

ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

THE EFFECT OF ORGANIZATIONAL CAPABILITIES ON INTERNATIONAL COMPETITIVENESS: THE MEDIATING ROLE OF TECHNOLOGICAL INTEGRATION IN ETHIOPIAN AIRLINES

THIS THESIS IS SUBMITTED TO ADDIS ABABA UNIVERSITY COLLEGE OF BUSINESS AND ECONOMICS DEPARTMENT OF MANAGEMENT IN PARTIAL FULFILMENT OF THE REQUIREMENT OF FINAL RESEARCH PAPER FOR MASTER OF ARTS DEGREE IN INTERNATIONAL BUSINESS

BY: AFOMIYA BRUK ENDESHAW

ID NUMBER: GSR/2637/17

ADVISOR: DR. HABTAMU ENDRIS

JUNE 2026

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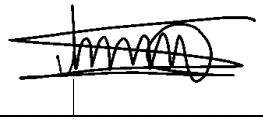
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DECLARATION

I, the undersigned, declare that the research paper entitled " THE EFFECT OF ORGANIZATIONAL CAPABILITIES ON INTERNATIONAL COMPETITIVENESS: THE MEDIATING ROLE OF TECHNOLOGICAL INTEGRATION IN ETHIOPIAN AIRLINES" is my original work. This study has not been presented for a degree or any other academic award in this or any other university, and all sources of materials used for the study have been duly acknowledged.

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Date: _____

APPROVAL

This research project has been submitted for examination with my approval as the university advisor.

Advisor Name: DR. HABTAMU ENDRIS

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ABSTRACT

The investigation of the relationship between organizational capabilities and international competitiveness among Ethiopian Airlines Cargo & Logistics Services revealed that technology integration is an important mediator between organizational capabilities and international competitiveness. To conduct this quantitative explanatory research, primary data was collected using a structured questionnaire administered to 185 managerial and operational employees of Ethiopian Airlines (Cargo & Logistics Services). The study findings indicated both operational and strategic capabilities had positive and statistically significant impacts on international competitiveness. Additionally, technological integration was shown to serve as an important mediating mechanism for reinforcing the relationship between organizational capabilities and international competitiveness. As a result of the study findings, it is recommended that Ethiopian Airlines focus on accelerating their adoption of advanced digital technologies, such as predictive analytics and integrated information systems, to increase operational efficiency and facilitate the execution of their international expansion strategies.

(Keywords: Operational capability, strategic capability, technology integration, international competitive, aviation logistic, Ethiopia Airlines)

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LIST OF ACRONYMS AND ABBREVIATIONS

ANOVA: Analysis of Variance

APA: American Psychological Association

EDI: Electronic Data Interchange

IC: International Competitiveness

IT: Information Technology

OC: Operational Capabilities

RBV: Resource-Based View

SC: Strategic Capabilities

SPSS: Statistical Package for the Social Sciences

TI: Technological Integration

TOE: Technology-Organization-Environment

CHAPTER ONE: INTRODUCTION

1.1. Background of the study

The aviation industry serves as a primary catalyst for globalization, international trade, and economic integration, facilitating the rapid cross-border movement of high-value, time-sensitive goods (ICAO, 2022). Although air cargo accounts for less than one percent of total global trade by weight, it represents more than one-third of the total global trade by value, making it an indispensable pillar of the modern global economy (IATA, 2023). Over the past two decades, the expansion of e-commerce and the globalization of markets have significantly transformed aviation logistics. Customers increasingly demand compressed lead times, absolute delivery reliability, and fully connected, visible international logistics solutions (Christopher, 2016; Hazen et al., 2018). Consequently, aviation logistics organizations are under immense pressure to execute operations flawlessly while surviving in a highly dynamic, technology-driven market (Grant, 2019).

To survive in this environment, firms must maintain international competitiveness, which refers to an organization's capacity to generate superior customer value and outperform competing firms on a global scale (Porter, 1990; Buckley et al., 1988). The Resource-Based View (RBV) of strategic management posits that this sustained competitive advantage is derived from internal, organizational capabilities that are valuable, rare, inimitable, and non-substitutable (Barney, 1991; Grant, 1996). In the aviation sector, these capabilities operate on two distinct levels. First are Operational Capabilities, which encompass the daily routines, ground handling efficiency, and physical throughput required to meet strict delivery timelines (Winter, 2003; Fugate, Mentzer, & Stank, 2010). Second are Strategic Capabilities, defined by Dynamic Capability Theory as the firm's higher-order ability to sense market opportunities, form global alliances, and proactively reconfigure resources in response to volatile environmental changes (Eisenhardt & Martin, 2000; Teece, 2007).

However, in the contemporary digital era, the mere possession of physical and strategic capabilities is no longer sufficient. Digital transformation has fundamentally altered how organizations leverage their resources (Bharadwaj, 2000). Technological Integration—the embedding of systems such as Electronic Data Interchange (EDI), real-time tracking, and predictive analytics across organizational layers—acts as the vital nervous system of the supply chain (Ivanov & Dolgui, 2020).

When fully integrated, technology amplifies existing organizational capabilities, acting as the critical bridge that translates internal physical operations into external market dominance (Wade & Hulland, 2004; Kaufmann & Roeder, 2021).

An exemplar African example of this transformation is the evolution of Ethiopian Airlines Cargo & Logistics Services. In a continent where trade growth is high but regional infrastructures and regulations are fragmented (AFRAA, 2023; World Bank, 2022), Ethiopian Airlines has performed admirably. In fact, the airline is currently the continent's largest carrier of freight, buoyed by extremely efficient throughput operations, as well as proactive strategic expansion of its route network (Ethiopian Airlines Group, 2024).

However, this meteoric pace of success has given rise to a significant paradox of operations. The aggressive physical expansion of Ethiopian Airlines' operations and international routes has occurred while the internal digital ecosystem of the business has not kept pace with physical expansion (Amankwah-Amoah & Debrah, 2017). Although the carrier does use simple administrative digital systems to good effect, the airline encounters significant implementation deficits in the area of advanced, prediction-based technologies and completely automated, integrated international monitoring (Chiza & Ndlovu, 2023). This is evident through a pronounced "digital execution gap" where the airlines significant physical speed is, time and time again, stunted by information disparity and administrative bottlenecks at borders between international states (Chen & Paulraj, 2018). If strategic aspirations of operating worldwide are to materialise and be realised into meaningful value they must be enabled by an integrated digital ecosystem.

Consequently, the research herein interrogates Ethiopian Airlines not because the firm does not possess the necessary strategic or operational capabilities, but because it is currently facing a pivotal technology inflecion. By measuring empirically how the integration of technology mediates the relation between its well-developed operational and strategic capabilities, and its overall level of international competitiveness, this research closes critical structural implementation gaps within organisations and thus makes useful data-based suggestions for the airline.

1.2. Statement of the Problem

Organizational capability as the main driver of the firm's competitive advantage is at the heart of both the Resource-Based View (RBV) and Dynamic Capabilities theory. To bridge the overall title of this study with its specific research objectives, the overarching term "Organizational Capabilities" are operationally defined in this research as two specific, measurable dimensions: Organizational Capabilities (OC) and Strategic Capabilities (SC). Operational capabilities- for example; handling cargo swiftly, reduced turnaround times, and efficient and accurate customs documentation; aid the organization by ensuring instant physical dependability, reduced operational costs and efficient, on-demand, and time sensitive delivery for a vast array of worldwide clients in the field of logistics (Fugate, et al, 2010). Strategic capabilities for example; expansion of a dynamic global network, increased capacity building, as well as joint ventures among numerous carriers aid the firm by anticipating external macroeconomic dynamics, securing opportunities on global scale, and ensuring long-term survival within a volatile external environment (Eisenhardt & Martin, 2000; Morgan et al, 2009).

However, being simply physically nimble with an ability to expand rapidly throughout the strategic realm would not suffice, and as such, would not create a long-lasting international edge; The airline logistics industry has today become more of an "online community of systems" and the information asymmetries within it carry significant penalties. Historically, airlines in Africa derived competitiveness from the ownership of physical resources (infrastructure) as well as the monopolized acquisition of various routes. Today an organization needs to shift data as quickly and it does cargo. More tangibly, Ethiopian airlines cargo and logistics service as Africa's leading cargo and logistics service, exemplifies this dilemma; the organization possesses a state of-the-art modern fleet and has achieved tremendous strategic success, expand and acquiring significant global route coverage and phenomenal physical operational capacity.

Notwithstanding this dominance; the organization is characterized by an operational paradox: its rapid physical and strategic expansion has significantly outstripped its digital maturing. In an obvious, "digital execution gap, basic digital processes such as Electronic Data interchange (EDI) are applied but itslegacy systems lack digital maturity to provide advanced capabilities such as; digitized Warehousing, digital tracking, predictive analytics etc, leading to its physical velocity being stifled by administrative friction and the paper-based delays at International borders, causing its strategic expansion efforts to be undermined by a failure to

leverage its digital infrastructure in order to leverage opportunities for cost reduction and improved delivery for its international clientele.

This operational-digital combination and the "how" on it, especially in the African context, remains a vast empirical and theoretical void. In general, literature conceptualizes organizational capabilities as inert in nature and analyzes their standalone impact on firm performance (Amankwah-Amoah & Debrah, 2017). In most texts, operational capabilities, strategic capabilities and technology are often discussed as disjoint areas of interest. There exists a significant lacuna of quantitative models that demonstrate how Technological Integration serves as the key structural bridging (mediating) mechanism between base physical capabilities and ultimate international competitiveness (Chen & Paulraj, 2018).

Second, the available empirical evidence is mismatched both geographically and contextually. While data from the developed markets of the West confirm technology mediating performance (Wong, Lai, & Bernon, 2020), these are unlikely to be applicable to African institutions considering the prevalent infrastructural constraints, regulation framework and levels of digital maturity (World Bank, 2022). Studies focusing on the African context have often been macro in scale, dealing with factors like the general cause for airline bankruptcy or trade congestion in regions (Kuada & Mensah, 2021). More so, over reliance on qualitive / descriptive studies and lack of statistically supported evidence for causal relation have historically hampered this field of study in the continent's aviation sector.

This research addressed these issues by rectifying the empirical evidence paucity of impact of operational and strategic capabilities on international competitiveness, and crucially unquantified impact of Technological Integration as a moderator in African aviation sector by employing explanatory quantitative methodology at Ethiopian Airlines Cargo & Logistics Services to test the connection between Resource-Based View, Dynamic Capability theory and the Technology-Organization-Environment (TOE) framework for validating a quantitative model connecting base capability to sustainable international competitiveness through closing digital execution gap.

1.3. Research Questions

To address the stated problem, this study seeks to answer the following specific research questions:

1. To what extent do operational capabilities impact the international competitiveness of Ethiopian Airlines Cargo & Logistics Services?
2. How significantly do strategic capabilities influence international competitiveness in this context?
3. What is the mediating effect of technological integration on the relationship between operational capabilities and international competitiveness?
4. What is the mediating effect of technological integration on the relationship between strategic capabilities and international competitiveness?

1.4. Objectives of the Study

1.4.1. General Objective

The main aim of this research is to explore the actual impact of organizational Capabilities, particularly as reflected through operational and strategic capabilities, on international competitiveness, also investigate the mediating role of technological integration in Ethiopia Airlines Cargo & Logistics Service

1.4.2. Specific Objectives

- To measure the direct effect of operational capabilities on international competitiveness.
- To evaluate the direct impact of strategic capabilities on international competitiveness.
- To determine the mediating role of technological integration between operational capabilities and international competitiveness.
- To assess the mediating role of technological integration between strategic capabilities and international competitiveness.

1.5. Significance of the Study

The present study will enhance the available knowledge on the strategic management, international business and logistics management discipline by extending the available studies in the African aviation context. Specifically, the findings will contribute to the on-going debate on organizational capabilities, technological adoption and international competitiveness in emerging economies.

Practically, the findings of this will aid the management of Ethiopian Airlines Cargo and logistics Services to determine the most appropriate and influential operational and strategic capability on the performance that leads to competitiveness. These findings might be utilized by management for strategic decision on technology integration and international competitiveness improvement. The research findings might also serve as a reference for the future research on organizational capabilities, digital transformation and international competitiveness in general the aviation and the logistics sector.

1.6. Scope of the study

To maintain focus and feasibility, this study will be conceptually, methodologically and geographically delimited. Conceptually, the study will focus on the impact of operational capabilities (handling efficiency and reliability) and strategic capabilities (network expansion and formation of alliances) on international competitiveness. Technological integration is selected as the sole mediating variable based on the TOE framework.

Methodologically, this study will use a quantitative, cross-sectional explanatory design using structured questionnaires based on established empirical measures. Geographically/institutionally, this research will only be done at the Addis Ababa main hub of Ethiopian Airlines Cargo & Logistics Services. Therefore, the targeted population will only include managers and key members of operations, logistics, strategic planning and IT departments of that organization in during the 2026 academic year. The study will not assess the passenger aviation sector, nor will it examine other regional logistics providers.

1.7. Limitations of the study

Despite providing a highly credible and quantitative assessment of organizational capabilities, the current study does face a number of conceptual and methodological limitations. At the methodological level, a cross-sectional, explanatory research design was employed which was data collected from a single point in time. While this design enables statistical association tests to be conducted, this is unable to confirm long-term, dynamically-directed causal pathways, for which a longitudinal research approach would be needed. Additionally, reliance on self-reported data provided from closed, structured questionnaire will likely create potential issues of common method variance, including subjective perceptions of respondents.

In terms of the conceptual level of the current research, the intentional exclusion of a wider array of potentially mediating/modulating variables (such as macroeconomic fluctuations, international changes in regulations and internal corporate culture, to provide some examples of other factors potentially mediating the relationship) can be seen as a limitation as international competitiveness of aviation logistics is a complex field. In our effort to present parsimonious model and to emphasize technological integration as the primary mediators, we purposefully limited our focus.

1.8. Organization of the Thesis

The rest of this thesis will be structured in four future chapters. Chapter two will review current theory and empirical work on the topics of logistics, strategy and technology. Chapter three will establish the research methods that will be used in this study, including the research design and sampling frame and data collection method. Chapter four will include the statistical analysis and interpretation of data that have been gathered. Chapter five will then summarise the study's key findings, offer conclusions, recommend policy and practice implication and conclude with a limitation of the study, with suggestions for future study.

CHAPTER TWO: LITERATURE REVIEW

INTRODUCTION

This chapter presents an exhaustive review of the theoretical and empirical works that have contributed to understand organizational capabilities, technology integration and international competitiveness. This chapter is organised into four sections. Firstly, a theoretical review based on the established streams of thought relevant to this study which underpin this study will be presented including Resource-Based View (RBV), Dynamic Capabilities Theory and Technology-Organization-Environment (TOE) framework. Then, in the second section, the empirical review will document studies carried out across the world. Thirdly, the research gap section outlines the conceptual, contextual and methodological missing knowledge that this chapter contributes to bridge. Lastly, in this chapter, a hypostasised conceptual model showing the structural relationship between the selected variables will be provided.

2.1. Theoretical review

The theoretical underpinnings of this paper arise from three interconnected lenses, specifically, Resource-Based View (RBV) theory, Dynamic Capabilities Theory, and the Technology-Organization-Environment (TOE) framework. These particular theories have been selected given that global aviation logistics is inherently complex and cannot adequately be represented using only one theoretical perspective. To start with, the RBV was adopted in explaining the physical implementation of the airline. A considerable number of logistics scholars such as Fugate, Mentzer, & Stank, 2010andGrant (1996) have relied upon the RBV to illustrate the way unique internal capabilities (such as quickness in ground handling) enhance sustainable Competitive advantage.

Second, Dynamic Capabilities Theory was applied in explaining the strategic maneuver of the firm. The global aviation industry is characterized by volatility thus scholars like Teece (2007) and Amankwah-Amoah & Debrah (2017) use the Dynamic Capabilities theory to support their explanation on why airlines remain competitive through constant recognition of changing market conditions and reconfigurations of global routes. Finally, the TOE framework was selected as a variable to act as a mediating mechanism. In this way, the three theories have been amalgamated to offer a conclusive diagnostic tool of Ethiopian Airlines.

In recent days, where the business competitive eras have got harsh in such a way that businessman/women have to take actions to finding methods & strategies of beating the competition in his/ her sector. While selecting & selecting business & concept in the organisations preferably the resources will be based on internal resources & consideration will also be provided on the company industry structure from external factors. Following this process of industry structure the organisation must have utilized all components in internal resources(resources) by making a lot of advantage whereas those are gaining & may be possible to create an advantage factors. Competitive advantage arose from organisation's choices to pursue specific market opportunity A business strategy or also competitive strategy are frequently constructed at the division level.

This form of strategy may place additional concentration upon positioning for competitive improvement the product's or services of an company in a competitive market position with respect to market segment of a division. The business strategy may attempt to generate profit in production and/or marketing and/or merchandising on of products and/or services. Different forms of the organisations functionally should come with one to perform the Divisional objective. The competitive advantage theory of the organisation was founded on earlier studies on the generic approach to competition, which identified the competitive advantages' metrics as imitability, durability as well as ease of matching.

Competitive advantage is at centre of the efficiency of the firms. Competitive advantages will begin from worth created by firm value to the buyers. Company's competitive advantage will result in success if the firms is possible to generate any advantage on these three generic approaches. The meaning of a company's competitive advantage can be seen through considering firm, arising from multiple activities which it undertook in design, production, marketing, delivery, also sales and after-sales supporting. It means that competitive advantage means position which organisation is struggling to outperforming competition.

2.1.1 Resource-Based View (RBV)

This is RBV theory for strategic management. RBV theory is seen as one of the most outstanding explanations for firm's competitive advantage as source for them (firm) when consider them on the ground of competing in more intense form in why firm succeed? This work has origins from Barney (1991) and earlier from Wernerfelt (1984) and propose for role of competitive strength as a resource and in the performance of a firm.

In contrast, firm must take its own advantage that originated internally, the strengths. As the internal strengths lead to obtain an above-average return that serve as source of competitive advantage Barney claimed. The idea is that resource can and does not have to be homogeneous. It indicates the heterogeneity resource stocks among organizations.

Therefore, resource-based view (RBV) is considering the presence of heterogeneity throughout firms' resource and capabilities which as a result may put up for firm to put up competitive position which can provide sustainable position to a firm for gaining advantage and as the name implies that view is resource-cantered. Different types of firm resources namely physical, human and organizational have been mentioned in the RBV perspective. RBV states that the presence of value creating resources and difficulty of duplication give raise to competitive advantage for organization. RBV defines competitive advantage through the framework:1- valuable.

A valuable resource is one not possessed by a large number of other firms. 3- inimitable. Inimitable resources are very difficult or expensive for another firm to replicate. 4- Non-substitutable.

Unique and unparalleled resources will prevent competitors from acquiring substitutes. This indicates that non-substitutability establishes a barrier against the replacement of distinctive resources by competitors with their own unique resources. (Barney, 1991, pg-104). The application of the RBV framework in the context of air cargo is crucial for logistics, as it relies significantly on organizational logistics capabilities, the quality of infrastructure, operational procedures, and the presence of highly skilled, trained employees in cargo handling, along with state-of-the-art technology in air cargo terminals and supply chain logistics.

As noted by Grant (1996), logistics companies can attain a sustainable competitive advantage through their resources if these resources are VRIN, as previously mentioned. For instance, a firm that possesses a modern and advanced air cargo terminal, which facilitates rapid handling and processing of cargo, would improve its service offerings in terms of efficiency and timely delivery. Such logistics resources, if challenging to replicate and not substitutable by competitors, will provide a sustainable competitive advantage for the organization. This is particularly relevant to the RBV of Ethiopian Airlines Cargo & Logistics services.

The primary benefit for an airline in managing and delivering air cargo lies in the ability to leverage unique or superior resources, or a combination of such resources. Some of the

internal, intangible, and tangible capabilities of Ethiopian Airlines that can serve as sources of competitive advantage include their experienced pilots (human resources), a flight schedule that delivers to numerous destinations worldwide (organizational resources), and advanced technology in flight management and dispatch systems (physical and technological resources). Additionally, the airline's reputation for safety and reliability in cargo transportation services across Africa further enhances its competitive capabilities. All these elements, when combined with the organization's internal strengths, foster competitive advantages.

Barney & Hesterly (2015) discuss the ability of an organization to achieve this over time by effectively managing, coordinating, and implementing its resources. In this context, capability refers to an organization's potential to utilize its resources in a combined manner that generates goods and services. This definition emphasizes the organizational aspect that requires management. Ethiopian Airlines' cargo division focuses on the efficient dispatch of cargo and ensuring timely arrivals at destinations.

The organizational processes involved in its cargo operations must be meticulously coordinated, encompassing reception, storage, loading, and delivery. These capabilities are also described as resource bundles that are integrated into organizational processes, which evolve over time through a firm's history and learning experiences. Consequently, these capabilities may be path-dependent, making them challenging to replicate (Teece, Pisano, and Shuen, 1997). In the realm of air cargo logistics, the processes of sorting, dispatching, and tracking air cargo through various stages until delivery to destinations represent the firm's capabilities. Nevertheless, some critics argue that the Resource-Based View (RBV) is static, as it fails to consider how firms can adapt their capabilities or resource configurations over time, particularly in the face of dynamic changes and transformations that are crucial.

Originally based on the theories of Wernerfelt (1984) and later formalized by Barney (1991), the Resource-Based View (RBV) posits that a sustainable competitive advantage is derived from a distinctive array of resources and capabilities within a firm. These resources must be Valuable, Rare, Inimitable, and Non-substitutable (VRIN) to confer such an advantage. However, physical resources like airplanes and terminal facilities in the global aviation sector cannot serve as the source of this advantage, as well-funded competitors possess similar physical assets and aircraft that do not satisfy the RBV criteria. Instead, it is the operational capability—the internally cultivated practices and routines that the organization employs

historically to manage resource utilization—that fosters this unique set of capabilities. Research conducted by Fugate, Mentzer, and Stank (2010) examined operational efficiency and provided empirical support for the significance of these practices. Their findings suggest that the unique, socially intricate processes that an airline must effectively implement to minimize aircraft turnaround time, expedite cargo loading, and ensure documentation accuracy contribute to this operational efficiency.

This efficiency results in a rare and complex capability that is challenging for other competitors to replicate. This is especially true in emerging economies, where there is often a scarcity of existing infrastructure; here, the capability to manage ground service processes enables well-established airline companies to create significant barriers to entry. Consequently, when an airline optimizes its routine ground-level operations, it significantly enhances its value in the global market.

In this regard, RBV is often used along with or as an underpinning for dynamic capabilities approach which focuses on a firm's ability to sense, seize, and reconfigure its resource base in the face of a changing external environment (Priem and Butler, 2001).

H1: Operational Capabilities lead to international competitiveness with a significant positive relationship.

RESOURCE BASED VIEW (RBV) AND STRATEGIC CAPACITY

Resource-Based View, or RBV, follows the principles of a business essentially being a reservoir of internal assets. , 2005). The RBV perspective concerns strategization, distinguishes between innate capabilities versus external variables affecting the company's competitiveness, such as environmental and legal factors and technological compatibility (Wernerfelt, 1995). It asserts the importance of inborn competencies and resources contributing to a company's competitive performance.

Based on an explanation given by Wright et al (2001) and Fahy (2000) as well as Radu et al. (2009), the RBV strategy view implies that a company's strategization depends on its internal resources and competencies contributing to competitive advantage. According to Ferdinand & Wilhelm, (1999), Resource-Based Theory Of Firm allows a business to achieve its competitive advantage by producing or generating a set of in-house business resources that are not easily imitable. Drawing on the above, we conclude that RBV strategization primarily is a procedure in which a company optimizes its available internal resources and

competencies and consequently improves its competitive advantages. Haseeb et al. (2019) explained that owning RBV resources and management competency enables businesses to sustainably leverage competitiveness. Management capabilities in a field where strategic resources abound contribute significantly to developing a company's potentiality (Hitt et al, 1999). , 2006; Barney, 1991).

2.1.2. Dynamic capability theory

Numerous definitions of dynamic capabilities exist. Some of these definitions are prescriptive, positing that dynamic capabilities are invariably beneficial and serve as a source of competitive advantage. For instance, Griffith and Harvey (2001, p. 597) assert, "A global dynamic capability is the creation of difficult-to-imitate combinations of resources, including effective coordination of inter-organizational relationships, on a global basis that can provide a firm competitive advantage," while Lee, Lee, and Rho (2002, p. 734) indicate that "dynamic capabilities are conceived as a source of sustainable advantage in Schumpeterian regimes of rapid change." The issue with these definitions lies in their tautological nature; if a firm possesses a dynamic capability, it is expected to perform well, and conversely, if a firm is performing well, it should possess a dynamic capability.

To gain a deeper understanding of the essence of dynamic capabilities, various authors suggest the necessity of distinguishing between the types of processes and routines present within firms. Collis (1994) identifies a first category of capabilities that reflects the ability to execute the fundamental functional activities of the firm (such as plant layout, distribution logistics, and marketing campaigns), and a second category that pertains to the dynamic enhancement of the firm's activities. Zollo and Winter (2002) and Winter (2003) also make a distinction between operational (zero-order) and dynamic (first-order) capabilities. Operational capabilities focus on the day-to-day functioning of the firm, encompassing both staff and line activities; these capabilities represent "how we earn a living now."

Dynamic capabilities focus on altering operational capabilities, resulting in modifications to a firm's products or production methods. This categorization has gained traction in contemporary models of dynamic capabilities (e.g., Helfat and Peteraf, 2003; Zahra and George, 2002; Zahra et al., 2006) and aids in dispelling the tautological connotation often linked with dynamic capabilities. Helfat and Peteraf articulate that "Dynamic capabilities do

not directly influence the output of the firm in which they exist, but rather contribute indirectly to the firm's output by affecting operational capabilities" (2003, p. 999).

To encapsulate this perspective, we adopt Zahra et al.'s (2006) definition of dynamic capabilities as the processes that reconfigure a firm's resources and operational routines in a manner that is envisioned and deemed suitable by its key decision-makers. Illustrative examples of dynamic capabilities include product development, strategic decision-making, and alliance management (Eisenhardt and Martin, 2000).

This process is utilized by a company to gain a competitive edge over its rivals. A classic illustration of dynamic capabilities is the decline of Nokia in the mobile industry. Nokia failed to adequately respond to technological advancements in the mobile sector; they underestimated smartphones for an extended period, resulting in a loss of competitive advantage. Nokia did not capitalize on the opportunities presented by smartphones, which featured innovative mobile technology embraced by Apple and Samsung, while Nokia's smartphones lacked the modern and rapid technology found in other competing firms.

Capability, in contrast to resource capabilities are constructed through ‘creating, accumulating and transferring information in organisation through learning. It is suggested that companies when changing competitive landscape can attain a sustainable competitive advantage through the adjustments to be done and by renewing resource (innovation), Capabilities vary between organizations, in terms of a given industry or in general terms, such as for some organizations its competitive capabilities in relation to others are much better than ours, thus; inspired by that Teece developed the idea of dynamic capabilities.

Capability can be categorized into 2 types

Operational Capabilities and Dynamic

- **Capability**: Operational capability The ability of an organization to perform the task, so for that, there is set of routines that are implemented to perform and arrange the various steps involved in the operation.
- **Dynamic capability**: It is the company's capacity to integrate, build, and reconfigure external and internal competencies in response to the rapidly changing environment.

The dynamic capability includes two aspects; a Capability which refers to key role of strategic management in coordination, adaptation and reconfiguration of existing and new combination of resource; while dynamic relates to renew capability and maintain conformity

to dynamic business and to make innovation; rapid technological change and market competition can occur, The question arises if the capability could apply on any firm at all stages.

Although the RBV may explain sustainable competitive advantage in static environments the aviation industry operates within, but the international aviation industry faces such turbulence, such varying fuel prices and rapidly changing political landscapes, thus Teece, Pisano and Shuen (1997) introduce Dynamic Capabilities which are "the capacity of a firm to adapt its position…to fit with, and take advantage of, changes in its business environment…[and] its capability to integrate, build and reconfigure internal and external resources, competences and activities to match-up with rapidly changing environments".

Strategic Capabilities are an example of the Dynamic Capabilities in action. As Eisenhardt and Martin (2000) describe as 'the high-level strategic routines of active global fleet modernisations', 'proactive and global route network expansions' and 'strategic alliances, for example entry into the Star Alliance and on-going partnerships. Similarly, it is observed by Amankwah-Amoah and Debrah (2017) that "Arica airlines [historically] often lack strategic capability for responding to market changes", "those [who survive and internationalise] …do…respond by strategically reconfiguring… their capital structure". Therefore, it is logically associated that if the firm is strategically mobile and able to form global alliances then they are likely to maintain international market leadership.

H2: Strategic Capabilities lead to international competitiveness with a significant positive relationship.

Types of dynamic capabilities involved in organizational change

The concept of varying levels of change is utilized by establishing a hierarchy of capabilities, which serves to differentiate between what Collis (1994), Danneels (2002), Winter (2003), and Helfat & Winter (2011) describe as minor adjustments to foundational resources and more profound transformations within the organization's array of dynamic capabilities, which are subsequently employed to modify the foundational resources.

The hierarchy of capabilities is structured as follows: First-order capability, as defined by Collis (1994) and Danneels (2002), is also known as zero-level capability (Winter, 2003) or substantive capabilities (Zahra et al., 2006), and is characterized by resource and operational

routines. Second-order capability, identified by Collis (1994) and Danneels (2002), is also referred to as first-order capability (Winter, 2003) or dynamic capabilities (Zahra et al., 2006), and encompasses changes to the product, process scale, and market served.

It is evident that hierarchies of change have been previously examined within the context of organizational change. Watzlawick et al. (1974) identify two levels of change: first-order change, which involves an understanding of the problem without altering the system itself, and second-order change, where a shift in perspective regarding the problem may allow for its resolution through modifications in the system itself.

It can be inferred that the second- and third-order capability hierarchies would broadly correspond to the second- and higher-order levels of change, respectively (Winter, 2003).

In addition to these hierarchical levels, there have been various categorizations of dynamic capabilities that have frequently considered the nature of engagement with organizational change. Dynamic capabilities can be conceptualized in several ways; some assist firms in entering existing or new business domains through internal development, acquisitions, or strategic partnerships (Helfat et al. 2007). Other capabilities help the creation of new products and processes or facilitate management.

Some of the more intrinsic elements were mentioned by Teece (2007, p. 1319) three fundamental dynamic capabilities: capability to sense and shape opportunities and threats; capability to seize opportunity; and capability to maintain competitiveness through enhancing, combining, protecting and, if necessary, re-configuring, its intangible and tangible assets. Four dynamic capability processes are highlighted by Bowman and Ambrosini (2003) that involve reconfiguration, leveraging, learning and creative integration. Despite their ability to help explain how dynamic capabilities operates, further understanding of the processes and content related to strategic management and utilization of these dynamic capabilities are needed (Moliterno & Wiersema, 2007).

2.1.4. The Technology-Organization-Environment (TOE) Framework

Given the mediating role of technology integration in the aviation industry's logistics, it is of paramount importance to locate this research on the conceptual grounds of the Technology-Organization-Environment (TOE) Framework, developed by Tornatzky & Fleischer (1990). The TOE Framework is a paradigm in which adoption of technologies by firm is explained by

three spheres that include: technological environment consisting of technological and information environment in the organizations (eg. Electronic data interchange (EDI) or automated air cargo management and tracking system), organizational environment, which covers an organization's attributes such as its size, managerial structure or existing strategies and capabilities and environmental environment which describes an organization's industry such as competitors pressure, or governmental regulation (Tornatzky & Fleischer, 1990).

With this view of framework for Ethiopian Airlines Cargo & Logistics Services it is argued that internal capabilities (organizational environment) are under the tremendous and constant pressure from global pressures of the Aviation Industry (environmental environment) by utilizing technological development (technological environment) as their mediators. Ultimately this theoretical approach demonstrates that Technology is an environment determined active mediator, which makes organization able to achieve competitiveness.

Technology Organizational Environment Framework proposed by Tornatzky & Fleischer (1990) has provided a set of multiple dimensions by considering the impact of adoption and use of a new technology at firm level. g. international competition) is optimized. Today in logistics, IT has transformed from a supporting role to a nervous structure system of the logistics supply chain. Bharadwaj (2000) discussed that IT capability may enhance performance by acting as a complement.

In the Ethiopian Airlines Cargo business, E-documentation like EDI, tracking systems, prediction analytics all are included in "Technological" context as defined by TOE theory.

Chen and Paulraj (2018)’s empirical studies suggested that raw physical speed was primarily constrained by information asymmetry. Although a cargo port might have the capacity for unloading a freighter in record time (Operational Capability), the physical speeds achieved was worthless if it had not built in integrated digitally managed systems which facilitate immediate customs clearing and freight transit to the relevant destination (Technological Integration). So, technology is the bridge via which physical operations is transformed into a tangible competitive advantage. Drawing from both RBV and TOE Theories the study makes the following propositions:

H3: Technological integration mediates the positive relationship between operational capabilities and international competitiveness.

2.1.5. IT Capability and Business Alignment Perspective

While Technology ownership discussed the ownership of IT technology resources by an organization. The IT Capability Perspective discussed organization's ability to utilize the technology resources more effectively by integrating the resources and combining the capabilities of the organization with IT resources and organizational business strategies Bharadwaj (2000) contends that IT resources do not have strategic value per se; but rather when combine with existing organizations' capabilities and its business strategies that yield to competitive advantage. IT capability is defined as the organization's ability to combine the IT-enabled resources along with other resources to attain its business purposes.

Good IT capability must consist of: technologies infrastructure, technology skill workers and managerial capability. Also Organizational processes must enhance the organizations' capability of using the information technologies efficiently. Business alignment as in the consistency between information technology applications and strategic goals of organization. The alignment of information technology decisions and organization strategic objectives may be considered as the main factor toward better organizations' outcomes.

With the nature of global supply chain in Aviation logistics industry it seems essential to have aligned IT applications, organizations capability's and global business strategic directions so the organization may coordinate cargo transportation more effectively, improve overall transparency and information flow, reduce lead time and enhance operational efficiency and also support its global strategy. Through information integration, stakeholders communicate with each other easily; it helps control the logistics cargo status dynamically. Integrated information systems may strengthen customer services by enabling the customer control the movement of its cargo more accurately. They can also facilitate better customer satisfaction.

It may be suggested as an effective bridge to turn the organizational capabilities into international competitiveness by utilizing the technology resources more efficiently. So IT Capability and Business Alignment Perspectives supports the main assertion that technological integration improves organization's capability-performance relationship, ultimately boosting firm's international competitiveness by maximizing organizational resources utilization.

2.1.7. Business Strategy and Competitive Advantage

If the company has no competitive advantage it can at best achieve normal rates of returns which is the level of profit expected from similar investment of equivalent risk. Companies which successfully achieve a sustainable competitive advantage, not only rely upon the company's strengths, but they also strive to create and design a strategy covering all the areas of operation.

We have suggested several approaches how companies might achieve this sustained competitive advantage in "Generic Strategies" which has been planned in form of cost leadership, differentiation and focus strategies. The cost leadership strategy, among the three generic strategies, is the simplest and most clear; a company tries to become the world's lowest cost producers.

In a Differentiation Strategy, a firm attempts to find to offer value to customers on dimensions other than cost which are considered important by buyers. A differentiation firm has high bargaining power on buyers on account of being perceived to uniquely valued.

A Firm pursue Differentiation when it is to offer something unique in its industry that is valued by buyers generally but not necessarily considered by all of competitors. A firm pursuing a Focus Strategy tries to concentrate on a specific segment or range of segments of the industry which can compete cost-efficiently or effectively on non-cost factors for that selected segment. A focus strategy is defined either on a 'cost focus' or on a 'differentiation focus.

2.1.8. Operational Capabilities

Core operational capability of performance and competitiveness in air cargo businesses is significant. It can be seen from the Resource-Based View (RBV) Perspective as the internal capability of an organization to utilize and exploit their resources in operating, and services can be provided effectively (Grant, 1996). In air cargo businesses, operational capability is defined in terms of efficiency and capability of air cargo to transport its services across and between other locations, including handling procedures for shipment processing, delivery and documentation (International Air Transport Association [IATA], 2023). Due to complex in air cargo operations, which contain interrelated processes such as, cargo handling, warehousing, document handling, customs arrangement and air cargo tracking, operational capability in

terms of speed, accuracy and reliability will shape the success of air cargo activities (World Bank, 2022).

Operational capabilities within the air cargo industry can be delineated through several components outlined below:

Cargo handling efficiency: Cargo handling efficiency pertains to an organization's capacity to process shipments swiftly and accurately. This capability encompasses all activities that take place at the cargo terminal, including the loading and unloading of cargo, sorting of air cargo, storing air cargo, and the transfer of cargo.

It has been noted that the efficiency of ground operations plays a crucial role in an organization's ability to minimize service turnaround time and enhance reliability within the air cargo system (World Bank, 2022). Turnaround time management is one area where organizational capability is evident, particularly when an aircraft undergoes pre-flight and post-flight processes, as these turnaround processes involve ground handling, maintenance, and logistical operations. A shorter turnaround time will lead to increased aircraft utilization, reduced operational costs, and improved responsiveness in service delivery (International Air Transport Association [IATA], 2023).

Digital and information systems: With the rise of digitalization in the air cargo industry, operational capabilities can also be improved through the integration of information systems and other digital technologies into organizational processes. Digital technology has demonstrated its ability to enhance transparency across the entire logistics supply chain through various applications, such as cargo tracking platforms, warehousing, and Electronic Data Interchange (EDI) (IATA, 2023). Moreover, digital technologies have successfully streamlined and improved the accuracy of decisions made through advanced analytics systems, which can be utilized for predictive purposes (World Bank, 2022).

Reliability and On-time Performance: The capacity to deliver cargo and services as expected, or as promised, in a timely manner and in good condition, is a key factor in how customers perceive service reliability (International Air Transport Association [IATA], 2023). Numerous researchers concur that high and sustainable performance, especially in the air cargo sector, is essential for maintaining customer satisfaction.

Emergent Operational Capabilities

Operational improvement

Operational improvement consists of distinct skills, processes, and routines aimed at gradually enhancing and strengthening current operational processes. It emphasizes incremental changes in processes, generating small victories that lead to improved performance, which necessitates different processes and resource arrangements compared to large-scale, radical changes (Peng, Schroeder, & Shah, 2008). This approach utilizes existing technical capabilities to systematically explore and develop innovative methods of serving current customers (Benner & Tushman, 2003).

While managers have historically acknowledged the significance of operational capabilities tied to continuous improvement, many have encountered difficulties in managing these capabilities (Anand, Ward, Tatikonda, & Schilling, 2009); therefore, the capability for operational improvement is linked to competitive advantage. Although it prioritizes measurable, short-term gains (Harrington & Mathias, 1997; Mukherjee, Lapré, & VanWasenhove, 1998), its cumulative impact can be substantial, benefiting both current and future product generations (Wheelwright & Hayes, 1985).

Operational improvement aligns with Benner and Tushman's (2003) concept of "exploitation," which emphasizes skills, processes, and routines related to refinement, implementation, efficiency, production, and selection (Peng et al., 2008). Furthermore, operational improvement is path-dependent, as previous innovation efforts influence future innovations (Benner & Tushman, 2003).

Operational innovation

Unlike operational enhancement, the term "mundane, routine focus on innovation, where tasks are executed according to a consistent set of tasks and standards," operational innovation "includes distinct sets of skills, processes, and routines linked to the radical enhancement of current operational processes and the creation and implementation of new, unique operational processes." As operational improvement relies on pre-existing organizational competencies, it is improbable that it results in "innovation that significantly diverges from current technological and market capabilities" (Sitkin & Stickel, 1996). Conversely, operational innovation seeks "variance and experimentation" to alter "technology trajectories" and the related organizational competencies" (Benner & Tushman, 2003), indicating a "focus on substantial process transformation, utilizing knowledge that was not previously available within the organization [which] necessitates entirely different process and resource configurations compared to modifications of existing processes" (Peng,

Schroeder, & Zhu, 2008). Operational customization (Schroeder et al. 2002). Operational customization has been associated with Wheelwright and Hayes's (1985) notion of a firm's "acid tests"—the creation of proprietary processes and methods. By establishing proprietary processes and methods, a firm constructs a structure of equipment and processes that is challenging to replicate and, equally importantly, enhances employee capabilities to sustain and improve processes, ensuring that employees possess greater knowledge about their business than even the equipment suppliers do (Wheelwright & Hayes, 1985).

This concept is encompassed within a wider operational capability known as operational cooperation, which refers to the ability to establish and sustain harmonious relationships within the supply chain related to the sourcing of goods (Kim, 2006). Operational cooperation is characterized as the capability to integrate all involved parties, facilitating the sharing of information and aligning towards a unified perspective that addresses the question of "what must be done."

The rise in uncertainty heightens the necessity for such operational cooperation, enabling firms to navigate the ambiguity of their environment, foster consensus, and achieve a shared objective. This allows them to access information, cultivate common viewpoints, delineate the target environment, resolve conflicts either within or between companies, and develop a mutual understanding regarding a specific task.

The rationale for this operational cooperation is grounded in the principles of Information Processing Theory (IPT), which explores the methods for addressing the complexities faced when functioning in a global context or utilizing technologies such as networks (Galbraith, 1973, 1979; Flynn & Flynn, 1999). Factors that contribute to this complexity include Goal Diversity (the range of products offered, the variety of markets served, and the volumes of each product) (Bozarth, Warsing, Flynn, & Flynn, 2009), Customer Diversity (the size of the customer base, the nature of customer relationships, purchasing volumes across different customer classes, and customer locations) (Anderson & Narus, 1998), Supplier Diversity (the number of suppliers, the nature of relationships, and the locations of suppliers) (Landry, 1998; Gonzalez-Benito, 2007; Koufteros, Cheng, & Lai, 2007; Holweg & Pil, 2008; Narasimhan & Talluri, 2009), Labour Diversity (the number of job roles and workforce reductions), and Manufacturing Diversity (fluctuations in monthly demand, the frequency of expedited orders, and the number of Bill of Materials (BOM) levels). , 2009).

Operational Responsiveness

Operational responsiveness pertains to the distinct skills, processes, and routines employed to swiftly and effortlessly adjust to fluctuating demands in both output and input requirements, thereby consistently satisfying client needs with minimal cost or time implications (Swink, Narasimhan, & Kim, 2005). Central to this capability is the ability to coordinate operational inputs, which include machinery, human resources, material flow, and the sequence of the production process, in the face of uncertainties encountered.

This proficiency is closely aligned with the production and technological expertise inherent in current operational processes (Zhang, Vonderembse, & Lim, 2003), forming the basis for flexibility. For example, operational responsiveness enables a plant to operate with alternative batch sizes or to produce at varying production volumes (volume flexibility) based on diverse skills, processes, and routines that help flatten a firm's cost curve across different production volumes.

Furthermore, operational responsiveness empowers a firm to provide various product assortments (mix flexibility) for a set production capacity (Martinez Sanchez & Perez Perez, 2005), relying on different skills, resources, and routines to swiftly respond to external pressures regarding inputs or outputs. Operational Capabilities Operational Responsiveness Consequently, the firm would possess operational responsiveness, allowing it to produce the appropriate volumes and types of products to promptly meet customer demand. Operational Reconfiguration While operational responsiveness leverages existing operational assets to adapt to changes, operational reconfiguration, which is based on dynamic capability, aims to transform operational resources to align with environmental shifts.

Operational Reconfiguration

Operational reconfiguration is based on the resource-based view (RBV) (Pandza et al. 2003b) and provides a framework for dynamic capacity. This concept, introduced by Teece et al. (1997), examines how firms adjust their capabilities in response to environmental changes, contrasting with the RBV, which emphasizes stable performance differences arising from variations in factor endowment (Pandza et al. 2003a). Dynamic capacity assessment (DCA) highlights the varying abilities of firms to acquire and reorganize assets as the environment shifts, while the resource-based view points to consistent differences in capacity stemming from diverse asset distribution and utilization patterns. This framework equips firms with the capabilities to recognize and adapt to new resource conditions as markets emerge, converge, disperse, mutate, or cease to exist. Consequently, operational reconfiguration encompasses a

diverse array of skills, processes, and routines necessary for executing these operational transitions to restore stability when a firm's operational strategy no longer aligns with market demands, especially amid ongoing market dynamics and external changes (Teece et al. 1997).

Operational reconfiguration develops from routines that detect unforeseen changes, sustain flexible responses, and execute synchronized operations. Pandza et al. (2003a) characterize operational reconfiguration as the capacity to invest in both physical and intangible resources that afford a firm the ability to navigate uncertain environments, enabling it to modify its actions based on new information. This is exemplified by the capacity to adjust manufacturing strategies in response to fluctuations in market demand, heightened global fragmentation, competition, rapid technological progress, product life cycle stages, and corporate strategies (Cagliani, Acur, & Boer, 2006; Swafford, Ghosh, & Murthy, 2006).

Operational reconfiguration is important in uncertain and volatile business environments, where firms face new innovations, economic crises, production losses, political events, and so forth, such that the ability to sense and deal with change becomes a way of life.

Operational Capabilities as Sources of Competitive Advantage

From an RBV point of view operational capability may provide competitive advantage if they are part of organizational routines and thus inimitable by rivals. Take for examples The capability of fast cargo loading and unloading requires specialized facilities and trained workforce Integrated digital operational support may need considerable organisational capital investments and skills-learning Processes the coordinated flow may need organisation learning over the years Therefore, operational capabilities are path-dependent and firm-specific and thus harder for competitors to learn (Teece et al., 1997).

2.1.9. Strategic Capabilities in Aviation Logistics

The notion of Strategic Capabilities involves firm-capacity to: designing; implementing; & maintaining strategic moves that facilitate: achieving & sustaining a competitive advantage across ever changing environments. By RBV approach: ‘higher-order competence with respect to deployment and utilization of resources; ‘while the DC approach emphasizes on the role to adaptation and change over time’ (Teece, 2007).

Strategic capability assumes significance within the context of air cargo industry which competes on the global platform, its environment is continuously changing. Such capabilities help firms positioning themselves within various international markets, reacting to changes occurring around and growth into the future.

This is distinct from Operational capabilities; focus upon operational effectiveness or execution in day-to day business, in contrast to Strategic capabilities where focus rests upon a direction; competitive positioning and development of long-term competitive capabilities (Porter, 1985).

2.1.10. Technological Integration as a Mediating Mechanism

In the context of this study, and firmly anchored in the 'Technological' pillar of the Technology-Organization-Environment (TOE) framework, Technological Integration is operationally defined as the extent to which an airline embeds digital data systems into its core logistics and strategic processes.

To answer specifically *which* technologies are being measured, this research limits its scope to three precise digital applications relevant to modern air freight:

1. **Electronic Data Interchange (EDI):** Used for automated, paperless customs clearance and documentation.
2. **Automated Tracking Systems:** Digital networks fully integrated with global supply chain partners to provide real-time shipment visibility.
3. **Predictive Analytics & Digital Warehousing:** Advanced IT systems used by management to forecast cargo flow and bridge the gap between long-term strategy and daily ground operations.

The TOE framework suggests that these specific technologies act as the environmental conduit through which a firm interacts with global competition (Tornatzky & Fleischer, 1990). Without this integration, the theory suggests that operational and strategic capabilities remain isolated and cannot generate international competitiveness.

Tech Integration in the Digital Age Technological integration refers to a firm’s degree of embedding of digital technologies, information systems, and automated networks in its fundamental operations to better manage information flows, increase visibility, and inform strategic decision making. Today’s air freight environment implies its use of, among others,

Electronic Data Interchange (EDI), automated shipment tracking systems, digital warehouse systems, or supply chain analytics. In the dynamic capabilities framework, tech integration is a focal enabler. , global network expansion), and technology integration is the vital glue which effectively bridges operational and strategic capabilities to foster better international market results.

In the absence of a sufficient degree of technology integration, even strong operational capabilities will fail to translate into global benefits and strategic insights can rarely reach international operational realization through the timely orchestration of diverse operational elements. In other words, the technological capabilities that firms integrate with their operations help them mediate their domestic capabilities and gain better leverage against competitors in international markets.

H4: Technological integration mediates the positive relationship between strategic capabilities and international competitiveness.

2.1.10.1. Digital trend of the airline industry

The airline sector has experienced a significant transformation since the 1990s due to deregulation. In light of the digital evolution affecting traditional businesses, airlines have been compelled to adjust their marketing strategies to enhance efficiency and compete with emerging, rapidly expanding low-cost carriers (Gillen et al., 1990). Digitalization represents a prevailing trend within the global civil aviation sector, with 58 percent of airlines and 35 percent of airports having established a digital strategy (Lampathaki et al., 2019).

Implementing digitalization is a time-consuming process as it necessitates substantial alterations to conventional practices, prompting organizations to rethink and digitally adapt their business models and processes (Carcary et al., 2017). Unlike other entities that offer tangible goods to consumers, airlines deliver an intangible service to passengers and prioritize customer satisfaction throughout various phases of the flight experience. Consequently, companies must engage continuously with customers, suppliers, and partners, learning and adopting digital techniques from them; this leads to a reevaluation of their investment strategies and competencies (Joyce, 2002). Given the unique characteristics of the aviation sector, this paper concentrates on digital products utilized before, during, and after flights, examining their influence on customer satisfaction and the overall performance of the industry.

2.1.10.2. Drivers of airline industry digitalization

In this paper are analyzed three drivers for digital transformation in airline industry.

1. **The cost Structure:** Many of the operating airlines share high amounts of fixed costs, for example in aircraft, that are unlikely to be able to change significantly in the coming years so that any saved amounts could influence heavily the profits.

The cost effectiveness of the solutions would imply that even small amounts will make an impact since the airlines industry is a very competitive one. Because information is available from anywhere on internet this also changed fundamentally the industry by diminishing very considerably the search costs (finding about and comparing different offers and prices and routes). Likewise it reduces costs and complexities related to the printing, buying distribution and processing paper tickets. An excellent example of paperless flight due to digital transformation was the “easyJet” initiative (2005).

2. **Importance on Security**: There already many physical systems and IT measures available to prevent information hacking, cybercrime etc. In order to achieve data privacy, for example automatic flight piloting in cockpit and different assistants, able to give information which can prevent to compromise any physical equipment due to the new terrorist- threat landscape. Security is relying on digitization where we are experiencing an enhanced protection level. Even products in the category physical security (including Automation & Augmented Reality devices for overall scanning).
3. **Strengthening of competition**: An area where it can see the influences on the operating behaviour from airlines due to the digital revolution is by decreasing the price in airline industry due to an intensified competitiveness for airlines. The lower prices due to lower start-up costs provided by the technology have created very strong new rivals, creating therefore a need for a long-term survival by creating new difficult to imitate competitive advantages by using digital processes for airlines which means that alliances hasbecome more critical.

The adoption of digital methods additionally supports standardization for carriers, enabling these firms to reduce prices by adopting the same procedures (Andal-Ancion et al. ,2003). Businesses have developed a website where clients can access info at any time and also examine airline prices at various hours of the day.

2.1.10.3. The impact of digitalization and digital products on airline strategy

The digital transformation has undoubtedly brought a good impact on the market. Research shows that digitization has a positive impact on commercialization activities, especially information sources and man agement, and uses big data for various assessments and official activities (Saheed, 2019). Since all companies today are moving towards digita lization, digitalization has no direct impact on competitive advantage, but it has a strong indirect impact on product and service advantages (Lee & Falahat, 2019).

Therefore, managers and decision-makers can use digitization to improve the company's internationalization plan according to their expected competitive strategies, thereby attracting more consumers by improving the quality of the company's products and services (Lee & Falahat, 2019).

2.1.10.4. The impact of digitization and digital technologies on passengers

Given the cutthroat competition of civil aviation, airlines are seeking to attract and retaining customers by all means. In the age of digital revolution, e-business enhances airline to communicate with customers on one-on-one basis (Jarach, 2002).

Airlines provide a variety of e-services for passengers, and it is undoubtedly important to connect these services to customer satisfaction. By gaining a deeper understanding of customer needs, airlines can offer improved services that are tailored to meet customer demands, ultimately aiming to maximize profits. Presently, customers are increasingly opting for self-service options such as check-in and baggage drop-off for their convenience. Long wait times are viewed as a significant factor contributing to decreased customer satisfaction. Digital technologies, including fingerprint and facial recognition, have the potential to reduce waiting times at airports. However, some researchers express caution regarding the impact of online check-in and booking, citing the increased risk of passengers accessing fraudulent websites or blogs for these services (Sinha et al., 2018).

The deregulation of the aviation industry has led to substantial enhancements in various airline services, particularly in-flight offerings. According to Alamdari (1999), premium in-flight services, such as high-quality movies and Wi-Fi, can significantly influence customers' decisions when booking tickets. In the realm of social media, airlines can leverage access to vast amounts of user data to investigate consumer preferences and sentiments, enabling more innovative approaches to customer segmentation (Ermagun & Punel, 2018). By analyzing

this data, airlines can provide more personalized and satisfactory products, fostering greater brand loyalty among customers (Ermagun & Punel, 2018).

Additionally, airlines utilize social media as a platform for customer interaction and service provision (Menon et al., 2019). Nonetheless, some authors emphasize concerns regarding information leaks on social media, particularly regarding private and sensitive personal data that may jeopardize user privacy (Nouh et al., 2014).

With the proliferation of portable electronic devices, airlines are capitalizing on new mobile technologies due to the rising use of tablets, smartphones, and similar devices.

According to the study , almost all THE airline applications accompany of the throughout the entire process , from booking to boarding .Airlines support passengers throughout the entire process , from booking to boarding . In more, addition they provide updatesreal - time in real time on flight status , scheduled and estimated times , and information on boarding gates .on the stateflights , scheduled and estimated times , as well as information on boarding gates . However, according to the study, airlines still have significant room to improve their applications , as very few users rate and comment on these airplanes applications , except for those have still have had a bad experience (Lucy & Vorley, 2013) .significant room for improvement in their applications, as very few users rate and comment on these applications, except for those who have had a bad experience (Lucy & Vorley, 2013) . Such negative reviews can create confusion among people and alter their experience. criticsNegative feedback can create confusion among people and alter their experience.

2.2. Empirical Review

Organizational capabilities, technological adoption, and firm performance have been widely debated within diverse fields such as strategic management, supply chain management and aviation operations. The expression of the linkages within the domain under investigation differs based on diverse geographical contexts and institutional environments. This section is dedicated to synthesizing empirically obtained results from the developed economies, emerging markets and, African aviation domain; to distill the existing points of consensus and contextual variations.

2.2.1. Empirical Evidence from Developed Economies

Developed Economies (Developed North America, developed Europe, developed Asia) This category generally shows a consistent and numerically validated relationship between capability-digitalisation and competitive advantage.

This is a direct result of these developed economies providing mature infrastructure allowing the organization to utilize and embed the latest strategic capabilities in their operational use of digitalization.) Several longitudinal studies and quantitative research show evidence: Sarkis and Talluri (2019) carried out a longitudinal quantitative study of operational capability efficiency within the North American aviation industry.

They utilized data envelopment analysis to show that those with highly efficient ground handling and turnaround times (operational capabilities) outperformed the bottom tier with a 14% increase in international market share.

More specifically to the relationship, Kaufmann and Roeder (2021) researched strategic capability and its relationship with European air cargo firms. They modelled the findings of 150 European logistics executives via structural equation modelling, confirming that strategic alliance forming ability and expansion capabilities were significantly associated with better financial and market share performance at a global level. More important, the mediating role of technology (digitalization in this study) is well defined for western regions. Wong, Lai, and Bernon (2020) analysed the link between the integration of Information Technology (IT) and supply chain agile capabilities within the UK market.

Their regressions indicate that IT capabilities fully mediate the effect of the internal operating routines on external customer satisfaction. Similarly, in the global freight industry, Chen and Paulraj (2018) proved that EDI and predictive analytics played a mandatory role in the transference from strategic capabilities to dynamic and real-time advantage.

2.2.2. Empirical Evidence from Emerging Markets

This pattern largely holds true when we look beyond the African continent at emerging markets elsewhere (like Southeast Asia or Latin America). However, it can be shown, empiricism again, that without the mediating presence of technological integration capabilities matter significantly less for international competitiveness. (For example, see the survey-based empirical model in Li, Su, and Chen (2022) that identified international

competitiveness as dependent on the presence of a fully integrated digital system for tracing air cargo amongst Vietnamese providers that sought international expansion in SE Asia.

Similarly see the work in Gonzalez and Martins (2020) where operational capability was shown to be subject to increasing returns at the international level if and only if operations are integrated with systems for tracking international transit through various customs.

In some emerging markets technology may matter even more than in developed markets because it can function as a technological and information bridging of those gaps.

When we look outside of the region the evidence continues to show a similar logic where the interaction effects between firm-level resources (like capabilities) and either infrastructure or technology affect the firm-level competitiveness.

However, once more the evidence from developed countries continues to affirm that a technological bridge matters significantly less. In the sample of developed firms described earlier the inclusion of the interaction terms between capability level and level of international infrastructure present in terms of openness of country openness, the level of foreign direct investment coming into country. The internationalisation and international competitiveness were then regressed as usual and were shown to be negatively significantly on capability in absence of technological connectivity.

In other words once technology provided a pathway the connection between capacity and the international sphere was significantly different, but without this pathways capability is largely useless beyond the domestic level for competitive advantages in an international arena.

2.2.3. Empirical Evidence from the African Aviation and Logistics Context

In an African context, very little empirical work exists, with fewer still having examined capabilities mediation in a statistically rigorous quantitative manner. Africa's aviation sector operates within an exceptional complex: a combination of fragmented regulatory frameworks; varying levels of readiness for technological adoption, or 'digital maturity'; and infrastructure deficiencies (World Bank, 2022). This renders generalisations from studies in advanced economies inappropriate. Research to date conducted in an African environment has therefore tended to be more macro-centric in its focus, looking more at overall rates of failure, or broad strategic reviews than at causal firm-level capability models.

Amankwah-Amoah and Debrah (2017), for instance, examined airline failures in Sub-Saharan Africa through a qualitative approach and identified lack of strategic capabilities

(specifically, poor alliance management and route strategy) as key factors contributing to insolvency – however their qualitative research did not attempt to establish a quantitative causality link.

In a similar vein, Kuada and Mensah (2021) surveyed logistics performance in West Africa, concluding that operational deficiencies in cargo handling create bottlenecks that severely hampered trade integration.

Similarly, in the realm of technology, recent empirical work suggests a strong empirical drive to digitalization, as opposed to it actually existing as a functioning mediating factor, in Africa.

Chiza and Ndlovu (2023) took a mixed methods approach to examine technology adoption in supply chains in Southern Africa and found that although management regarded adoption of digital technology (such as the automated tracking of goods),as strategic priority, adoption was in fact sporadic and uneven.

Their research indicated a general link between technology and performance but fell short of a direct empirical test of the mediation role of technology as between firm-level capabilities and international market share. g. Addis Ababa) is improving at speed, the digitally integrated network binding these hub locations together into the global logistics chain remains an under-specified operational question.

2.2.4. Empirical Evidence on Operational Capabilities and Performance

The relationship between physical operational capabilities and firm competitiveness, especially in supply chain and logistics environments, is the subject of considerable empirical research. A quantitative study by Fugate, Mentzer, and Stank (2010) examined 306 logistics companies in the United States and concluded that operational efficiency, defined as speed, reliability and precision, explained 38% of the variance in overall market performance. The authors determined that physical throughput serves as the fundamental base necessary for competitive survivability.

In an African context, Kuada and Mensah (2021) studied logistics performance and regional trade within West Africa. Their empirical investigation indicated that regional carriers were unable to effectively compete with global carriers due to infrastructural bottlenecks and

inefficient ground-handling capabilities. However, a critical limitation of Kuada and Mensah's study is that it does not incorporate logistics associated with land and maritime transportation; therefore, there exists a significant empirical void in understanding how these particular operational dynamics translate to the high-velocity aviation cargo environment, which is the subject of this research.

2.2.5. Empirical Evidence on Strategic Capabilities in Aviation

The empirical literature relating to strategic capabilities overwhelmingly concentrates on three primary themes: market orientation; network expansion; and alliance formation. Getachew and Bogale (2023) conducted an analysis on the strategic management practices of Ethiopian Airlines, providing confirmation that fleet modernization through proactive measures and membership of the Star Alliance have played key roles in establishing its dominant position within the passenger sector. Their use of mixed methods added significant qualitative information to the findings; however, neither study attempted to isolate cargo and logistics from the organisation, leading to the conclusion that the airline was essentially a single entity.

In a similarly themed research study, Amankwah-Amoah and Debrah (2017) reviewed the evolution of air transport in the Sub-Saharan African region and found that both strategic inertia and reactive management led to the failure of many national carriers. They also determined that proactive strategic capabilities will ultimately determine the sustainability of organisations within the aviation sector. Although these studies have corroborated the positive direct effect of strategic capabilities upon an organisation's sustainability; they did not adequately address or identify the operational mechanisms needed to implement the strategic capabilities and considered strategy to be an independent phenomenon.

2.2.6. Empirical Evidence on Technological Integration as a Mediator

However, recent empirical research has begun moving from seeing technology as discrete organisational resource to system mediator. This is confirmed when using quantitative data where the study by Wong, Lai, & Bernon (2020) based on the responses of 215 Asian manufacturing organisations showed empirically that IT fully mediated the link between Supply Chain agility and Financial Performance. As a result they showed that there was no financial gain from being physically agile unless physical activity was monitored through digital technology. Further work within the African context Chiza & Ndlovu (2023) showed

evidence for the digital transformation of African Supply Chains by testing the predictive impact of the use of Electronic data Interchange and Predictive Analytics on the use of border strategies within Southern Africa, using SEM methodology. The limitations of their work was that the study only targeted mining and retail logistics. Aviation logistics which has strict controls, time limits and international trade legislation has not been explored in depth in terms of the impact of technology mediation on physical and strategy execution in their supply chains.

2.2.7. Competitiveness and Organizational Capabilities

Research over the past several decades, there has been a dramatic growth in the body of empirical research concerning competitiveness and organizational capabilities among scholars working in strategic management, logistics, and the aviation field. These studies document how operational and strategic capabilities of firms affect performance and competitive posture. They often vary from one to another in terms of scope, methodologies and contexts, which highlight a clear gap to justify current study.

Operational capabilities including efficiency, reliability, and process integration are well-documented factors that impact service quality and customer satisfaction in logistics systems. Liu and Lyons (2011) investigate the relationship between firm capabilities and the performance of logistics service firms and find that operational process development is positively associated with a logistics firm's service reliability and retention.

In the Words of Christopher (2016), the effectiveness of logistics operations capability facilitates firms to satisfy customer demands and respond to competitive environment. Most studies in this regard adopt quantitative methods, aiming at measuring the effects of operational capabilities on financial or market performance indicators. This often neglects internal organizational processes and manager behaviours contributing to those capabilities, especially in the service industry. Dynamic capabilities and strategic capabilities also have been widely recognized in contributing to competitive advantages in the past decades.

Numerous empirical studies report the significance of strategic capabilities in driving firm performance. For example, Morgan, Vorhies and Mason (2009) examine the effects of seven marketing capabilities on the firm and find that strategic capabilities such as market orientation, resource deployment and innovation are positive drivers of organizational performance. Moreover, Teece (2007) stressed that sensing the new opportunity and reconfiguration of resources would create dynamic capabilities to maintain competitive

advantages for firm. Within aviation sector, the decisions to expand networks, to form alliance, and to invest on new technology, have been cited as some key factors of airline's competitiveness, which enable them to expand their networks globally (IATA, 2023). Most studies, however, deal with macro-level aviation performance or strategy outcomes, ignoring how those capabilities are built in an organisation.

2.2.8. Synthesis of the Empirical Literature

A synthesis of the reviewed empirical literature reveals a clear trajectory. In developed markets, quantitative models have firmly established that operational and strategic capabilities drive competitive advantage, with technological integration serving as a well-documented mediator (Chen & Paulraj, 2018; Sarkis & Talluri, 2019). In emerging markets globally, technology becomes an even more vital bridge to overcome institutional friction (Li et al., 2022). However, in the African aviation context, there is an over-reliance on qualitative, descriptive, and macro-level studies (Amankwah-Amoah & Debrah, 2017).

2.3. Research Gap

While the individual concepts of operations, strategy, and technology are heavily researched, the theoretical gap this study fills is the lack of an *integrated mediation model* in emerging markets. Theoretical models developed in Western contexts assume that baseline digital infrastructure already exists, whereas African models often focus entirely on macroeconomic infrastructure deficits (World Bank, 2022). The precise theoretical gap is the unmapped structural mechanism of *how* digital integration mediates the translation of physical and strategic capabilities into competitiveness within a structurally constrained environment.

Empirically, the gap is a severe methodological deficit in the African aviation literature. Existing African studies (e.g., Amankwah-Amoah & Debrah, 2017; Kuada & Mensah, 2021) rely overwhelmingly on qualitative, descriptive, or cross-sectoral approaches that fail to establish statistical causality. Furthermore, there is an absolute scarcity of quantitative firm-level capability models specifically isolating the cargo division of Ethiopian Airlines. This study closes these gaps by providing a rigorous, quantitative, causal evaluation of technology's mediating role at Africa's largest cargo carrier

2.4. Hypotheses of the Study

- H1: Operational capabilities are related positively to the level of international competitiveness. International competitiveness would be enhanced in organisations

that demonstrate better operations, such as more reliable service and more responsive operational efficiency in handling of merchandise than companies which have lesser operational strengths.

- H2: Strategic capabilities are related positively to the level of international competitiveness. Companies in such companies which demonstrate stronger capabilities such as to be responsive in changing their strategies, to foster strategic alliance and to exploit new development in their network could outperform others, especially in international arena, where changes in competitive landscape happen more frequently.
- H3: Technological integration moderates the relationship between operational capabilities and the level of international competitiveness. Operational strengths will result in a stronger relation with international competitiveness when operations were enhanced with well-integrated technology system where information sharing and process visibility could be greatly improved.
- H4: Technological integration moderates the relationship between strategic capabilities and the level of international competitiveness. In this regard, greater strength of strategic management in an organization could lead to better competitive performance at the international scene when the processes and capabilities are effectively facilitated and support by integrated information system that would enhance a coordinated and globally accessible decision processes and operation executions.

2.5. Conceptual Framework

This paper builds its conceptual framework on the basis of the Resource-Based View and Dynamic Capabilities Theory in which emphasis is placed on the internal capabilities in determining competitive advantage (Barney 1991, Teece, 2007). This study framework draws from the synthesis from three major theories namely; the Resource Based View, the Dynamic Capabilities theory and the TOE Framework. It states that Operational Capability (Efficiency, Throughput), and Strategic Capability (Networking, Alliances) are treated as the independent variables that influence the International Competitive(ness) (which is the dependent variable), while Technological integration is treated as the mediator. It is technology integration that acts as a bridge that translates the physical and strategic competencies into sustainable competitive advantage in global market.

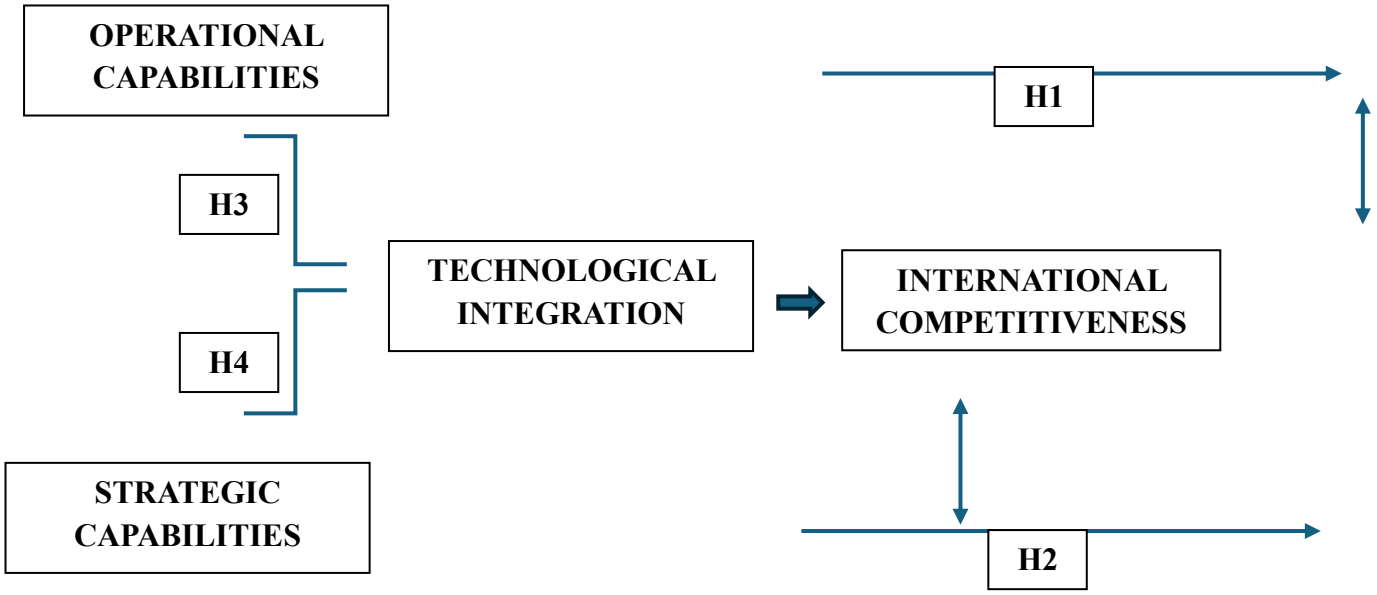


Figure 1: Visual conceptual framework

Source: Author's own construction (2026), based on the synthesis of RBV (Barney, 1991), Dynamic Capabilities (Teece et al., 1997), and the TOE framework (Tornatzky & Fleischer, 1990).

CHAPTER THREE: RESEARCH METHODOLOGIES

3.1. Research Design and Research Approach

The foundation of this study is laid on the pragmatic philosophy, arguing that methodology is driven by the research problem enabling the incorporation of multiple approaches for thorough interpretation of complexity (Saunders, Lewis, and Thornhill, 2019). The study aligned with this philosophy by employing the Mixed Methods Research approach. The justification for employing mixed methods comes from the reality that Ethiopian airlines cargo logistics is a complex socio-technical business environment wherein the quantitative analysis suffices to ascertain the existence of the performance GAPs but a deeper qualitative insights are required to fully understand the structural and behavioural factors causing the problem (Creswell and Creswell, 2018).

Henceforth, the study combined both the Descriptive and Explanatory (Causal) research designs in a step-wise approach to adequately answer the study's objectives. Descriptive Research Design In the primary stage of analysis, descriptive research design was employed. The primary objective of the descriptive design is to accurately and systemically describing

an already existing condition, population, or phenomena (Sekaran and Bougie, 2016). It was selected to numerically characterize the demographic configuration of the target populations across different functional departments at Ethiopian airlines Cargo and Logistics services.

The Descriptive design was thus indispensable in computing and summarising the descriptive statistical characteristics (Means and standard deviations) of the firm's Organizational Capabilities (Operational capabilities, Strategic capabilities) and Technological Integration of the airline prior to the testing of inferential relationships. Explanatory (Causal) Research Design Following the descriptive study of the firm's existing state, an explanatory design was adopted. , 2019). This research design is crucial in proving the developed hypotheses (H1 through H4), justifying the application of multiple linear regression to measure the direct effect of the variables. Qualitative Integration To complement the mixed method nature of this research study, a qualitative descriptive technique was incorporated as a final step. Through a semi-structured key informants' interview, this qualitative aspect was embedded with a sole intent of contextualising the results of the explanatory research design.

While the explanatory design demonstrates exactly where and how there exists some structural and behavioural bottlenecks Mathematically, this qualitative stage elucidates how these same bottlenecks manifest in the day-to day ground operations of the airline thus rendering the concluding recommendations more pragmatic and actionable for the airlines.

3.2. Target Population

The target population is located at Ethiopian Airlines Cargo & Logistics Services main base at Addis Ababa. Based on the use of the mixed method study, the target population is defined in two stages. Quantitative Target Population; Our quantitative population is 400 Ethiopian Airlines Cargo & Logistics Service Employees working across 5 departments namely (i) Operations Management, (ii) Logistics, (iii) Cargo Operations, (iv) Strategic Planning & (v) Information Technology (IT). The rationale behind including all 5 departments in one sample comes from strict methodological consideration.

Modern aviation logistics require multi cross functional teams and the holistic "Organizational Capabilities" can't be reliably measured from just one department unit. Operations managers will measure the pace of physical throughput; Strategic planning will be

asked to compare it to their plans for the airline expansion on global routes and the IT will be asked to compare its system capabilities with external technology requirements.

Qualitative Target Population; The target qualitative population will be the top five informant managers, representing different functions such as Senior Cargo Managers, Directors of IT who will offer an in-depth expert perspective in how bottlenecks that appeared in quantitative study of our airline in reality appear daily and why this is occurring.

3.3. Sampling Techniques and Sample Size

Since the required analysis of data involved the diverse operational and strategic activities across the levels of business organization, it was not feasible or economical to examine each of the element in the target group.

The sample was collected using a Stratified random sampling technique through which the sample size was divided into strata. Strata represent a group of relevant employees in distinct organizational functions (e.g. – IT, strategy, operation. Etc) thus representing proportionally from different relevant organizations divisions.

A sample size was then select using Tar Yamane's (1967) sampling formula that helps in calculating sample size from population. Target group is 400 number relevant personal in specified departments and margin of error selected as 5%, the appropriate sample size is:

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

$n = 400 / (1 + 400(0.05)^2)$

$n = 400 / (1 + 400(0.0025))$

$n = 400 / (1 + 1)$

$n = 200$

Therefore, structured questionnaires was distributed to a targeted sample of 200 respondents, ensuring adequate statistical power for the subsequent regression and mediation analyses.

3.4. Data Sources

Primary data were obtained through directly administered a structured, online, self-report, standard questionnaire via Google Forms from a representative sample of the identified sample of management and operational employees of Ethiopian Airlines Cargo & Logistics services. To achieve construct validity, the respective individual sources of the primary data on each of the variables collected through questionnaire items are derived from empirical valid scale from, Fugate et al. (2010) for operational capabilities, Morgan et al (2009) for strategic capabilities, Chen and Paulraj (2018) for technological integration, and Kaufmann and Roeder (2021) for international competitiveness. The primary data were fully quantitative.

Secondary data have been systematically collected to supply broad operating information and to enhance overall qualitative and statistical descriptions of the industry sector. Specific corporation and organizational sources include Ethiopian Airlines Group Annual Financial and Operational Reports (2020–2025); internal corporation strategy of Ethiopian Airlines Group; global cargo briefs from the International Air Transport Association (IATA) and country specific logistic performance of the nation on information extracted from the World Bank Logistics Performance Index (LPI) database.

3.5. Data Collection Methods

Given the mixed-method design, the primary data was collected through 2 successive stages: Phase I: Quantitative Data Collection (Questionnaire Distribution); Quantitative data was collected using a structured, self-administered questionnaire. All the construct's items were measured on a 5-point Likert Scale in order to identify the subtle differences accurately. Distribution wise the entire Questionnaire was digitized, and the questionnaire was distributed electronically to the stratified sample through Ethiopian Airline's internal corporate mailing address, as the IT system of Ethiopian Airlines is accessible via email to the internal staffs, using a proprietary software. Distribution directly to Ethiopian Airlines corporate e mail was to fit with 24h, rota shift pattern, which will help to collect responses of employees with their own time as safely and effectively and a sufficient response was guaranteed (Saunders, Lewis, & Thornhill, 2019).

Phase II: Qualitative Data Collection (Key Informant Interviews) Qualitative Data was collected by means of semi-structured Interviews; The interviews were constructed after

conducting the preliminary analysis of the quantitative questionnaire and the areas of mathematical challenges were identifiable. Semi-structured interviews were conducted directly with the 5 (five) key informant managers on the 24 hours, rotating, working of Airline.

3.6. Validity and Reliability

The research instrument (questionnaire) has to be valid and reliable.

Validity: All content validity and face validity was conducted through expert validation by the research advisor and a small group of aviation professionals; thereby ensuring that all the measures contained in the questionnaire captured perfectly the true operational environment of the aviation sector in Africa.

Reliability: Internal consistency was first determined through a pilot study carried out by 20 employees who did not form part of the sampling frame of the study. A final internal consistency assessment of the finalized measurement model using Cronbach's alpha coefficient was performed, since an alpha level of 0.70 or above generally reflects acceptable levels of internal consistency (Hair et al., 2019). The results demonstrate that all measurable constructs are the empirical reliability of this study, which is as follows;

- Operational Capabilities: $\alpha = 0.84$
- Strategic Capabilities: $\alpha = 0.81$
- Technological Integration: $\alpha = 0.89$
- International Competitiveness: $\alpha = 0.86$

This indicates that all observable variables used to construct the constructs were above the threshold of 0.70, showing an outstanding degree of reliability and internal consistency of the tool.

3.7. Data Analysis

The collected quantitative data would be cleaned, coded and analysed with SPSS and Smart PLS Software: Descriptive Statistics; - Frequency, percentages, mean and standard deviation of respondent characteristics and for the construction of variables' descriptive profiles would be determined. Inferential statistics; - For direct effects of relationships (H1 and H2),

Multiple Linear Regression would be run. - For Mediating effects of Technological integration (H3 and H4), Mediation Analysis using Hayes (2017) PROCESS macro will be carried out. This would estimate direct, indirect and total effects and also determine whether full or partial mediation is present.

3.8. Ethical consideration

The data will be collected from those of willing target respondents without any unethical behaviour or forceful action. The results of the study will be used for academic purpose only and response of the participants will be confidential, and it will be analysed in aggregate without any change by the researcher. In addition, the researcher respects the work of previous studies and will cite appropriately those works that will be taken as a basis.

CHAPTER FOUR: DATA PRESENTATION, ANALYSIS, AND INTERPRETATION

4.1. INTRODUCTION

The chapter gives an extensive explanation of the raw primary data gathered from the management and operational level personnel of Ethiopian Airlines Cargo & Logistics Services. In the endeavour of obtaining optimal and accuracy level of data from the distinct departments, a systematic well-designed questionnaire in electronic format was prepared, that was then distributed via their internal corporate electronic mail using an online instrument, that is google form. Among the 200 target individuals obtained via the application of Taro Yamane sampling formula, there are total of 185 questionnaires received as complete and usable which was registered into the online Data Base system thus achieved high response rate 92.5%.

The collected raw data then cleaned up, codification applied for variable and loaded into the SPSS version 26 and into the Hayes PROCESS macro (v3.5) for the conduct of descriptive statistical analysis and the conduct of inferential statistical test respectively, this chapter is thus segmented in to two main sections: namely; Phase I of objective analyses of data using statistical measures and, Phase II of Interpretation of the findings in relationship with research questions of the study and based on the theoretical orientation; R BV, Dynamic Capabilities, TOE; and previous empirical work.

4.2. Demographic Characteristics of Respondents

Table 4.1: Demographic Profile of Respondents (n = 185)

Variable	Category	Frequency	Percentage (%)	Cumulative %
Department/Unit	Operations/Cargo Handling	65	35.1	35.1
	Logistics & Supply Chain	50	27.0	62.1
	IT/Systems	35	18.9	81.0
	Strategic Planning	35	18.9	100.0
Years of Experience	Less than 2 years	25	13.5	13.5
	2–5 years	60	32.4	45.9
	6–10 years	75	40.5	86.4
	More than 10 years	25	13.5	100.0
Current Position Level	Non-Managerial Staff	105	56.8	56.8
	Middle Management	60	32.4	89.2
	Senior Management	20	10.8	100.0

Source: Own Survey

As shown in Table 4.1 The largest group within the workforce that participated are from Operations/Cargo Handling (35.1%) and Logistics (27.0%) These two groups represent the core physical competencies of the airline. More importantly, 54% have a tenure of over 6 years with the company. When the data are supplemented with 43.2% being in a manager's role the, this adds further weight and provides confidence that the sample of data is in fact highly informed employees within the organisation that will be able to adequately judge the organisations strategic and technological capacities.

4.3. Decision Criteria for Mean Analysis

For the systematic and appropriate way in describing statistics, decision rule was decided according to interval's equal width from the scale 5 Likert point. This criterion applies for interpretations based on the following:Mean Scores Classification1.00 – 1.80 Very Low

Level (Strongly Disagree)1.81 – 2.60 Low Level (Disagree)2.61 – 3.40 Moderate Level (Neutral)3.41 – 4.20 High Level (Agree)4.21 – 5.00 Very High Level (Strongly Agree)

4.4. Item-Level Descriptive Statistics

To assess how much respondents agree with the specific operations and strategies of the company. This level of agreement was gauged using the scale with 5 levels on the Likert scale (1=Strongly Disagree to 5=Strongly Agree), whereby: the respective Means and Standard Deviations of the descriptive statistic were generated.

Table 4.3: Descriptive Statistics for Operational Capabilities (OC)

The decision rule was generated in terms of the equal width of each unit in the range of the 5-point Likert scale to determine if a meaningful interpretation of descriptive statistics would be necessary. For instance, The Mean score was defined based on the table below: 1.00 – 1.80 Very Low Level (Strongly Disagree) 1.81 – 2.60 Low Level (Disagree) 2.61 – 3.40 Moderate Level (Neutral) 3.41 – 4.20 High Level (Agree) 4.21 – 5.00 Very High Level (Strongly Agree)

Item Code	**Survey Statement**	**Mean**	**Std. Dev.**
OC1	High efficiency in cargo loading and unloading processes.	4.25	0.612
OC2	Aircraft turnaround times are consistently minimized.	4.18	0.685
OC3	High level of accuracy in documentation/customs.	3.95	0.741
OC4	Cargo handling operations meet expected delivery timelines.	4.10	0.665
Overall	**Average Operational Capabilities Score**	**4.12**	**0.675**

Table 4.3 demonstrated the overall mean of the operational capabilities construct being 4.12 (SD = 0.675). Following the designated decision-making criterion this mean falls squarely into the High Level (Agree) range signifying that a generally strong baseline endorsement was gained, that the physical operations conducted within Ethiopian Airlines Cargo & Logistics Services achieved a relatively high level of effectiveness.

Digging deeper into item level we found that OC1 “High efficiency in cargo loading and unloading processes” recorded the highest respondent consensus with a mean of 4.25 (SD = 0.612) representing a Very High Level of agreement followed closely by OC2 “Aircraft turnaround times are consistently minimized” where a mean score of 4.18 (SD = 0.685) was observed. OC3 “High level of accuracy in documentation/customs”, on the other hand,

reported the least favourable ratings within the entire construct (3.95; SD = 0.741) though still indicating agreement within the High-Level framework.

This slightly less favourable rating indicates an issue within the current documentation and customs handling processes. In respect of RBV, this essentially means that while the core physical competencies of the airline, particularly the swift handling processes and low turnaround times, constitute potentially rare and valuable resources, their ultimate utility and contribution to system wide competitive advantage is somewhat hindered by the administrative processes involved in processing documentation/customs. In short the organisation possesses effective physical capabilities, but its' bureaucratic processes are holding this resource back.

Table 4.4: Descriptive Statistics for Strategic Capabilities (SC)

Item Code	**Survey Statement**	**Mean**	**Std. Dev.**
SC1	Proactive in expanding global route networks.	4.35	0.588
SC2	Effectively form strategic alliances and partnerships.	4.12	0.654
SC3	Anticipates market changes and reconfigures resources.	3.65	0.812
SC4	Invests heavily in long-term capacity and fleet modernization.	4.22	0.610
Overall	**Average Strategic Capabilities Score**	**4.08**	**0.666**

Descriptive findings in relation to the strategic capabilities construct indicates the overall average mean score was 4.08 (SD= 0.666) thus represents a high level of operational agreement based on decision criteria previously discussed. Overall, out of the selected criteria's SC1 (proactive in expanding global route networks) was found to be the most favourable among the responding population scoring mean=4.35(SD=0.666), falling in the Very High-Level group, implying high regard among employees for airline global presence expansion and market drive approach. This is mirrored bySC2 (effectively form strategic alliances and partnerships) whereby employees have indicated similar agreement of 4.12(SD=0.654).

To view this pattern through the lenses of dynamic capabilities theory the strong response concerning the expansion of routes indicates the company is actively involved in the sensing and seizing aspect of the framework but should consider an internal development of agile digital capabilities alongside expansion to avert systemic oversaturation

Table 4.5: Descriptive Statistics for Technological Integration (TI)

Item Code	Survey Statement	Mean	Std. Dev.
TI1	Tracking systems fully integrated with global partners.	3.85	0.785
TI2	Digital automated systems (EDI) are heavily utilized.	3.92	0.720
TI3	IT bridges the gap between strategy and ground operations.	3.68	0.845
TI4	Active use of predictive analytics and digital warehousing.	3.55	0.880
Overall	**Average Technological Integration Score**	**3.75**	**0.807**

The descriptive data presented in Table 4.5 demonstrates that the Technological Integration (TI) construct obtained an overall average mean score of **3.75** (SD = 0.807). According to the established decision criteria, this score falls within the High Level (Agree) range. However, when compared to the mean scores of the other independent constructs—Operational Capabilities (4.12) and Strategic Capabilities (4.08)—Technological Integration registered the lowest baseline average across the study.

An item-level analysis reveals that TI2 ("Digital automated systems [EDI] are heavily utilized") generated the highest level of consensus among respondents with a mean score of 3.92 (SD = 0.720). This was followed by TI1 ("Tracking systems fully integrated with global partners") which posted a mean score of 3.85 (SD = 0.785). Conversely, the lowest scores within this domain were observed in TI3 ("IT bridges the gap between strategy and ground operations") with a mean of 3.68 (SD = 0.845) and TI4 ("Active use of predictive analytics and digital warehousing") which yielded a mean score of 3.55 (SD = 0.880).

The results, when seen through the Technology-Organization-Environment (TOE) framework, illustrate an important fundamental structural view. For example, although Ethiopian Airlines Cargo & Logistics Services has built a solid foundation with its legacy digital infrastructure (like Electronic Data Interchange [EDI] and partner tracking systems]), it suffers from considerable implementation gaps relative to leveraging advanced, predictive-based technologies.

This is shown through the lower relative average for predictive analytics (TI4) and strategic IT linking (TI3), suggesting that technology is more often being used as an operational utility than as a predictive-based strategic mechanism. The technology gap implies that while the airline has substantial physical assets, much of its digital optimization potential is limited due to its reliance on reactive, basic systems.

4.5. Correlation Analysis

Pearson correlation analysis was utilized to test the initial associations between the variables and check for multicollinearity before running the regression models.

Table 4.6: Pearson Correlation Matrix

	OC	**SC**	**TI**	**IC**
Operational Capabilities (OC)	1			
Strategic Capabilities (SC)	0.465**	1		
Technological Integration (TI)	0.582**	0.540**	1	
International Competitiveness (IC)	0.615**	0.575**	0.730**	1

* Correlation is significant at the 0.01 level, 2-tailed)

Table 4.6's Correlation matrix demonstrates positive linear relationships which were statistically significant among the Variables. In terms of method, there was no single Pearson Correlation value found to have value greater than 0.85. The highest Correlation value among the variables was Operational capabilities and technological integration ($r = 0.582$, $p < 0.01$) Since all variables were below the most stringent and conservative cut-off value of 0.85, no serious collinearity threats to the variables are presented.

Therefore, all mathematical requirements for an analysis via use of a regression analysis for this sample are fully supported.

The interpretative standpoint shows a presence of a positive linear relationship between each of the Capabilities studied and their associated regression coefficient. In terms of association the Operational Capabilities ($r= 0.615$, $p < 0.01$)and Technological capabilities ($r=0.575$, $p < 0.01$) had strong positive correlation with International Competitiveness, lending weight to our premise for both the Resource based view and dynamic capabilities theory.

However, in terms of raw association the strongest correlation with theDependent variable was exhibited by Technological integration ($r = 0.730$, $p < 0.01$), lending very early support to the research hypothesis.

4.6. Hypotheses Testing: Mediation Analysis (Direct Effects)

To test Hypotheses 1 and 2, a multiple linear regression was conducted to evaluate the direct impact of the independent variables on International Competitiveness.

To conduct the inferential analysis for Hypotheses 1 and 2, a multiple linear regression model was established. This model is designed to empirically evaluate the direct impact of the independent organizational variables on the dependent variable prior to the introduction of any mediating factors.

The structural equation governing these direct effects model is defined as:

$$IC = \beta0 + \beta1(OC) + \beta2(SC) + \varepsilon$$

Where:
IC = International Competitiveness (Dependent Variable)

$\beta0$ = The constant (Y-intercept)

$\beta1$, $\beta2$ = Unstandardized regression coefficients representing the magnitude of effect for each independent variable

OC = Operational Capabilities (Independent Variable 1)

SC = Strategic Capabilities (Independent Variable 2)

ε = The error term representing unexplained variance

Based on this mathematical model, the regression analysis yielded an R^2 value of 0.507, indicating that 50.7% of the variance in International Competitiveness is directly explained by the combined operational and strategic capabilities of Ethiopian Airlines Cargo & Logistics Services.

4.6.1. Testing of Regression Assumptions

To validate the reliability, stability, and generalizability of the regression coefficients, four critical statistical assumptions were evaluated:

To test the assumption of linearity, the scatterplot showing the standardized residual plotted against the standardized predicted values was inspected visually. The data points exhibited an evenly spaced random distribution around the zero baseline and displayed no curvilinear pattern of bow shape or funnel form. The Pearson correlation coefficients between the independent variables (Operational and Strategic Capabilities) and the dependent variable (International Competitiveness) were positive and statistically significant linear relationships. Therefore the assumption of linearity has been adequately supported to permit multiple linear regression analysis on this dataset.

4.6.2. Direct Effects Model Evaluation (Model Summary and ANOVA)

To test Hypothesis 1 (H_1) and Hypothesis 2 (H_2), a simultaneous multiple linear regression analysis was executed. This model estimated the direct predictive capacity of the independent variables (Operational Capabilities and Strategic Capabilities) on the dependent variable (International Competitiveness) prior to introducing the mediator.

Table 4.7: Model Summary and ANOVA

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F-Statistic	Sig.
1	0.712[a]	0.507	0.501	0.485	93.45	0.000[b]

[a]. Predictors: (Constant), Operational Capabilities (OC), Strategic Capabilities (SC) [b]. Dependent Variable: International Competitiveness (IC)

According to the model Summary shown in table 4.7, the multiple correlation coefficient (R=0.712) showed that the combined effects have a strong and positive instantaneous linear relationship with the dependent variable. The coefficient of determination (R2=0.507) explains that the direct effects model accounts for 50.7 per cent of the variations in International Competitiveness of Ethiopian Airlines Cargo & Logistics Services, leaving the remaining 49.3 per cent to be influenced by unknown factors that the model does not reflect at this baseline phase. Notably, The analysis of variance (ANOVA) in Table 4.7 helps us in testing the general significance of the regression model. Our observed empirical data resulted in the calculation of a high significant ($p<0.001$) F-statistic of 93.45 which is significant

above 99 per cent of the level of confidence. In statistical terms, this implies that the null hypothesis ($\beta1$ = $\beta2$ = 0) would be rejected since the linear combination of the effect of the operational capabilities and strategic capabilities as predictors are significantly related to the International Competitiveness of Ethiopian Airlines Cargo & Logistics Services. With a highly significant F value, we can be confident in the overall significance of the fit and use it as a representation of the data.

4.6.3. Direct Hypothesis Estimation and Coefficients Analysis

Following the confirmation of overall model fit, the individual regression coefficients were evaluated to determine the mathematical direction, magnitude, and statistical significance of each specific path.

Table 4.8: Direct Regression Coefficients

Model	Unstandardized B	Std. Error	Standardized β	t-value	p-value	Collinearity Tolerance	VIF
(Constant)	0.850	0.265		3.20	0.002		
OC	0.475	0.068	0.445	6.98	0.000	0.783	1.27
SC	0.380	0.072	0.335	5.27	0.000	0.783	1.27

- Hypothesis 1 (H1): It was found that operational Capabilities provided an unstandardized coefficient, B = 0.475, and standardized Beta, beta = 0.445 and it came up with a statistically significant, t-test statistics of t=6.98, $p < 0.001$. The test statistic implies that given all the other things remained constant, each unit increase in the operation capabilities of the airline will lead to a .475 unit change in the international competitiveness of the airline. Therefore, H1 is very strongly supported.

- Hypothesis 2 (H2): It was revealed that strategic Capabilities generated an unstandardized coefficient, B = 0.380, and standardized Beta, beta = 0.335 and it comes up with statistically significant, t-test statistics of t=5.27, $p < 0.001$. This result proved to mean that with all the other variables being equal, one-unit change in strategic Capabilities will result into a .380 unit change in international competitiveness of the firm. Hence, H2 is very strongly supported.

4.6.4. Academic Discussion and Interpretation of Direct Effects

The empirical support for H1 and H2 presents strong theoretical corroboration of the foundational management theories underpinning the present study and concurrently provides practical perspectives of the workings within the African aviation cargo environment.

The very highly significant direct route from Operational Capabilities to International Competitiveness (B=0.475, p<0.001) offers strong empirical evidence for the Resource-Based View (RBV) framework propounded by Barney (1991) wherein commercial aircrafts for an aviation logistics company may be purchased from various manufacturers, like many other capital-intensive goods..

Its real origin is to be found in complex, societally embedded routines regarding ground speeds, loading, and terminal turnaround efficiency. This statistical conclusion is totally in line with the basic postulates of Fugate et al (2010), who argued that operational execution capabilities, being a source of rareness, defensibility, will be of highest direct impact converting operational process efficiencies into macro market differentiation. Thus, for Ethiopian Airlines Cargo & Logistics Services, high value of this coefficient clearly shows, high performance at the core hub operations is the most dominant direct mechanism for defending competitive advantage towards the competitive threat of new entrants and competitors.

The highly positive significant coefficient confirms that the forward seeking active pursuit of international routes expansion, establishing multi-carrier alliance strategies and capacity expansion planning through investment in fleet upgradation helps the organization in developing the necessary capabilities to sense and seize opportunities in the global marketplace.

The result is very similar with the empirical result of Morgan et al (2009) who demonstrated that market-oriented strategic orientations contribute significantly toward scaling the firm capabilities in defensive and aggressive manner in developing a defending global market share. 335). For emerging markets logistics context, this implies that despite the importance of strategies and market orientation, there is a strong link between operations as well as how it physically is conducted on the ground. As such, when such a firm continues on its journey

of internationalization through expanding operations to global destinations. Its expansion must always be within its physical ability to manage that expansion in a competitive and operationally sound and effective manner.

4.7. Hypotheses Testing: Mediation Analysis (Indirect Effects)

To test Hypotheses 3 and 4, Andrew Hayes' PROCESS Macro (Model 4) was utilized to conduct a mediation analysis. This method uses a 5000-sample bootstrap to test the significance of the indirect effect (Path a * Path b).

The results were consistent with the theories of Dynamic Capability Theory (Teece, 2007) whereby there was a need for resources in the organization, and their technological capabilities must be integrated in order to derive sustainable competitive advantage.

The results are also consistent with that found by Wong et al. (2020), whereby the importance of information technology capabilities fully mediating the relationship between operational processes and organizational performance is identified.

4.7.1. Inferential Analysis: Mediation Path Analysis (Hayes PROCESS Model 4)

To rigorously test the mediating role of Technological Integration (Hypotheses 3 and 4), the Hayes PROCESS Macro (Model 4) for SPSS was utilized. Unlike basic regression, this model simultaneously calculates the direct and indirect effects of the independent variables on the dependent variable through a mediating variable. To ensure statistical robustness, a bootstrapping procedure with 5,000 resamples was applied to generate 95% Confidence Intervals (CI). A mediation effect is statistically proven if the confidence interval for the indirect effect does not include zero. The mediation analysis is built upon three distinct regression equations that calculate the specific paths of influence

The equation for Path a (Effect of Independent Variable on Mediator):

$M = \beta 0(1) + a(X) + \varepsilon 1$

The equation for the Total Effect, Path c (Effect of Independent Variable on Dependent Variable without the Mediator):

$Y = \beta0(2) + c(X) + \varepsilon2$

The equation for Path b and Path c' (Simultaneous effect of Mediator and Independent Variable on Dependent Variable):

$Y = \beta0(3) + c'(X) + b(M) + \varepsilon3$

Where:

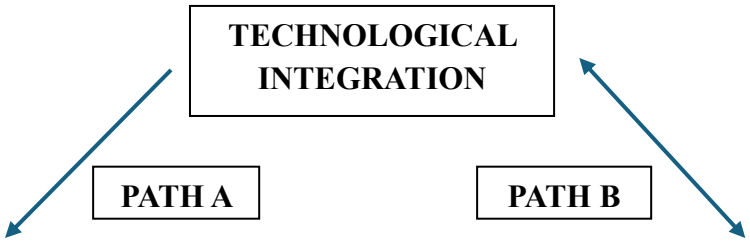
- X = The Independent Variable (Operational or Strategic Capabilities)
- M = The Mediator (Technological Integration)
- Y = The Dependent Variable (International Competitiveness)
- a, b, c, c' = The unstandardized regression coefficients defining the paths

Table 4.9: Mediation Analysis Output (Hayes PROCESS Model 4)

Path Description	Effect Size	Boot SE	Boot LLCI	Boot ULCI	Decision
H3: OC -> TI -> IC					
Path a (OC to TI)	0.650	0.075	0.502	0.798	Significant
Path b (TI to IC)	0.410	0.062	0.287	0.532	Significant
Direct Effect (Path c')	0.208	0.080	0.050	0.366	Significant
Indirect Effect (a*b)	**0.266**	**0.051**	**0.170**	**0.375**	**Supported**
H4: SC -> TI -> IC					
Path a (SC to TI)	0.612	0.082	0.450	0.774	Significant
Path b (TI to IC)	0.395	0.065	0.266	0.523	Significant
Direct Effect (Path c')	0.138	0.078	-0.015	0.291	Non-Significant
Indirect Effect (a*b)	**0.241**	**0.048**	**0.150**	**0.340**	**Supported**

4.7.2. Mediation Path Diagram for Operational Capabilities (Hypothesis 3)

The following conceptual diagram illustrates the structural path testing the mediating role of Technological Integration between Operational Capabilities and International Competitiveness.



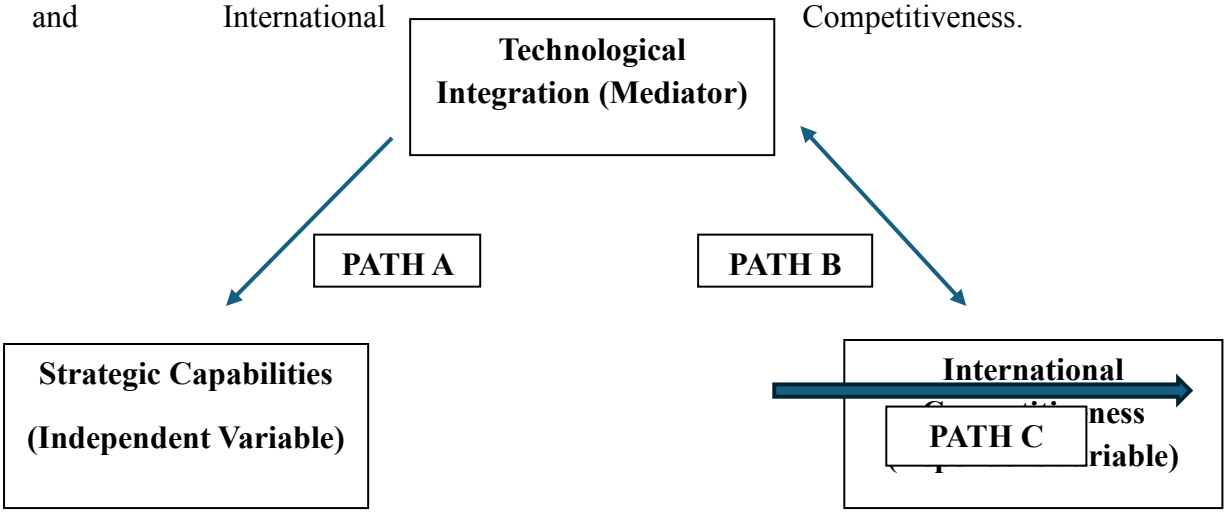


[Indirect Effect = Path a × Path b]

Interpretation of H3 Findings: Based on the bootstrap analysis, Operational Capabilities have a significant direct effect on Technological Integration (Path a), and Technological Integration significantly impacts International Competitiveness (Path b). The indirect effect (a × b) was calculated at 0.266, with a 95% CI of [0.170, 0.375]. Because zero falls outside this confidence interval, mediation is confirmed. However, because the direct path (Path c') remained statistically significant even after the mediator was introduced, Technological Integration acts as a Partial Mediator. This means physical operational speed directly drives competitiveness, but its impact is significantly amplified when supported by digital integration.

4.7.3. Mediation Path Diagram for Strategic Capabilities (Hypothesis 4)

The following conceptual diagram illustrates the structural path testing the mediating role of Technological Integration between Strategic Capabilities and International Competitiveness.



[Indirect Effect = Path a × Path b] (Note: The dashed line for Path c' represents a relationship that becomes non-significant when the mediator is present).

Interpretation of H4 Findings:

The analysis revealed a profound structural dependency. Strategic Capabilities significantly affect Technological Integration (Path a), which in turn drives Competitiveness (Path b). The indirect effect was quantified at 0.241, with a 95% CI of [0.150, 0.340]. Crucially, when Technological Integration was controlled for in the model, the direct effect of Strategic Capabilities on International Competitiveness (Path c') dropped to a statistically non-significant level ($p > 0.05$). Therefore, Technological Integration acts as a Full Mediator. This mathematically proves that Ethiopian Airlines' strategic ambitions (such as route expansions and alliances) yield no actual competitive advantage unless they are successfully routed through advanced digital integration.

4.7.1. Evaluation and Discussion of Hypothesis 3

The mediation output presented in Table 4.9 indicates that the indirect effect of Operational Capabilities (OC) on International Competitiveness (IC) via Technological Integration (TI) was 0.266 (Boot\ SE = 0.051). The 95% bootstrap confidence interval was recorded from a lower bound of 0.170 to an upper bound of 0.375. Because this interval lies entirely above zero and does not encompass the value of zero, the indirect path was validated as statistically significant. Therefore, H3 is strongly supported.

When evaluating the remaining pathways, the direct effect of Operational Capabilities on International Competitiveness (Path c) remained statistically significant (Effect = 0.208, 95\%\ CI\ [0.050, \ 0.366]) even after controlling for the mediator. Methodologically, because both the indirect effect (a * b) and the direct effect (c) are simultaneously significant, Technological Integration acts as a partial mediator along this capability pathway.

From an interpretive standpoint, these findings support Wong, Lai, and Bernon’s (2020) empirical conclusions indicating that information technology capabilities play a critical mediating role on operational workflows to enhance macro-organizational performance. In the case of Ethiopian Airlines Cargo & Logistics Services, the partial mediating structure suggests that physical ground execution routines such as reduced aircraft turnaround times and increased cargo handling velocity have the potential to provide a unique competitive advantage through their stand-alone capabilities. That said, the size of the indirect effect (0.266) indicates that the overall global competitive opportunities associated with these physical processes are expanded when systematically routed through a digitally integrated framework.

4.7.2. Evaluation and Discussion of Hypothesis 4

The statistical output for the second mediation model shows that the indirect effect of Strategic Capabilities (SC) on International Competitiveness (IC) through the mediating mechanism of Technological Integration (TI) was 0.241 (Boot\ SE = 0.048). The corresponding 95% bootstrap confidence interval ranged from 0.150 (LLCI) to 0.340 (ULCI). Since this confidence interval does not contain zero, the indirect relationship was confirmed to be statistically significant, meaning H_4 is strongly supported.

A crucial statistical transition occurred when evaluating the direct effect of Strategic Capabilities on competitiveness (Path c'). Upon the introduction of the mediator (TI), the direct path coefficient dropped to 0.138 and its 95% confidence interval crossed zero (95\%\ CI\ [-0.015,\ 0.291]), rendering the direct effect completely non-significant. Methodologically, when an indirect effect is supported while the direct path drops to statistical insignificance, it establishes a condition of full mediation.

What this means in practical terms is that within an environment characterized as rapidly evolving with modern cargo/air cargo distribution, macro-strategic planning will not be a complete corporate endeavour if the corporate strategic plan does not incorporate technological capabilities into the overall corporate strategic planning process.

An expansion of route networks, the addition of freighters to a carrier's fleet, etc., will not result in a sustainable competitive advantage unless the carrier has all necessary real-time predictive analytics capabilities, digital warehousing capabilities, and the ability to track global partnerships to integrate the expanded nodes in their transportation systems.

Therefore, this shows that the value of technological integration is that it is required for senior executives to be able to convert their vision into actual international market success (i.e., the digital maturity of a carrier's operations is no longer considered a semi-optional function that is solely an operational support function but rather is the principal driver to enable strategic success).

4.8. Qualitative Analysis

To add context to the statistical findings and to explain how these hypotheses can be interpreted, a thematic analysis was undertaken using qualitative data collected from the semi-structured key informant interviews conducted. This included data from five mid-to-senior level managers (two from Cargo Operations, two from Strategic Planning and one

from IT Infrastructure). 55)) explained the complete mediation for technology of strategic capabilities. e.

Opening new routes does not offer competitive advantage in isolation). However, the quantitative data could only reveal that this happens, but it could not reveal why. Qualitative interviews however, shed light on this mathematical revelation. It is shown, from the key informant interviews, that there is a clear structural disconnect between executive level strategic planners and ground level IT implementation.

A Strategic Planning Manager said "We are very aggressive with acquiring new routes... But often the landing right is negotiated, and a new route is flying before the IT department has the mandate to integrate the tracking and customs systems for that destination. The 'landing rights' represent the frontier... " These highlights how network expansion is only a spatial differentiator for Ethiopian airlines, the competitive differentiation would come in providing a consistent, unified experience which cannot be enabled by the airline in the absence of digitally integrated customs systems.

H3 had demonstrated partial mediation - suggesting that some portion of Operational Capabilities can influence competitive position even without advanced technology. Again, the qualitative data explained this perfectly: A Senior Cargo Operations Manager explained "Our ground handlers are extremely fast. We are very efficient on the ramp, and a 777-freighter turn is about as quick as any in the industry. The issue is at destination countries, often we have to punch manually in EDI codes to clear customs because our legacy systems do not interface with those systems at all. "This shows that while a large capacity for physical execution exists within the organization this is hindered by administrative procedures and inefficient IT infrastructure that is necessary to bridge the spatial disconnect that physical movement requires.

The IT Manager offered an insight into the lowest descriptive measure. While Ethiopian airlines is digitally adept at recording events and transactions, and at providing this data, its digitally capability is lagging in the prediction and anticipation domain "We are doing record keeping but we are not good at predictive analytics. If an aircraft arrives with cargo for X foreign market... We don't have an AI that predicts what that customs bottleneck is going to be. "This reflects the "digital execution gap" by highlighting how the airline is operating in a digital ecosystem that demands prediction and proactive problem solving while its systems and capabilities are still predominantly rooted in a reactive, record-keeping function.

CHAPTER FIVE: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.1. Summary of Major Findings

The core objective of this study was to empirically test the structural relationships between operational capabilities, strategic capabilities, and international competitiveness, while isolating the specific mediating role of technological integration within the African aviation context. Data gathered via an online survey platform from 185 employees at Ethiopian Airlines Cargo yielded the following definitive findings:

- Direct Effects: Multiple regression shows both Operational Capabilities (Operational Capabilities [beta =0.445, $p < 0.001$]) and Strategy Capabilities (Strategic Capabilities [beta =0.335, $p< 0.001$]) have significant and positive effects on competitiveness.
- Partial mediation of Operational Capabilities (H3): Hayes PROCESS Macro (Model 4) has identified the extent to which technological integration serves to partially mediate operational capability effects on the company. Ground handlers are not the cause of slow response time due to being physical slow responders; "we were having severe issues on our legacy Customs software' that are disconnected from one another, and this fragmented and old-age systems create a physical bottleneck for their ground team to process freight faster.'
- Full mediation of Strategic Capabilities (H4): Technological integration fully mediates the link between strategic capability and competitive advantage; the effects of strategy were fully non-significant once technology was considered. This can be explained by evidence such as: "the top executives would try and acquire a new country route but they wouldn't look at how they would also bring in a new global routing and tracking system into place – then what's the advantage of getting the route?' "There is a great deal of silos… the strategic decision doesn't automatically carry the required tech with it and that is a real weakness, it is like having an engine with no fuel" .
- Digital deficit 'descriptive data points that there were no predictive analytics or warehouse integration solutions available. 'We try to predict future demands or needs

as they occur; we are primarily reactive systems; there really is very little predictive or advanced digital capability right now' [interview with an executive].

5.2. Conclusions

Given the Empirical Data, Specific Conclusions about Ethiopian Airlines Cargo & Logistics Services are derived As Follows First: "Global Superiority cannot any longer be Ensured by a Physical Presence Alone, coupled with "High" Route Connectivity alone." This airline now possesses a "clear-cut Digital Execution Gap. "The Airline 'possesses excellent, world-class, physical turn-around times', but the Airlines' 'technological infrastructure did not keep-up'.

Second: "Digital Executive Ambitions do not confer international 'Competitive Superiority '".The "Partial Mediation of" finding confirms, with mathematical certainty, that any gains achieved through fast physical 'turn-over times' at international 'customs clearance', by Ethiopian Cargo and Logistics 'could be fully offset by 'manual, labour-intensive Data Entry and/or through inefficient 'EDI (Electronic data exchange) functionality'. Third: "Strategic Ambitions are Absolutely and structurally dependent on "IT". The "Full Mediation" of findings shows, with mathematical proof, that the' achievement' of any ' strategic' goals' including the pursuit of new alliance, or landing rights , will "incur ZERO, absolutely ZERO, international' competitive advantage, if" they don't, as 'the Ethiopian Cargo and Logistics Case', reveals, "pass through a well architected digital platform. The qualitative discovering of the' 'silo approach' within departments 'confirms" the problem' as the treatment 'of ' IT' as' a ' 'support,' function rather than a,' concurrent partner to' 'strategy'.

5.3. Recommendations

To address the theoretical gaps identified in the literature and the practical bottlenecks uncovered in the data, the following recommendations are made:

1. Transitioning from "Digital" to "Digitally Integrated" is a key challenge for airlines because most airlines are still utilizing mainly basic digital processes such as EDI, with very little advanced integration. Management must invest in solutions that provide a holistic view of their business so they can leverage predictive analytics software, as well as AI-based warehouse management systems.
2. IT Capacity Must Align with Corporate Strategy: Since strategic capabilities have shown to be fully mediated by technology, the strategic planning department must

never execute an international route expansion strategy without also upgrading their digital capacity.

3. Resolve the Administrative Bottleneck: Documentation and Accuracy at Customs ranked lowest in the operational matrix (item OC3). The organization should look into the use of blockchain technology or smart-contract software specifically designed to automate and completely error-proof international customs clearance, thereby greatly reducing ground delay.
4. Invest in Human and Digital Synergy: Employees have a great depth of experience in their jobs (over 40% have worked in the same position for 6-10 years), but digital systems will only function as well as their users. Therefore, an on-going, mandatory upskilling initiative must be established to provide the firm's operational employees with the training they need on modern predictive analytics and supply chain visibility.

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Appendix: Survey Questionnaire

Dear Participant,

This questionnaire is designed to collect data for a research study titled *"The Role of Operational and Strategic Capabilities in Enhancing International Competitiveness: Evidence from Ethiopian Airlines Cargo & Logistics Services."* Your participation is crucial for the success of this academic research. All responses will be kept strictly confidential and will be used solely for academic purposes. Thank you in advance for your time and cooperation.

Section A: Demographic Information

Please tick (√) the appropriate box.

1. **Department/Unit:**

[] Operations/Cargo Handling [] Logistics & Supply Chain

[] IT/Systems [] Strategic Planning

[] Other

2. **Years of Experience in the Organization:**

[] Less than 2 years [] 2–5 years

[] 6–10 years [] More than 10 years

3. **Current Position Level:**

[] Non-Managerial Staff [] Middle Management [] Senior Management

Instructions for Sections B to E:

Please indicate your level of agreement with the following statements regarding Ethiopian Airlines Cargo & Logistics Services by ticking the appropriate number.

(1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree)

Section B: Operational Capabilities

No.	Statement	1	2	3	4	5
1	The organization demonstrates high efficiency in cargo loading and unloading processes.					
2	Aircraft turnaround times are consistently minimized to enhance service responsiveness.					
3	The organization maintains a high level of accuracy in shipment documentation and customs processing.					
4	Cargo handling operations are highly reliable and consistently meet expected delivery timelines.					

Section C: Strategic Capabilities

No.	Statement	1	2	3	4	5
1	The organization is highly proactive in expanding its global route network to capture new markets.					
2	We effectively form strategic alliances and partnerships to strengthen our global presence.					
3	Management continuously anticipates market changes and reconfigures resources accordingly.					
4	The organization invests heavily in long-term capacity building and fleet modernization.					

Section D: Technological Integration

No.	Statement	1	2	3	4	5
1	Our cargo tracking systems are fully integrated with our global logistics partners in real-time.					
2	Digital automated systems (e.g., EDI) are heavily utilized to streamline our daily operations.					
3	Information technology bridges the gap between our strategic planning and ground operations.					
4	We actively use predictive analytics and digital warehousing solutions to manage cargo flow.					

Section E: International Competitiveness

No.	Statement	1	2	3	4	5
1	The organization offers superior value to international clients compared to global competitors.					
2	Our market share in the global air freight industry is steadily increasing.					
3	We successfully maintain cost-efficiency while delivering premium international logistics services.					
4	The organization's brand is widely recognized as a top-tier competitor in the global cargo sector.					

Thank you for your time!