational goals and mission. Moreover, inventory management is indispensable for small businesses as well as for large-scale businesses. Effective inventory management can enhance the strategic competitiveness of any organization (Chopra & Meindl, 2007).

Within contemporary operations networks, protecting service quality while dropping excessive carrying costs depends entirely on high-utility inventory auditing practices (Deveshwar & Dhawal, 2013). Keeping optimal stock levels helps logistics frameworks actively dodge the concurrent dangers of tied-up capital in obsolete piles and highly disruptive, immediate stock-outs (Hatefi et al., 2013). When an entity exhibits weak control over its physical supply accessibility, it faces massive cash-flow compression, compounding holding charges, and equipment underutilization. Empirical data from developing contexts reinforces that strictly complying with standardized operating routines removes assembly stoppages and creates strong material predictability (Hashmi et al., 2020). By securing product availability and driving exact cycle-counting accuracy, entities drastically improve customer satisfaction while dropping superfluous operational overheads (Bin-Syed et al., 2016; Chopra & Meindl, 2007).

H4. The effect of knowledge on organizational performance is significantly mediated by inventory management. The mediated effect of inventory management between knowledge and organizational performance.

Knowledge creation and knowledge transfer are imperative to improve staff skills. More explicitly, skills development involves transferring, retaining, interpreting, acquiring, and creating knowledge, and these attributes got empirical attention (Garvin et al., 2008).

While amassing deep intangible knowledge is an invaluable asset, its eventual return on investment is realized only when applied directly to optimize concrete physical operations (Rashid & Rasheed, 2023). Recent empirical research proves that inventory management processes serve as a vital converting link that reshapes staff insights into visible organizational returns (Rashid et al., 2020). If strategic knowledge paths are structurally overcome within a single department, latent human talents fail to improve broader cross-functional targets (Garvin et al., 2008). Educating localized workforces on resource optimization strategies unlocks downstream efficiencies, causing inventory systems to heavily amplify on time and quality

delivery and lower expenditure (Ogbo & Ukpere, 2014). Consequently, precise stock control networks act as full, complementary mediators through which intellectual capital is successfully mapped and big pictured in to overall organizational performance.

Ogbo and Ukpere (2014), stated that a firm must educate its staff to reach optimal inventory levels. Consequently, the role of inventory management is increasing, and understanding the right vendor, the right time, the right price, the right quantity, and the right purchasing could only be possible with knowledgeable professionals.

The measurement model conceptualizes how the latent constructs are measured using sub-constructs/factors and observed indicators (survey items). This study employed a reflective-reflective type of higher-order hierarchical model. It consists of three main constructs and six sub-constructs/lower-order components which represent more concrete subdimension of the three concepts under study.

Reflective–reflective higher-order construct has reflectively measured lower-order components and relationships from the higher-order component to the lower-order component. The measurement model setup in which measures represent the effects (or manifestations) of an underlying construct. Causality is from the constructs to its measures (indicators). The outer loadings estimation of reflective measurement models usually uses Mode A in PLS-SEM (Hair J. F. et al., 2022). Subsequently the lower order constructs measured by a total of 23 reflective indicators (survey items).

The rationale behind that the study employed a second-order measurement model consisting of three main constructs and six sub-constructs to get advantage by establishing higher-order constructs and the researcher can reduce the number of relationships in the structural model, making the PLS path model more parsimonious and easier to grasp (Hair J. F. et al., 2022).

2.7 Overview of International Non-Government Organization in Ethiopia

International Non-Governmental Organization (INGO): A non-profit, voluntary organization that operates across multiple borders to provide humanitarian assistance and development support, remaining independent of government control to serve humanitarian needs (Lewis et al., 2020).

International non-governmental organizations (INGOs) are pivotal players in Ethiopia's development and humanitarian landscape governed by the authority for civil society

organizations (ACSO), these entities must navigate a specific legal framework to operate within the country.

The primary law governing INGOs in Ethiopia is the civil society organizations proclamation no. 1113/2019. This legislation significantly opened the operating space compared to previous laws, removing the 10% cap on foreign funding for organizations working on human rights and advocacy. Key regulatory points include foreign organizations must register with ACSO, a process that typically takes up to 45 days upon fulfilling all requirements, organizations are mandated to spend at least 80% of their total budget on operational programs, while administrative costs must not exceed 20% and these organizations are required to sign a project agreement with the relevant government ministry for example for health/medication related sector; ministry of health, for agriculture/food related sector; ministry of agriculture and the same for each specific intervention.

INGOs in Ethiopia primarily focus on high impact sectors aimed at alleviating poverty and improving infrastructure consists of food security and nutrition like the World Food Programme (WFP), Save the Children, etc. INGOs focuses on healthcare consists of initiatives focused on medical items distribution, maternal health, and vaccinations (e.g., United States Agency for International Development (USAID) funded partners, United Nation (UN) agencies/programs, etc.). Essential household items distribution during emergency response for the provision of crucial assistance like floods, or regional conflicts (e.g., CARE international, Norwegian Refugee Council (NRC), Oxfam, International Rescue Committee (IRC), etc.). INGO's focuses on Water, Sanitation and Hygiene (WASH) like World Vision international, Oxfam international, etc. INGO's in the sector of education focuses on School feeding programs and adult literacy (Plan International, Catholic Relief Services (CRS), etc. Orthopedic Items (Physical Rehabilitation Items) e.g., Medicine Son Frontier (MSF) and others provide detention assistance (Items and monitoring support for detainees) like International Committee of Red Cross (ICRC).

As of 2026, hundreds of INGOs operate in Ethiopia, contributing billions in foreign aid and providing employment to thousands of locals. However, they face persistent challenges like customs & logistics while humanitarian goods often receive duty free status, the process for clearing equipment can be lengthy and compliance with strict reporting requirements to ACSO regarding annual audits and project as well.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

The designing and methodological aspect of a particular study is the roadmap that the study should follow in its pursuit of the desired outcome. Hence, due care shall be given while spelling out this roadmap. In view of that, a detailed account has been given to the description of the design the research would employ, the data sources and methods of collection, the target population, unit of analysis and respondents, the types of instruments and their development procedure, the dimensions and corresponding measurement items, and data processing, analysis and presentation procedures (Creswell & Creswell, 2018).

3.2 Research Design

A research design provides the basic directions or “recipe” for carrying out the project. Following the principle of parsimony, the researcher should choose a design that will (1) provide relevant information on the research questions and hypotheses and (2) complete the job the most efficiently. Once the researcher has decided on a study design, the formulation phase of the basic research process is complete (Hair et al., 2020). The same authors discuss three types of research design, namely exploratory (emphasizes discovery of ideas and insights), descriptive (concerned with determining the frequency with which an event occurs or relationship between variables) and explanatory/causal (concerned with determining the cause-and-effect relationships) in their known textbook.

The type of research design employed in this study is explanatory/causal concerned with determining the cause-and-effect relationships. Because objective of this study is to determine the relationship among variables under investigation (Hair et al., 2020).

This research is cross-sectional in nature. Cross-sectional research captures data at a single point in time and is highly efficient for examining structural correlations. It evaluates relationships across multiple variables in the organization simultaneously at a single point of time.

Furthermore, this study applies a formal deductive research method, starting with theory and hypotheses before the collection and analysis of data, this implies that theoretical relationships found in existing literature are translated into formal hypotheses and empirically tested using data (Hair J. F. et al., 2022).

3.3 Research Population and Sampling

3.3.1 Research Population

This study focuses on international NGOs in Ethiopia. As of early 2026, the landscape for civil society organizations (CSOs) in Ethiopia has expanded significantly due to legal reforms. While the exact number of international NGOs (INGOs) fluctuates as new organizations register and others complete their missions, current data from the Authority for Civil Society Organizations (ACSO) provides approximately 500 international/foreign NGOs operating nationwide in Ethiopia. And nearly 95% of all international NGOs operating in Ethiopia maintain their main country office in Addis Ababa (secondary data from the authority 2026).

3.3.2 Sample Design

Sampling design is part of the basic business research process. The sampling design process involves answering questions like should a sample or a census be used. If a sample, then which sampling approach is best and how large a sample is necessary

Sample Method

The study employed simple random sampling to ensure that every member of the sampling frame had an equal and independent chance of selection as the method is completely probabilistic and straightforward. This probability-based approach was chosen to minimize selection bias and ensure the representativeness of the sample, which is a critical assumption for the generalizability of statistical findings (Creswell & Creswell, 2018).

The sampling frame for this study consists of international non-governmental organizations (INGOs) with large-scale inventory management departments maintaining stock ceilings exceeding \$5 million USD. These organizations were selected as the sampling frame to ensure direct alignment with the research objective of analysing mediation of inventory management in the relationship between knowledge and organizational performance. According to ACSO Directive No. 986/2024 from the ledger used for the registry of macro-level commodity and budget values managed by specific INGOs, out of 500 INGOs in Ethiopia, 243 met these criteria and were included in the sampling frame (secondary data from the authority 2026).

Sample Size

To determine the minimum sample size, G*Power 3.1.9.7 and inverse square root method was compared. Based on a multiple regression model with a medium effect size ($f^2 = 0.15$), a power

of 0.95, and a significance level of $\alpha = 5\%$, the required minimum sample was calculated at 107. G-power analysis is an excellent freeware program. It computes the power values for given sample sizes, effect sizes, and alpha and allows high accuracy of power and sample size analysis.

Based on the inverse square root method Hair J. F. et al., (2022), the minimum sample size required for a significance level of 5% and a power of 80% is calculated as $(2.486/P_{min})^2$ and with the assumption of minimum path coefficient for the proposed method assumed to be 0.2 and resulted in 154.504, after rounded to the next integer, so the minimum sample size in this method was 155.

A comparison of the two calculated outputs led to the adoption of the larger sample size derived from the inverse square root method, despite its limitation in evaluating a single path rather than the complete structural model. To account for potential non-response or incomplete surveys, the study incorporated a 10% buffer to the baseline requirement of 155. This calculation $155 \times 1.1 = 170.5$ establishes a final rounded target sample size of 171 respondents.

The target respondents or sampling units for this study are senior level professionals who are responsible for inventory management within their respective organizations (One individual from One specific framed sample). These individuals were selected because they hold strategic positions with oversight of business operations and strategic direction, ensuring they possess the most comprehensive knowledge and relevant information regarding inventory management processes and their respective operational employees.

3.4 Survey Design and Data Collection Methods

This study used a structured questionnaire survey as a primary source of data to evaluate the interrelationships among variables (Hair et al., 2020). The questionnaire was adopted from similar empirical studies. The questionnaire used a five-point Likert scale, strongly disagree was represented by 1, and 5 was represented by strongly agree. This metric scale achieves an appropriate balance between the responses' complexity and the data analysis's simplicity. The questionnaires were tested on 30 potential respondents to ensure the validity and reliability of the items/variables, and the measurement tool aligns with the study context.

The questionnaire includes four sections. Section one is all about briefing the researcher, overview/aim of the research, data protection and general detail about profile of the responding organizations and from section two to four deals with the constructs and respective items that

were adopted based on academic literature (See APPENDIX A Constructs, Sub Constructs and Measurement Items).

After the applications of precoding requirements like all the indicator coding must have the same direction, a low value represents a negative outcome and a high value a positive outcome. Otherwise, we cannot conclude that higher latent variable values represent the lower components and their indicators Hair et al. (2022), the questionnaire then has been encoded in an online platform, google form, to ease the respondents in answering the questionnaire. The researcher emails a set of structured and closed-ended survey questionnaires to the respondents (Hair et al., 2020). The questionnaire comprised a total of 23 items (APPENDIX A Constructs, Sub Constructs and Measurement Items). Due to the geographical dispersion of the participants, the questionnaire was distributed via google forms. Prior to distribution, the researcher obtained formal authorization by submitting an assistant letter from the AAU Programs Coordination Unit to the participating organizations. The respondents received thorough instructions in advance regarding the survey items to ensure clarity and facilitate the ease of completion.

3.5 Data Analysis

SmartPLS 4.0 software for partial least square structural equation modeling (PLS-SEM) has been utilized. PLS-SEM has been widely applied in the quantitative research approach.

According to Hair et al. (2022), SEM has been considered a suitable technique to measure direct and indirect hypothetical paths, as it analyzes unobservable latent constructs that are difficult to evaluate. Furthermore, it includes inner and outer model analyses, assessing the links between independent and dependent variables and between latent variables and their estimated items. Therefore, the estimation and evaluation of the proposed model was performed in two stages. First, the measurement model, where validity and reliability statistics were analyzed, and second, the analysis of the structural model, where the proposed hypotheses were tested.

Furthermore, the researcher utilized the google form analysis so that frequency and percentages tables were generated to summarize the profile of the responding organizations whereas, descriptive statistics such as mean, standard deviations, skewness and excess kurtosis of the respondents' scores on all items and variables were assessed using PLS-SEM algorithm unstandardized data scale method.

Before the commencement of analysis, the researcher performed rigorous data examination to prevent bias in the structural model and ensure the integrity of the results. This process involved

identifying and removing unengaged respondents specifically those exhibiting straight-lining, diagonal lining and alternating extreme pole response behavior. To safeguard data integrity and avoid non-response bias within the structural model, the google forms parameters were configured to require a response for every survey item. Consequently, the final dataset contained no missing values. PLS-SEM algorithm is a nonparametric statistical method which is different from CB-SEM algorithm, which draws on a maximum likelihood estimator that requires normally distributed data, PLS-SEM algorithm does not make any distributional assumptions (Hair J. F. et al., 2022).

Furthermore, post-coding was conducted to transform the raw data into a format suitable for SmartPLS 4.0, this included assigning short, and alphanumeric codes to each indicator to facilitate the assessment of the measurement and structural model. These preparatory steps are essential for ensuring both convergent and discriminant validity, as the accuracy of Partial Least Squares Structural Equation Modeling (PLS-SEM) is highly sensitive to the quality of the input data (Hair J. F. et al., 2022).

3.6 Model Specification and Variable Description

To map the complex structural interactions, this study specifies a reflective-reflective second-order hierarchical component model (HCM). The operational relationships involve three abstract macro-constructs broken down into six concrete first-order latent variables.

Table 3.1 Model Specification and Variable Description

Construct Type	Higher- Order Constructs	Lower-Order Sub-Dimensions	Operational Measurement Definition	Number of Items	Source
Independent (Exogenous)	Knowledge	Competency	Measures individual employee skills, expertise, and structured training	8 Items	(Naidoo & Wu, 2011; Rashid & Rasheed, 2023)
		Training			
Mediating (Intervening)	Inventory Management	Inventory Stock	Measures inventory stock levels and accuracy of inventory records when comparing with physical availability of items	7 Items	(Bin-Syed et al., 2016; Chopra & Meindl, 2007; Hashmi et al., 2020; Rashid & Rasheed, 2023)
		Inventory Accuracy			
Dependent (Endogenous)	Organizational Performance	Operational Cost	Measures overall costs associated with operating the business in line with reliability and speed of organization service	8 Items	(Hashmi et al., 2021 ; Rashid et al., 2020 ; Rashid & Rasheed, 2023)
		Service Quality			

3.7 Instrument Validity and Reliability

3.7.1 Reliability

3.7.1.1 Indicator Reliability

High outer loadings on a construct indicate the associated indicators have much in common, which are captured by the construct. The size of the outer loading is also commonly called indicator reliability. The standardized item outer loadings must exceed 0.708 (Hair J. F. et al., 2022). The empirical results confirm high reliability, with all 23 loadings falling between 0.767 and 0.950.

3.7.1.2 Internal Consistency Reliability

The traditional criterion for measuring internal consistency reliability is Cronbach's alpha. The alpha criterion provides an estimate of reliability based on the intercorrelations of the observed indicator variables. To overcome one weakness of Cronbach's alpha, that it assumes all indicators are equally reliable, this study also applies a different measure of internal consistency reliability, referred to as composite reliability (Hair J. F. et al., 2022).

3.7.2 Validity

A validity test evaluates the accuracy of an instrument, determining the precise extent to which a latent construct is empirically and truly represented by its observed items. In this study, this assessment ensures that the operationalized survey indicators accurately capture the targeted underlying phenomena without capturing systematic measurement error. To confirm this, construct validity, it was operationalized and verified through two distinct statistical phases. First convergent validity via average variance extracted and then discriminant validity via Fornell-Larcker Criteria (FLC) and heterotrait-monotrait (HTMT) ratio.

3.7.2.1 Convergent Validity

Convergent validity describes the extent to which a measure correlates positively with alternative measures of the same construct. This was verified utilizing the Average Variance Extracted (AVE), where a minimum value of 0.50 is required (Hair J. F. et al., 2022).

3.7.2.2 Discriminate Validity

Discriminant validity indicates the extent to which a given construct is empirically distinct from other constructs within the structural model (Hair J. F. et al., 2022). To evaluate discriminant validity, the Fornell and Larcker (1981) criterion was applied. However, the heterotrait–

monotrait (HTMT) ratio has emerged as a new method to detect discriminant validity, which was developed by (Henseler et al., 2015).

Table 3.2 Reliability and Validity Test

Constructs and Sub-Constructs	Cronbach's alpha (> 0.7)	Composite Reliability (> 0.7)	Average Variance Extracted (AVE) (> 0.5)
Knowledge	0.964	0.964	0.965
Competency	0.946	0.946	0.822
Training	0.833	0.855	0.753
Inventory Management	0.943	0.952	0.945
Inventory Stock	0.927	0.927	0.873
Inventory Accuracy	0.894	0.895	0.759
Organizational Performance	0.989	0.989	0.989
Operational Cost	0.954	0.954	0.878
Service Quality	0.960	0.961	0.894

Source: Survey Result 2026

A scan at table 3.1 implies that all alpha and composite reliability values for the respective dimensions were well above the suggested cut-off value of 0.7 and for average variance extracted above the suggested cut-off value of 0.5, hence implying the validity and reliability of the instrument that measures the study constructs, i.e. the items under the respective scales could properly measure the dimension of concern.

3.8 Research Ethics

This study adhered to established ethical guidelines to protect the rights and welfare of human participants (Creswell & Creswell, 2018). Prior to data collection, respondents were informed of the strict academic nature of the research and provided their informed consent to participate. Participation was entirely voluntary, with respondents maintaining the right to withdraw at any stage without penalty. To ensure full anonymity, no personally identifiable information like names and email addresses was not recorded during the data collection process. The survey was configured in google forms to strictly avoid the collection of respondent emails, ensuring that all data remains untraceable to individual participants. Furthermore, participants were assured of data confidentiality, with all responses stored securely and used solely for aggregate statistical analysis to prevent any potential harm or breach of privacy.

CHAPTER FOUR

RESULT AND DISCUSSION

4.1 Introduction

This chapter presents the empirical findings, and discussions from the data analysis, directly addressing the core research questions. Structurally, the chapter is organized into five sequential sections. It begins with the profile of the participating organizations, followed by the presentation of descriptive statistics. Next, the evaluation of the measurement model is detailed, leading to the structural model evaluation comprised of hypothesis testing, and finally chapter concludes with the model explanatory and predictive power evaluation.

Out of 171 contacted respondents, 159 professionals completed survey questionnaires via Google Forms, representing a high response rate of 92.98 %. Consequently, the final sample size consists of (n = 159) respondents. This sample size is highly suitable for partial least squares structural equation modeling (PLS-SEM) analysis, as it comfortably exceeds the minimum recommended threshold of 100 respondents typically required for this method (Hair J. F. et al., 2022).

4.2 Profile of the Responding Organizations and Respondents

To contextualize the empirical findings, the descriptive profiles of the participating organizations and individual respondents (n = 159) were systematically analyzed across several strategic parameters. In this work, google form analysis form responses tab was used to analyze organizational profile data from the respondents.

Regarding the primary organization sector, more than half of the surveyed entities operate within medical assistance (n = 89, 55.97%), followed by food items/nutrition assistance (n = 28, 17.61%). In terms of institutional longevity and scale, the responding organizations exhibit substantial operational stability in Ethiopia. A dominant majority have been active in the country for 10 to 12 years (n = 98, 61.64%), while 9.43% (n = 15) have surpassed 12 years of operations.

The assessment of the current inventory management systems implemented by the participating organizations reveals an overwhelmingly highly digitalized environment. An integrated enterprise resource planning (ERP) system such as SAP, Oracle, or Microsoft dynamics serves as the primary technological backbone for 81.13% (n = 129) of the organizations.

Regarding respondent leadership profile and tenure, the individual respondent demographics underscore a highly elite, specialized, and experienced informant pool, reinforcing the target

data's elite credibility and reliability. Finally, the years of service in the current position align closely with the deep professional maturity of the respondents, more than half of the leaders have accumulated between 7 to 9 years of direct tenure in their current roles ($n = 83$, 52.20%), while an additional 19.50% ($n = 31$) boasts 10 to 12 years of service.

Collectively, the intersection of long institutional operations, widespread ERP adoption, and highly seasoned supply chain leadership establishes a qualified empirical dataset suited for path modeling for the phenomena under study.

4.3 Findings

4.3.1 Descriptive Statistics

Table 4.1 Respondents' Perception on Knowledge

Constructs, sub-Constructs and Items	Mean	Standard Deviation	Excess kurtosis	Skewness
Knowledge	3.638	0.943	-1.153	-0.328
Competency	3.628	1.010	-1.092	-0.317
C1	3.654	1.076	-0.604	-0.467
C2	3.673	1.107	-0.917	-0.333
C3	3.748	1.116	-0.957	-0.448
C4	3.491	1.159	-0.784	-0.405
C5	3.560	1.119	-0.926	-0.260
Training	3.649	0.886	-1.099	-0.297
T1	3.503	1.104	-0.910	-0.164
T2	3.730	0.895	-0.508	-0.182
T3	3.711	1.042	-0.489	-0.540

Source: Survey Result 2026

The results in table 4.1 show that the mean and standard deviation values. For the construct knowledge $M=3.638$ and $SD=0.943$ and the sub dimensions competency, and training $M=3.628$, $SD=1.010$; and $M=3.649$, $SD=0.886$ respectively. The mean values of each of the measurement items of competency indicator were calculated between 3.491 and 3.748 and standard deviations that range between 1.076 and 1.159. The mean values of each of the measurement items of training indicator were calculated between 3.503 and 3.711 and standard deviations that range between 1.042 and 1.104. The noticeably represented mean and standard deviation scores of the variable knowledge suggest that respondents in the investigated organizations believe that competency and training are key inputs for knowledge.

Table 4.2 Respondents' Perception on Inventory Management

Constructs, sub-Constructs and Items	Mean	Standard Deviation	Excess kurtosis	Skewness
Inventory Management	3.647	0.806	-0.855	-0.142
Inventory Stock	3.674	0.803	-0.643	0.057
IS1	3.673	0.880	-0.426	-0.147
IS2	3.648	0.810	-0.720	0.229
IS3	3.704	0.894	-0.878	-0.019
Inventory Accuracy	3.623	0.850	-0.820	-0.268
IA1	3.616	0.976	-0.163	-0.392
IA2	3.591	0.906	-0.482	-0.224
IA3	3.654	0.965	-0.739	-0.190
IA4	3.635	1.072	-0.787	-0.341

Source: Survey Result 2026

The mean and standard deviation values for the construct inventory management M=3.647 and SD=0.806 and the sub dimensions inventory stock, and inventory accuracy M=3.674, SD=0.803; and M=3.623, SD=0.850 respectively. The mean values of each of the measurement items of inventory stock indicator were calculated between 3.648 and 3.704 and standard deviations that range between 0.810 and 0.894. The mean values of each of the measurement items of inventory accuracy indicator were calculated between 3.591 and 3.654 and standard deviations that range between 0.906 and 1.072. The represented mean and standard deviation scores of the variable inventory management suggest that respondents believe that above average, factors of inventory management have related each other.

Table 4.3 Respondents' Perception on Organizational Performance

Constructs, sub-Constructs and Items	Mean	Standard Deviation	Excess kurtosis	Skewness
Organizational Performance	3.620	1.043	-1.131	-0.368
Operational Cost	3.627	1.043	-1.070	-0.378
OC1	3.610	1.110	-0.799	-0.434
OC2	3.654	1.160	-0.880	-0.416
OC3	3.604	1.082	-0.991	-0.241
OC4	3.642	1.106	-1.176	-0.237
Service Quality	3.614	1.054	-1.135	-0.364
SQ1	3.566	1.125	-0.923	-0.340
SQ2	3.642	1.095	-1.128	-0.265
SQ3	3.623	1.103	-1.038	-0.287
SQ4	3.623	1.136	-1.018	-0.359

Source: Survey Result 2026

The mean and standard deviation values for the construct organizational performance $M=3.620$ and $SD=1.043$ and the sub dimensions operational cost, and service quality $M=3.627$, $SD=1.043$; and $M=3.614$, $SD=1.054$ respectively. The mean values of each of the measurement items of operational cost indicator were calculated between 3.604 and 3.654 and standard deviations that range between 1.082 and 1.160. The mean values of each of the measurement items of service quality indicator were calculated between 3.566 and 3.642 and standard deviations that range between 1.095 and 1.136. The finding implies that a consistent response captured concerning the relation among the sub-dimensions of organizational performance.

The descriptive statistics revealed healthy variability among respondent scores. The calculated standard deviations hovered around a mean threshold value ranging from 0.803 to 1.160. This level of dispersion indicates a robust spread of responses across the measurement continuum without suffering from restriction of range or excessive noise, making the data highly suited for variance-based path modeling in SmartPLS.

Prior to conducting the measurement and structural model assessments, the data were evaluated for univariate normality by examining the skewness and excess kurtosis of the indicators. The indicators yielded excess kurtosis values ranging from -1.176 to -0.163 and skewness -0.540 to +0.229. According to Hair J. F. et al., (2022), both excess kurtosis and skewness values falling within the range of -2.0 to +2.0 indicate acceptable univariate normality for structural model estimation and path coefficient evaluation. Consequently, data distribution is deemed appropriate for both measurement and structural model analyses.

4.3.2 Measurement Model Evaluation

Following PLS-SEM protocols, model assessment follows a two-step process. Beginning with the first one, confirmatory composite analysis (CCA) with reflective measurement was carried out to evaluate the outer measurement model for reliability and validity. Assessment of the outer model starts with the evaluation of the indicator reliability/outer loading along with the constructs/variable's internal consistency of reliability measured by composite reliability/CR and Cronbach's alpha (α) and validity (convergent validity measured by average variance extracted/AVE and discriminant validity measured by Fornell-Larcker Criteria (FLC) by diagonal elements and heterotrait-monotrait (HTMT) ratio in Smart-PLS 4.0, PLS-SEM algorithm (Hair et al., 2020).

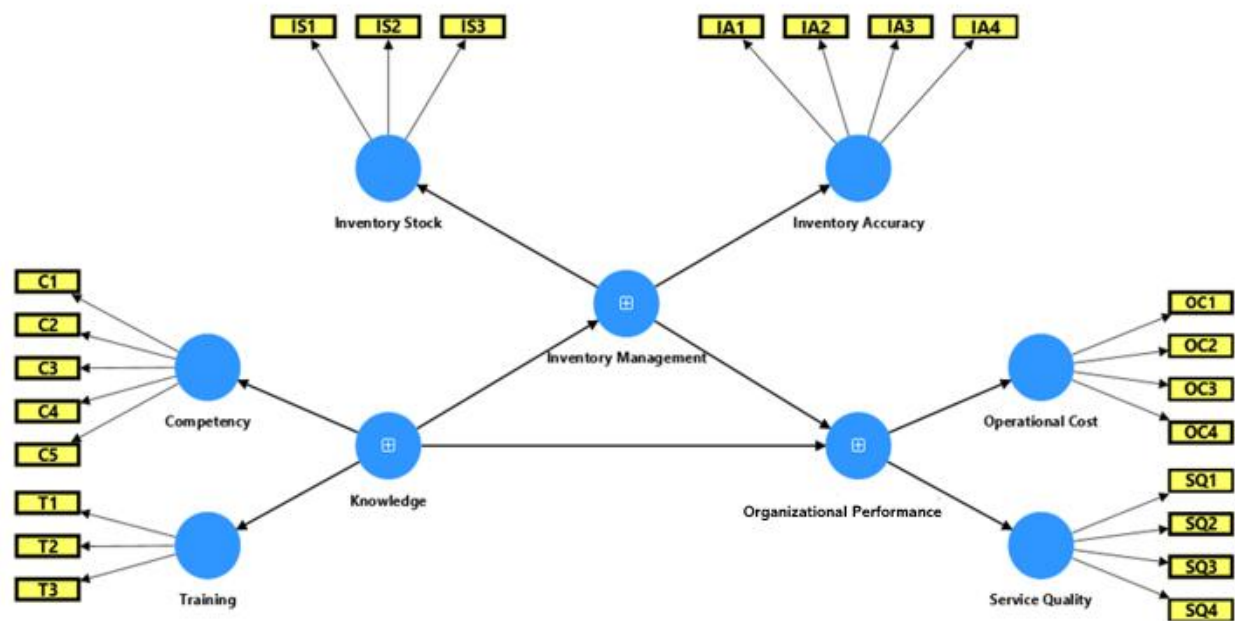


Figure 4.1 The Research Model. Source: Smart-PLS 4.0 2026

Figure 4.1 expresses the overall higher order model of the study which shows the higher order constructs, the lower order latent variables and their respective indicators. To deal with the measurement error, it was automatically treated within the research model by SmartPLS 4.0. Unlike traditional regression analyses that assume error-free independent variables, the structural equation modeling approach employed here isolates measurement error from the true score variance of the latent constructs. Indicator-level measurement error was controlled by ensuring all item outer loadings exceeded the recommended threshold of 0.708. Furthermore, systemic measurement error was minimized by verifying that the Average Variance Extracted (AVE) for all latent variables exceeded 0.50, indicating that the true construct variance successfully outweighs the error variance (Fornell & Larcker, 1981; Hair J. F. et al., 2022).

To comprehensively evaluate the conceptual framework, a hierarchical component model (HCM) was established, consisting of three reflective-reflective higher-order constructs (HOCs) driven by six lower-order constructs (LOCs), as illustrated in Figure 4.1. Following the methodological recommendations of Hair J. F. et al., (2022), a two-stage approach was executed to evaluate the measurement properties of this second-order architecture. In the first stage, the standard PLS-SEM algorithm was run using the repeated indicators approach to assess the item-level outer loadings (indicator reliability), internal consistency, and convergent validity of the six first-order sub-constructs (competency, training, inventory stock, inventory accuracy, operational cost, and service quality). Once the lower-order measurement model satisfied all psychometric thresholds, the latent variable scores (composite scores) for these sub-constructs were extracted

from SmartPLS 4.0. In the second stage, these extracted scores were utilized as manifest indicators to establish and validate the measurement and structural parameters of the three higher-order constructs (knowledge, inventory management, and organizational performance).

Table 4.4 Standardized Items Loading, Cronbach's Alpha/ α , CR, and AVE for the model

Construct	Sub-Construct and Items		Std β (> 0.7)	Cronbach's alpha (> 0.7)	Composite Reliability (ρ_a) (> 0.7)	Average Variance Extracted (AVE) (> 0.5)
	Sub-Construct	Items				
Knowledge				0.964	0.964	0.965
	Competency		0.982	0.946	0.946	0.822
		C1	0.904			
		C2	0.906			
		C3	0.927			
		C4	0.895			
		C5	0.901			
	Training		0.983	0.833	0.855	0.753
		T1	0.911			
		T2	0.767			
		T3	0.916			
Inventory Management				0.943	0.952	0.945
	Inventory Stock		0.969	0.927	0.927	0.873
		IS1	0.936			
		IS2	0.938			
		IS3	0.929			
	Inventory Accuracy		0.976	0.894	0.895	0.759
		IA1	0.889			
		IA2	0.852			
		IA3	0.889			
		IA4	0.854			
Organizational Performance				0.989	0.989	0.989
	Operational Cost		0.995	0.954	0.954	0.878
		OC1	0.935			
		OC2	0.936			
		OC3	0.930			
		OC4	0.947			
	Service Quality		0.995	0.960	0.961	0.894
		SQ1	0.943			
		SQ2	0.950			
		SQ3	0.939			
		SQ4	0.949			

Source: Survey Result 2026

4.3.2.1 Indicator Reliability and Internal Consistency Reliability

At the time of evaluation of first (lower) order constructs, that means at stage 1, indicator reliability was evaluated by examining the standardized outer loadings (Std β) of the manifest items onto their respective lower-order latent constructs. According to Hair J. F. et al., (2022), the outer loadings should exceed the threshold of 0.708 to confirm that the latent construct explains more than 50% of the indicator's variance. As detailed in table 4.4, all the 23 item loadings across the six sub-constructs fall between 0.767 and 0.950, which are greater than the

baseline metric. Consequently, absolute indicator reliability is fully established across the instrument, and no items were required deletion. To establish instrument reliability, both Cronbach's alpha (α) and composite reliability (CR) were evaluated. The critical benchmark for both coefficients is 0.70 for exploratory and confirmatory modeling (Hair J. F. et al., 2022). The lowest recorded Cronbach's alpha among the sub-constructs is 0.833 (training), and the highest is 0.960 (service quality). Similarly, the CR indices range from 0.855 to 0.961. Because these indices fall within the ideal range, the first-order constructs demonstrate internal consistency and have good measurement stability.

Following the confirmation of second-order criteria, the measurement properties of the three reflective higher-order constructs namely knowledge, inventory management, and organizational performance were evaluated using their second-order standardized load and composite indicator score. Knowledge driven by its lower-order sub-constructs (competency, Std β = 0.982; training, Std β = 0.983), this second-order construct shows statistics with a Cronbach's alpha of 0.964, and CR of 0.964. Inventory management is supported by inventory stock (Std β = 0.969) and inventory accuracy (Std β = 0.976), it yields a Cronbach's alpha of 0.943, and CR of 0.952. organizational performance supported by operational cost (Std β = 0.995) and service quality (Std β = 0.995), it reveals Cronbach's alpha of 0.989, and CR of 0.989.

The high second-order factor loadings ($\beta \geq 0.969$) confirm that the lower-order dimensions are strong, valid concrete representations of their primary abstract macro-constructs (Hair J. F. et al., 2022).

4.3.2.2 Construct Validity

The validity of a measurement model should imperatively be achieved through construct validity, convergent validity, and discriminant validity (Henseler et al., 2015). This validity test refers to the measurement of accuracy and the extent that the latent construct represented by observed items (Hair J. F. et al., 2022).

4.3.2.2.1 Convergent Validity

Convergent validity describes the extent to which a measure correlates positively with alternative measures of the same construct. This was verified utilizing the Average Variance Extracted (AVE), where a minimum value of 0.50 is required (Hair J. F. et al., 2022).

Similarly, during evaluation of first (lower) order constructs the empirical calculations show that the AVE values for the sub-constructs range from a low of 0.753 (training) to high of 0.894

(service quality). Since all AVE scores are well above 0.50, it is confirmed that each latent variable/sub construct captures substantially truer variance from its indicators than systematic measurement error. The average variance extracted from the sub constructs of knowledge (competency and training) reached 0.965, while the average variance extracted from the sub constructs of inventory management (inventory stock and accuracy) and the average variance extracted from the sub constructs of organizational performance (operational cost and service quality) yielded 0.945 and 0.989 respectively. Since all AVE scores are above the 0.50 threshold, the results confirm that each of the three higher-order constructs explains a substantial amount of variance within their respective lower-order dimensions.

4.3.2.2 Discriminate Validity

Discriminant validity indicates the extent to which a given construct is empirically distinct from other constructs within the structural model (Hair J. F. et al., 2022). To evaluate discriminant validity, the Fornell and Larcker (1981) criterion was applied. However, the heterotrait–monotrait (HTMT) ratio has emerged as a new method to detect discriminant validity, which was developed by (Henseler et al., 2015).

Fornell-Larcker Criterion (FLC)

According to this approach, discriminant validity is established when the square root of the Average Variance Extracted (AVE) for each construct exceeds its highest correlation with any other latent variable.

Table 4.5 Discriminant validity - Fornell-Larcker Criterion (FLC)

	Inventory Management	Knowledge	Organizational Performance
Inventory Management	0.972		
Knowledge	0.742	0.982	
Organizational Performance	0.763	0.853	0.995

Note. Diagonal values (in bold) represent the square root of the Average Variance Extracted (AVE); off-diagonal values represent inter-construct correlations. Source: Survey Result 2026

Table 4.5 presents the results of the Fornell-Larcker criterion assessment. The diagonal values, represented in bold/green, indicate the square root of the AVE for each construct, while the off-diagonal values represent the inter-construct correlations. The square root of the AVE for inventory management is 0.972, which is greater than its correlation with knowledge (0.742) and organizational performance (0.763). Similarly, the square root of the AVE for knowledge (0.982) is higher than its correlation with organizational performance (0.853). Finally, the square root of the AVE for organizational performance stands at 0.995, which is greater than all corresponding correlations. Because the diagonal values are consistently higher than the off-diagonal

correlation coefficients, discriminant validity is successfully established for all latent constructs within the model.

Heterotrait-Monotrait Ratio (HTMT)

This method has currently gained preference over Fornell and Larcker as it estimates the real correlation between two constructs if they were measured perfectly (Henseler et al., 2015).

Table 4.6 Discriminant validity - Heterotrait-monotrait ratio (HTMT) - Matrix

	Inventory Management	Knowledge	Organizational Performance
Inventory Management			
Knowledge	0.776		
Organizational Performance	0.787	0.874	

Note: Thresholds < 0.90 Source: Survey Result 2026

As depicted in table 4.6 the existence of discriminant validity since all the obtained values are less than 0.90.

Table 4.7 Heterotrait-monotrait (HTMT)- Confidence Intervals

	Original sample (O)	Sample mean (M)	5.00%	95.00%
Knowledge <-> Inventory Management	0.776	0.776	0.722	0.820
Organizational Performance <-> Inventory Management	0.787	0.787	0.732	0.831
Organizational Performance <-> Knowledge	0.874	0.874	0.801	0.922

Note: Thresholds < 1.0 for CI 95% Source: Survey Result 2026

While the result for the sample HTMT value between knowledge and organizational performance (OP) was 0.874 in the PLS-SEM algorithm, a complete bootstrapping procedure with 5,000 subsamples was performed to assess discriminant validity via inference. As shown below in table 4.7 the resulting 95% confidence interval [0.801, 0.922] does not include the value of 1.00, establishing sufficient discriminant validity according to the criteria outlined by Henseler et al. (2015).

4.3.2.3 Assessment of Global Model Fit

The notion of model fit as known from CB-SEM is not transferable to PLS-SEM as the method follows a different aim when estimating model parameters (i.e., maximizing the explained variance instead of minimizing the divergence between covariance matrices). Nevertheless, research has brought forward several PLS-SEM-based model fit measures such as SRMR, RMS theta, and the exact fit test, which, however, have proven ineffective in detecting model misspecifications in settings commonly encountered in applied research. Instead, structural model assessment in PLS-SEM focuses on evaluating the model's explanatory and predictive

power. Therefore, this study was attempted to rigorously validating the structural framework through its predictive capabilities and out of sample relevance, by utilizing the R^2 for the model explanatory and Q^2 for predictive power it can be referred as goodness of fit instead of relying on global fit criteria, which are structurally incompatible with the casual-predictive nature of PLS-SEM (Hair et al., 2020; Hair J. F. et al., 2022).

4.3.3 Structural Model Evaluation

Once the construct measures reliability and validity confirmed, the second step in PLS-SEM protocols is the assessment of the structural model results. In this study all subsequent steps for the structural model assessment were carried out in SmartPLS 4.0 bootstrapping tool to evaluate the significance of the constructs path.

The study examined the structural model for potential collinearity issues. The reason is that the estimation of path coefficients in the structural models is based on ordinary least squares regressions of each endogenous latent variable on its corresponding predecessor constructs. Just as in a regular multiple regression, the path coefficients might be biased if the estimation involves excessive levels of collinearity among the predictor constructs. (Hair J. F. et al., 2022).

Table 4.8 Intervals Variance Inflation Factor (VIF) result

Relationship	VIF
Inventory Management -> Organizational Performance	2.225
Knowledge -> Inventory Management	1.000
Knowledge -> Organizational Performance	2.225

Note: Thresholds < 3.3 Source: Survey Result 2026

The VIF was analyzed to evaluate the collinearity between the three higher order constructs. The VIF values of the inner model are less than 3.3 (Hair J. F. et al., 2022). As depicted from table 4.8, the inner model there is no issue of multi-collinearity. Therefore, the proposed research met the pre-determined requirements, allowing the assessment for the significance and relevance of the structural model relationships/hypothesis testing followed by evaluation of the model's explanatory and predictive capabilities and the relationships between the constructs as PLS-SEM method represents a causal predictive approach to SEM which aims at testing a model's predictive capabilities whose structure has been derived from theory (Hair J. F. et al., 2022).

4.3.3.1 Evaluation of Significance and Relevance of the Structural Model

Following the confirmation that multicollinearity does not pose an issue, the structural model was evaluated by executing the PLS-SEM bootstrapping algorithm to examine the hypothesized relationships/path analysis. This procedure generates the standardized path coefficients (β), which represent the empirical strength and direction of the relationships among the latent constructs. The path coefficients have standardized values approximately between -1 and +1 (values can be smaller/ larger but almost always fall in between these bounds). Estimated path coefficients close to +1 represent strong positive relationships (and vice versa for negative values) that are usually statistically significant (i.e., different from zero in the population). The closer the estimated coefficients are to 0, the weaker the relationships are and the construct's relative importance of explaining another construct in the structural model. (Hair J. F. et al., 2022).

According to Hair et al., (2020), one-tailed test is used when the researcher can predict the direction of hypothesized relationship in the structural model. The critical values for a one tailed test are 1.28 (significance level = 10%), 1.65 (significance level = 5%), and 2.33 (significance level = 1%) (Hair J. F. et al., 2022).

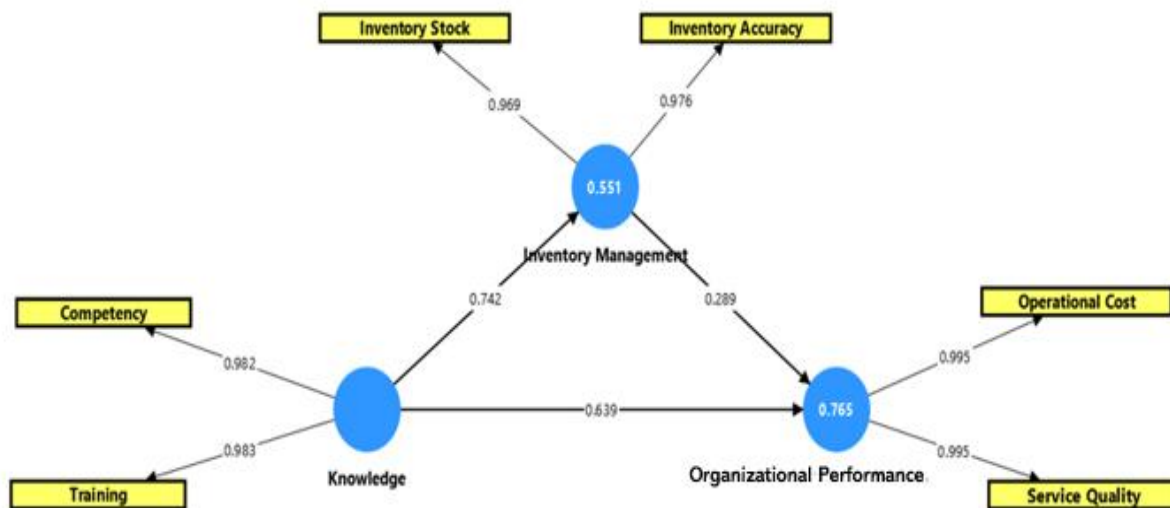


Figure 4.2 Path Model with Hypothesis testing and R² result. Source: Smart-PLS 4.0 2026

4.3.3.1.1 Hypotheses Testing/Direct Effect Analysis

The proposed study analyzed the causal relationship between the constructs in the structural model by the path coefficient, t-statistic value, and p-value. In this study, the directional hypotheses were tested by a one-tailed test with a significance level of 0.05 (5%). Thus, a hypothesis is supported when the t-value of the path coefficient is greater than 1.65 and simultaneously the p-value must be less than 0.05.

Table 4.9 Path analysis/Direct-hypotheses testing

Hypotheses	Structural Path	Path Coefficient (β)	Sample Mean (M)	STDEV	T statistics	P values	Decision
H1	Knowledge -> Organizational Performance	0.639	0.641	0.078	8.137	0.000	Supported
H2	Knowledge -> Inventory Management	0.742	0.743	0.028	26.082	0.000	Supported
H3	Inventory Management -> Organizational Performance	0.289	0.287	0.073	3.935	0.000	Supported

Note. The Path Coefficient/ β column represents the original sample (O). Significance thresholds: ($T > 1.65$) at ($p < 0.05$). Source: Survey Result 2026

The bootstrapping results for the path analysis are presented in table 4.9. The findings confirm that knowledge has a statistically significant positive influence on organizational performance ($\beta = 0.639$, t-statistics = 8.137, $p = <0.05$) so H1 is supported. H2, which predicts knowledge positively impacts inventory management, is also found to be statistically significant ($\beta = 0.742$, t-statistics = 26.082, $p = <0.05$). Furthermore, H3, between inventory management and organizational performance, is supported ($\beta = 0.289$, t-statistics = 3.935, $p = <0.05$), which hints that inventory management positively impacts organizational performance. Therefore, the evidence shows that all three proposed direct structural relationships are statistically significant and consequently the research hypotheses are supported.

4.3.3.1.2 In-direct Effect Analysis

Mediation occurs when a mediator construct intervenes between two others directly related constructs. More precisely, a change in the exogenous construct results in a change of the mediator construct, which, in turn, changes the endogenous construct. (Hair J. F. et al., 2022).

Table 4.10 Specific Indirect Effect Result

Relationship	Path Coefficient (β)	Sample Mean (M)	STDEV	T statistics	P values	Decision
Knowledge -> Inventory Management -> Organizational Performance	0.214	0.212	0.053	4.062	0.000	Partial Mediation

Note. The Path Coefficient/ β column represents the original sample (O). Significance thresholds: ($T > 1.65$) at ($p < 0.05$). Source: Survey Result 2026

The findings confirm that inventory management has a statistically significant mediation effect between knowledge and organizational performance ($\beta = 0.214$, t -statistics = 4.062, $p = <0.05$) so H4 is supported.

According to Lowry and Gaskin (2014), there are three mediation effects: no mediation, partial mediation, and full mediation. No indirect effect between variables means no mediation effect. Partial mediation reflects the significance of both direct and indirect effects between variables. However, full mediation signifies only indirect effects. This strengthens the partial mediation effect of inventory management on the relationship between knowledge and organizational performance since both the direct and indirect effects of knowledge on organizational performance are statistically significant. Table 4.10 summarizes the results of the mediating effect of inventory management.

In the case of a mediating effect being present, according to Zhao et al.,(2010) the type of mediation in this study is complementary mediation because the indirect effect and the direct effect are both significant and point in the same direction.

4.3.3.2 Assessment of the Model Explanatory and Predictive Power

The structural model's explanatory power is the coefficient of determination (R^2) value, which is calculated as the squared correlation between a specific endogenous construct's actual and predicted values. The coefficient represents the exogenous latent variables' combined effects on the endogenous latent variable. That is, the coefficient represents the amount of variance in the endogenous constructs explained by all the exogenous constructs linked to it (i.e., its explained variance). Because the R^2 is the squared correlation of actual and predicted values and, as such, includes all the data that have been used for model estimation, it represents a measure of in-sample predictive power (Hair J. F. et al., 2022). The R^2 value ranges from 0 to 1, with higher levels indicating higher levels of explanatory power. Acceptable R^2 values are based on the context (Hair J. F. et al., 2022).

Table 4.11 Result of Model Explanatory and Predictive Power

Construct	R ²	Q ²	f ² in relation to	
			Organizational Performance	Inventory Management
Knowledge			0.780	1.225
Inventory Management	0.551	0.546	0.160	
Organizational Performance	0.765	0.723		

Source: Smart-PLS 4.0

To evaluate the explanatory power of the structural model, the coefficient of determination (R²) were examined for the endogenous constructs, as recommended by (Hair J. F. et al., 2022). The structural model demonstrated a moderate to strong explanatory power. For the mediator, inventory management, with R² of 0.551 (T = 13.095, p < 0.05), indicating that knowledge explains 55.10%, the variance in inventory management. The model yielded a substantial explanatory power for the primary outcome variable, organizational performance, achieving R² of 0.765 (T = 15.836, p < 0.005). This confirms that 76.50% of the variance in organizational performance is collectively explained by knowledge and inventory management. Both values are statistically significant, providing strong empirical support for the predictive relevance of the proposed structural framework.

Furthermore, (f²) effect size was analyzed to investigate the effect of latent predictor (independent variable) on the dependent variable, the (f²) effect size expresses the change in the (R²) value when a specific predecessor construct is omitted from the model (Hair J. F. et al., 2022). According to Henseler et al. (2015), cut-off values of 0.02, 0.15, and 0.35 were proposed to categorize the effect sizes into small, medium, and large. The findings show that knowledge has a substantial impact on the endogenous variable inventory management (f² = 1.225), and on organizational performance (f² = 0.780), while a moderate effect size of inventory management on organizational performance (f² = 0.160).

To evaluate the out of sample predictive capabilities of the structural model, the PLS predict procedure was executed as recommended by (Hair J. F. et al., 2022). The latent variable (LV) summary metric, Q² predict was analyzed to determine predictive relevance, where values above 0.00, 0.25, and 0.50 signify small, medium, and large predictive relevance, respectively. The Q² predict value for inventory management was 0.546, while the Q² predict value for organizational performance reached 0.723. Because both indicators are substantially greater than zero and exceed the 0.50 threshold, the structural model demonstrates large out of sample predictive relevance.

CHAPTER FIVE

CONCLUSIONS, RECOMMENDATIONS AND RESEARCH LIMITATIONS

5.1 Introduction

This chapter presents a summary of the key findings and the conclusions emanated from the empirical results of this research. Based on the conclusions drawn, actionable recommendations are provided, followed by an acknowledgment of the study's limitations and suggested directions for future research. Recalled that the primary objective of this study was to examine the effect of knowledge management on organizational performance, and to evaluate the mediating role of inventory management within the context of international non-governmental organizations (INGOs) operating in Ethiopia. To achieve this, four foundational hypotheses derived from the resource-based view (RBV) and control theory were tested using rigorous statistical methods.

5.2 Summary of Key Findings

This study identified that there is a positive significant relationship between knowledge, inventory management and organizational performance in the context of developing country like Ethiopia within the case of international organization, which is supported by previous empirical research in the other sector. Rashid & Rasheed (2023), Hashmi et al., (2021), and Rashid et al.,(2020) argued that, in their studies, The finding indicated that the strict compliance of standardized operating procedures, professionally well-equipped staff, stock availability, and accurate inventories could reduce costs with improved service quality. This study together with the exiting empirical studies confirms RBV and control theory are very important concepts that should be taken into accounts by organizations to improve their overall performance. The rationale behind focusing on these theories is, if organizations focus on one of the main resources, that is human resources, managing and controlling the rest of the resources within the organization can achieve a high level of organizational performance.

The study revealed a statistically significant and positive effect of knowledge on organizational performance. This result explained that increased knowledge will increase organizational performance and these two are proportionate. This confirmed that within the Ethiopian INGO sector, human resource development, staff competency, and targeted training directly lower operational costs and maximize service quality. Knowledgeable workforces operate as strategic assets capable of navigating complex institutional demands, that is corroborating the foundational contentions (Ferris et al., 2007).

The empirical finding revealed that knowledge operationalized as a higher order construct encompassing staff competencies and organized training programs exerts a massive, direct, and statistically significant positive effect on inventory management. Substantively, knowledge demonstrated a very large effect size on inventory operations, marking it as the most dominant structural path in the entire framework. This overwhelming effect underscores that in complex humanitarian supply chains, the capacity to maintain accurate stock levels and minimize inventory inaccuracy (discrepancies) is fundamentally a human capital capability. This finding strongly aligns with Naidoo and Wu (2011), who established that specialized operational knowledge is a mandatory prerequisite for effective inventory planning and execution.

The study also revealed the positive direct effect of inventory management on organizational performance. In the context of humanitarian actions, effective inventory management ensures that life-saving resources such as medical items, emergency nutritional kits, and water, sanitation, and hygiene (WASH) supplies are systematically tracked and distributed without stockouts or wasteful holding costs. This offers strong empirical support for the assertions of Chopra and Meindl (2007), who viewed balanced inventory systems as critical levers for strategic organizational competitiveness.

The study also identified partial mediation in the relationship between knowledge and organizational performance. The specific indirect effect analysis revealed that inventory management serves as a statistically significant mediator in the relationship between knowledge and organizational performance.

This partial mediation model explains a substantial 76.50% of the total variance in organizational performance and 55.10% of the variance in inventory management. Furthermore, the model's out of sample predictive precision is validated by substantial values for inventory management 0.546 and organizational performance 0.723, both easily exceeding the strict 0.50 threshold for high predictive relevance.

5.3 Conclusions

The study extends the current knowledge space on the association between knowledge, inventory management, and overall organizational performance across 159 senior inventory management members of international NGO in Ethiopia. Relying on the analytical engine of PLS-SEM using Smart-PLS version 4.0 statistical software, the empirical framework confirmed that human

capital capabilities are the ultimate root source of both operational precision and overall organizational performance.

The major objective of this study was whether knowledge has any relationship with organizational performance. In addition, this study also aimed to determine whether inventory management can mediate the relationship between knowledge and organizational performance. The study hypothesized that there is positive relationship between the study higher order constructs and sub constructs. The analysis based on the respondents' views supported all the hypotheses and thereby answered all the research questions clearly.

The structural model successfully establishes that knowledge acts as a critical antecedent to successful inventory management, while inventory management operates as a vital strategic bridge that partially mediates the path to high organizational performance in the context of humanitarian organization in Ethiopia which is supported by other research in other sector and country (Hashmi et al., 2021; Rashid et al.,2020).

The strong path coefficients from knowledge to both inventory management and organizational performance prove that investing in employee competency and continuous training is not just a human resource expense it is a strategic driver of operational success.

The exceptionally high collective explanatory power confirms that the proposed framework offers a highly precise, localized solution to the resource-handling challenges that plague humanitarian operation in developing country context.

The significant link between inventory management and organizational performance suggests that companies that maintain stock accuracy and optimal stock level can see immediate improvements in cost efficiency and service quality. Because knowledge drives inventory management, which in turn drives performance, managers should understand that "knowing what to do" (knowledge) only leads to "better results" (organizational performance) when it is applied to "operational processes" (inventory management).

The structural model successfully addresses the core objective of the study while possessing raw technical or procedural knowledge is vital. Its ultimate value to an INGO is unlocked when it is explicitly channeled into optimizing physical resource levels, maximizing inventory accuracy, and mitigating waste emanated from unnecessary additional operational costs.

Ultimately, the study proves that possessing intellectual knowledge within an INGOs is very necessary and organizational excellence, cost reduction, and service quality are realized when that knowledge is actively mobilized to optimize physical inventory tracking, inventory stock level, and stock data accuracy. This conclusion was empirically supported by prior studies in different sectors and countries.(Hashmi et al., 2021; Rashid et al., 2020; Rashid & Rasheed, 2023).

5.4 Recommendations

INGOs logistics department can benefit from this study's findings, because it suggests a link between knowledge and organizational performance by studying the literature on knowledge and its impact on organizational performance and underlying mechanism of the relationship between these two constructs as mediation.

Since the unit of analysis in this study is international non-governmental organizations (INGOs) in Ethiopia, the recommendations are focused on operational efficiency and mission impact rather than just profit-making sector. In this sector, inventory management often involves life-saving supplies (medicine, food, shelter), and knowledge refers to technical expertise in humanitarian aid.

Therefore, the study suggests the below practical recommendations based on the confirmed structural model.

Because knowledge directly impacts both inventory management and organizational performance, it is recommended that INGOs better to move away from "ad-hoc" expertise to knowledge building and transfer strategies like

- I. INGOs leadership teams better establish digital sources to store technical project data and local cultural insights. This ensures that when international staff/expats rotate or leaves out, the INGOs doesn't lose the know-how required to manage local logistics and supply chains.
- II. Since training is a key indicator, provide staff with specific certifications in humanitarian logistics comprised of inventory planning, demand forecasting, warehouse and stock management to enhance the skill of the staff and consequently has positive effect on the improvement of humanitarian operation like maintaining optimal level of inventory stock and reducing errors/discrepancies in stock accuracy during emergency responses.

- III. INGOs better to align the inventory automation and human competency, as shown in the profile of organizations high digitalization with 81.13% of Ethiopian INGOs utilizing integrated ERP systems like SAP or Oracle. It is recommended to deploy rigorous competence assessments to ensure that the staff operating these complex ERP systems possess the advanced critical thinking and analytical capabilities required to interpret inventory data accurately.

Since inventory management is a significant driver of organizational performance, INGOs must prioritize maintaining optimal stock level and inventory accuracy in difficult environments.

- I. INGOs management `better up-keep the real time tracking systems to ensure inventory accuracy because in an INGO context, accuracy means knowing exactly how many kits are available for beneficiaries by preventing both wastages resulting from excess stock level and stock-outs during crises.
- II. Predictive stocking, this implies that organizations working in alleviating human suffering should manage their inventory. Inventory management is first and most how much to order stock as inventory includes working stock and safety/contingency stock. And second when to order/time of replenishment. Using historical data/ from the inventory management system or collaborative department/program forecasting is the methods that can be used in INGOs to optimize inventory stock levels rather than sales budget. This ensures that resources are not tied up in excess inventory in stable zones but are readily available in high-risk setup of warehouses (Chopra & Meindl, 2007).

The relationship between inventory management and organizational performance (operational cost and service quality) is a powerful story for donors in the context of INGOs. INGO leaders can show donors that better inventory management leads to lower operational cost and better quality of service delivery to beneficiaries in their cost efficiency reporting. Donors prove that more of their donation is reaching the actual beneficiaries with reasonable and efficient manner.

5.5 Limitations and Future Research Directions

The proposed study and its findings contributed to the theoretical and empirical research on what INGOs in Ethiopia better to address. This empirical study can discourse the relationship between the major constructs namely knowledge, inventory management, and organization

performance successfully in the context of INGO sector. However, this research contained limitations that pave the way for future research directions.

The study is based on the perception of 159 respondents from top level managers of specific sectors (INGO); Hence, it can be challenging to generalize the findings to the other sectors and absolute values for the indicators/dimensions. The scope of this study can be broadened to examine other sectors or combination of sectors with absolute/objective data to see if they experience similar gains.

This study is cross-sectional research in one specific country. So, future empirical studies can research by analyzing the hypotheses in other countries, or regions and designing longitudinal research based on the model to better capture the association between the constructs in the long term.

This study considered only three higher order constructs and two factors for each, namely knowledge from an organizational/strategic point of view which is explained by competency and training, inventory management explained by inventory stock and accuracy and organizational performance in terms of operational cost and service quality. Future research can empirically determine the impact of knowledge on organizational performance by changing or adding factors involved in both constructs and exploring other underlying mechanisms of the relationship between these two constructs as a mediator or moderator.

APPENDIX A Constructs, Sub Constructs and Measurement Items

Table A Constructs, Sub Constructs and Measurement Items

Constructs	Sub Constructs	Items	Sources
Knowledge	Competency	C1- Our staff possess the necessary professional qualifications for their roles.	(Naidoo & Wu, 2011; Rashid & Rasheed, 2023)
		C2- Our organization recruits’ employees with relevant previous experience.	
		C3- Our organization’s operational efficiency is enhanced by the proficiency and experience of its workforce.	
		C4- Our organization’s ability to meet high quality service standards is directly attributable to employee skill level.	
		C5- Staff members have a clear understanding of our organization’s inventory policies and procedures.	
	Training	T1- Our organization provides specialized training programs that are directly relevant to our inventory management tasks.	
		T2- Our employees are encouraged to participate in continuous learning to update their professional skills.	
		T3- Our knowledgeable employees actively mentor their subordinates to improve overall team performance.	
Inventory Management	Inventory Stocks	IS1- The current level of inventory stock is well aligned with our actual operational requirements.	(Bin-Syed et al., 2016; Chopra & Meindl, 2007; Hashmi et al., 2020; Rashid & Rasheed, 2023)
		IS2- Our organization effectively balances stock availability with demand to minimize the occurrence of stock outs.	
		IS3- Effective inventory stock management is a critical driver of our organization's strategic success.	
	Inventory Accuracy	IA1- The accuracy of our inventory data allows for reliable forecasting and planning and consequently improves quality service.	
		IA2- Our inventory records are updated in real time to reflect stock movements accurately.	
		IA3- Physical inventory counts consistently matches the records in our digital tracking system.	
		IA4- Discrepancies in inventory reports are identified and resolved promptly by our inventory management team.	
	Organizational Performance	Operational Cost	
OC2- Our organization has successfully minimized waste and profligate spending in resource handling			
OC3- We have reduced the holding costs associated with excessive stockpiling			
OC4- Our organization avoids financial losses associated with expired or obsolete stock.			
Service Quality		SQ1- Maintaining accurate inventory allows us to meet client demands without interruption	
		SQ2- Overall client satisfaction has improved due to our better inventory visibility and availability	
		SQ3- Our inventory management practices enable us to achieve on time delivery	
		SQ4- The proficiency of our staff ensures high standards of service reliability	

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