ISSN: 2688-8653

A Cold War Microcosm in the Political and Route Evolution of the Ethiopian Airlines Fleet (1945–1991)

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Abstract

During the Cold War, the global geopolitical rivalry and technological competition between the two major blocs led by the United States and the Soviet Union exerted significant influence on the developmental trajectories and industrial pathways of Third World countries. Ethiopian Airlines (hereafter "Ethiopian Airlines"), as a landmark enterprise in the African aviation industry, provides a micro-level case through its entire course from its establishment in 1945 to the end of the Cold War in 1991 for examining the differences in U.S. and Soviet models of technical assistance as well as Ethiopia's practices of national autonomy. Centering technical assistance as the core analytical dimension and taking changes in the route network as the most visible manifestation, this paper integrates key Cold War turning points from 1945 to 1991 with Ethiopia's domestic political transformations to explore the essential differences, implementation logics, and concrete impacts of U.S. and Soviet technical assistance to Ethiopian Airlines. It further reveals how, within the context of being "assisted," the Ethiopian government and the management of Ethiopian Airlines actively safeguarded national interests and industrial autonomy through strategic choices, technological integration, and operational planning. The theoretical value of this study lies in its systematic empirical validation of the practical effectiveness of the "technopolitics" theory through the Ethiopian Airlines case, while also revising the pessimistic assertions of "dependency theory" regarding the passive subordination of late-developing states. The findings indicate that the development of Ethiopian Airlines was not merely a passive outcome of U.S. and Soviet technological export; rather, it represented a strategic achievement whereby Ethiopian Airlines, within the Cold War structure, employed technical assistance as an instrument and national needs as a guiding orientation to balance great-power relations and pursue autonomous development. This case provides a representative example for understanding the agency of post-colonial states during the Cold War and offers historical insights for contemporary post-colonial countries seeking to leverage external resources to achieve independent development under globalization.

Keywords

Cold War; Ethiopian Airlines; Technopolitics; National Autonomy; Geopolitics.

1. Introduction

1.1. Research Background and Significance

During the Cold War in the second half of the 20th century, the two major camps led by the United States and the Soviet Union engaged in comprehensive confrontations across political, military, and ideological spheres. Furthermore, they utilized technology as a pivotal tool for geopolitical maneuvering. Consequently, technological output ceased to be a matter of pure economics or science; instead, it became a political instrument for expanding spheres of

ISSN: 2688-8653

influence, facilitating ideological infiltration, and consolidating strategic interests. As a vital region for the rise of emerging powers, the African continent became a core arena for the rivalry between the U.S. and the U.S.S.R. due to its central geographical position, abundant natural resources, and nascent political landscapes. Aviation, being a technology-intensive field with profound strategic implications, naturally became a primary target for technical assistance and a significant vehicle for power projection. Throughout the Cold War, the economic and social development of African nations was deeply embedded within the framework of great-power rivalry. The developmental trajectory of the aviation industry was both constrained by colonial legacies and shaped by the varying models of American and Soviet technical assistance.

Since its founding in 1945, the developmental trajectory of Ethiopian Airlines (EAL) has been highly synchronized with the progression of the Cold War and deeply intertwined with Ethiopia's internal political transitions. As one of the few post-colonial nations on the African continent to maintain long-term sovereign independence, Ethiopia faced practical dilemmas such as technical shortages and a lack of management experience during the nascent stages of its aviation industry. Simultaneously, it sat at the center of the strategic tug-of-war between the U.S. and the Soviet Union in the Horn of Africa-a region whose geopolitical value is underscored by its role as a critical transportation hub. The composition of EAL's fleet shifted from total reliance on American aircraft in the early years to the acceptance of technical support from the Soviet and Eastern European blocs following the regime change in 1974. This shift in aircraft sourcing directly reflects the realignment of great-power relations. Its route network expanded from a focus on intra-African and Western markets to establishing aerial links with Soviet allies during the mid-to-late Cold War, serving both national diplomatic strategies and illustrating the role of technical assistance in shaping transport networks. Under the multifaceted pressures of alternating American and Soviet influence, international sanctions, and political upheaval, EAL did not become a mere vassal of great-power competition. Instead, it gradually evolved into a paragon of the African aviation industry [1]. This unique historical journey provides a robust sample for studying the autonomous practices of the Third World within the Cold War structure.

From an academic perspective, existing research has fully illustrated the strategic rivalry between the U.S. and the Soviet Union in the Horn of Africa-particularly the historical process of the "alignment swap" following the 1974 Ethiopian Revolution-laying the foundation for understanding EAL's external political environment. However, existing studies tend to emphasize the dominance of the technology-exporting nations and the passivity of the recipient nations. Even though scholars have recently begun to focus on the agency of the recipients, long-term case studies targeting specific industries during the Cold War remain scarce. Research on the African aviation industry largely focuses on efficiency evaluations, with insufficient attention paid to the interactive relationship between technical assistance and national autonomy during the Cold War. Regarding the existing literature on EAL, while some studies touch upon technological learning, they lack a framework that systematically integrates EAL into the Cold War system or provides an in-depth analysis of the interaction between technical assistance, route evolution, and national autonomy.

The core theoretical value of this study lies in addressing the ambiguous discourse regarding recipient agency within "technopolitics" theory. Current technopolitical research focuses heavily on the strategic projection of the exporting countries, while providing insufficient analysis of how latecomer states actively undertake, transform, and even reconstruct external technological resources. Through the case of EAL, this study systematically defines the connotation and practical dimensions of "national agency." It elucidates that the agency of latecomer states is a dynamic process realized through specific strategies such as technological selection, talent cultivation, and network layout. In doing so, it enriches the micro-analytical perspective of technopolitics while revising the "center-periphery" unidirectional dependency

ISSN: 2688-8653

logic presupposed by "Dependency Theory," offering a new theoretical space for the study of autonomous development in latecomer states.

1.2. Presentation of Core Questions

Based on the aforementioned research background and the limitations of existing studies, the core questions of this paper focus on the following three levels: First, what were the fundamental differences between U.S. and Soviet technical assistance to EAL in terms of form (aircraft provision, training support), mode (commercial contracts vs. intergovernmental agreements), and essence (market logic vs. ideological bundling)? Were these differences consistent with the global technical assistance strategies of the U.S. and the Soviet Union? Second, how were these differences specifically projected onto EAL's fleet composition and the evolution of its route network, forming distinct developmental characteristics at different stages? Did the shift in technical assistance lead directly to fundamental adjustments in EAL's operational strategy? Third, under the alternating influence of U.S.-Soviet technical assistance and external pressures, how did the Ethiopian government and EAL management exercise national agency to protect national interests and industrial autonomy through technological absorption, model adaptation, and strategic balancing?

Investigating these questions not only clarifies the operational logic and practical impact of great-power technical assistance during the Cold War but also reveals the national agency of Third World countries within the context of "being assisted," providing new analytical pathways for reinterpreting international relations and technology transfer during the Cold War era.

1.3. Definition of Core Concepts

(1) National Agency

In this paper, "National Agency" refers to the dynamic practical capacity of a latecomer state to actively shape its own developmental path through strategic decision-making, resource integration, and capability building while operating under external structural constraints (great-power rivalry, technological dependence). Its core characteristics include: first, goal-orientation, centered on the nation's long-term developmental needs rather than passive compliance with external rules; second, tactical flexibility, adjusting action plans based on changes in the external environment to seek a balance between dependence and autonomy; and third, capability construction, converting external resources into endogenous capabilities through technological learning and talent cultivation.

(2) National Autonomy

National Autonomy is closely related to, yet distinct from, national agency. National Autonomy is the core objective pursued by latecomer states, manifested as a state of independent decision-making and development in political, economic, and technological spheres, free from external manipulation. National Agency, on the other hand, is the means and process for achieving National Autonomy; it is the concrete manifestation of the actions taken by latecomer states to "strive for autonomy" within a complex international landscape. The logical relationship between the two is as follows: through sustained practices of national agency, a latecomer state gradually accumulates endogenous capabilities, ultimately realizing national autonomy [18].

National agency is the means to achieve national autonomy, while national autonomy is the ultimate result of agency-based practice. As a quintessential case of the aviation industry in a post-colonial nation during the Cold War, EAL's technological choices, route layouts, and talent cultivation throughout its history are all concrete expressions of national agency. These practices eventually drove the gradual enhancement of national autonomy.

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2. Cold War Technopolitics, Africa's Strategic Position, and the Development of the Aviation Industry

2.1. The Essence and Operational Logic of Cold War Technopolitics

The core competition of the Cold War was not merely a confrontation of military power and ideology, but also a struggle for technological superiority. As a central manifestation of national power, technology was endowed with intense political attributes during the U.S.-Soviet hegemony. On one hand, through technological research, development, and application, the superpowers consolidated the military security and economic advantages of their respective camps. On the other hand, through technical assistance and output, technology was transformed into a geopolitical tool to shape an international order and spheres of influence that aligned with their own interests. The technological competition between the U.S. and the Soviet Union was essentially a struggle for "technological hegemony," wherein technical assistance became a vital instrument for achieving dominance. The differences in their assistance models stemmed directly from the divergent ideologies and concepts of international order held by the two blocs.

U.S. technological output followed the principle of "integrating market logic with strategic interests." In the civil aviation sector, the United States primarily utilized commercial contracts, exporting passenger aircraft to allied nations through corporations such as Boeing and Douglas. Simultaneously, it bundled the export of American-style operational management systems, safety standards, and training protocols. This model not only facilitated the global expansion of the American aviation industry but also consolidated political alliances with recipient countries through technological dependence, achieving a "win-win" for both economic and strategic interests. For instance, in civil aviation negotiations with the Soviet Union, the U.S. consistently linked market access to ideological identification, using technological output as a tool to shape a Western-dominated international civil aviation system. Conversely, Soviet technical assistance was characterized by "ideological bundling and political returns." Often carried out through intergovernmental agreements, barter trade, or preferential loans, the Soviet Union provided aviation technology and equipment to "socialist-oriented" or pro-Soviet regimes. Its core objective was to expand the influence of the socialist camp and secure strategic outposts and political support; economic interests were frequently secondary. In its early Cold War aviation policy, the Soviet Union explicitly treated civil aviation as a tool for political infiltration, strengthening political and economic ties within the bloc by establishing aerial links with its allies. The divergence between these two models of technical assistance was, in essence, a conflict between two ideologies and visions of international order, which also laid the groundwork for the agentic practices of recipient nations.

2.2. Africa's Strategic Position in the Cold War and the Dual Shaping of its Aviation Industry

The strategic value of the African continent during the Cold War was manifested in two dimensions: first, geopolitics. Africa is situated at the nexus of Europe, Asia, and Africa. Controlling Africa allowed a superpower not only to project influence into the Middle East, Europe, and South Asia but also to dominate crucial maritime corridors and resource-producing areas. Consequently, it became a core area of contention in the U.S.-Soviet struggle for the "intermediate zone." The United States viewed Africa-particularly strategic locations like the Horn of Africa-as a vital barrier to contain the expansion of Soviet influence. Second, ideology. Most African nations gained independence from colonial rule after World War II. The political orientation of these post-colonial states directly impacted the global balance of power between the two camps. Both the U.S. and the Soviet Union sought to integrate African nations into their respective ideological camps through assistance and cooperation.

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The development of the African aviation industry was deeply constrained by this Cold War landscape, exhibiting characteristics of "dual shaping by colonial legacy and great power intervention." During the colonial era, the foundation of the African aviation industry was weak and unevenly developed. Route networks primarily served the resource extraction and administrative control of colonizers, often consisting of unidirectional corridors connecting colonies to their metropoles, lacking internal integration. For example, before the 1950s, aviation services on the African continent were dominated by European colonial airlines such as Air France and British Overseas Airways Corporation (BOAC), with route designs entirely subordinated to the needs of colonial rule [2]. After World War II, as the colonial system collapsed, African nations urgently needed to use aviation to connect domestic regions and strengthen ties with other African countries and the world to support economic development and nation-building. U.S. and Soviet technical assistance met this demand and became a significant driver for the growth of African aviation, yet it simultaneously pulled African nations into the vortex of great-power rivalry.

The United States exported civil aviation technology and management models to pro-Western African countries, pushing their aviation industries toward marketization and internationalization, with route networks largely directed toward Western markets and pro-U.S. African neighbors. The Soviet Union provided aviation equipment and infrastructure support to pro-Soviet nations; the aviation technology it provided was often adapted to planned economic systems and political mandates, with networks focused on connecting the Soviet Union, Eastern Europe, and other socialist allies. In this process, the national airlines of African countries served not only a transport function but also became symbols of national independence, modernization, and international status. Their developmental trajectories reflected both the influence of superpower technical assistance and indigenous developmental aspirations. As a core nation in the Horn of Africa, Ethiopia’s aviation development particularly highlights this complex interaction, serving as a concentrated manifestation of the U.S.-Soviet technical assistance rivalry and the practice of national agency.

The fundamental differences in U.S. and Soviet technical assistance provided the structural conditions for the agentic practices of latecomer states, while the "dual shaping" of the African aviation industry intensified the contradiction between developmental dilemmas and the space for choice. The core agentic practice of Ethiopian Airlines (EAL) was to utilize the differences in U.S. and Soviet assistance to acquire resources while employing autonomous strategies to circumvent the risks of dependency, thereby paving the way for the construction of national autonomy.

3. The Developmental Foundations of Ethiopian Airlines before the Cold War

3.1. Origins and Early Explorations of the Aviation Industry

Ethiopia was one of the few African nations that was never fully colonized, and the origins of its aviation industry are closely linked to a sense of national independence and the pursuit of modernization. In the 1920s, Emperor Haile Selassie I recognized the vital importance of aviation to national sovereignty and development. Given the country's difficult inland transportation and weak regional connectivity, aviation offered a means to enhance the state's administrative control, break geographical constraints in international relations, and demonstrate sovereign independence. Consequently, he began to promote the inception of a domestic aviation industry. Early explorations focused primarily on military use and government transport. The establishment of the Royal Ethiopian Air Bureau in 1929, which was responsible for aircraft procurement, pilot training, and basic air transport services, served as the precursor to Ethiopian Airlines (EAL).

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During this stage, the development of the Ethiopian aviation industry faced significant dilemmas, including a lack of technology and a shortage of skilled personnel. Equipment and expertise were primarily dependent on European imports, and the scope of operations was limited, as a large-scale civil aviation transport system had not yet formed. For instance, prior to the Italian invasion of Ethiopia in 1935, the Royal Air Bureau possessed only a few biplanes used mainly for royal travel and military reconnaissance, with almost no civil transport capacity. During World War II, Ethiopia's aviation facilities were severely damaged, and the industry's development stagnated. Following the restoration of Ethiopian independence in 1941, Emperor Haile Selassie restarted the aviation development plan, treating it as a core project of national modernization. This laid the political and strategic foundation for the formal establishment of EAL in 1945.

3.2. Overview of EAL's Fleet and Routes Before the Cold War

The formal establishment of Ethiopian Airlines in 1945 marked the entry of the Ethiopian civil aviation industry into a phase of standardized development. At the dawn of the Cold War, EAL's developmental foundation was extremely fragile. The fleet composition was monolithic, relying entirely on imported American Douglas DC-3 aircraft. Although this model was mature, reliable, and easy to maintain-making it a mainstream choice for global civil aviation after WWII-EAL initially possessed only three such aircraft. This limited quantity made it difficult to meet the demands of large-scale transport. Regarding technical support, EAL lacked an indigenous maintenance team and technical personnel; aircraft maintenance and servicing were entirely dependent on foreign experts, meaning technical autonomy was virtually zero [3].

In terms of the route network, EAL focused primarily on domestic routes in its early years, connecting the capital, Addis Ababa, with major domestic cities. The opening of these routes served national administrative unity and economic links between regions, mitigating the difficulties caused by Ethiopia's complex terrain and poor land transportation. International routes were limited to short-haul flights to neighboring countries and regions, such as Cairo and Asmara, with very few connections to the global aviation network.

During this period, EAL's core demand was to establish basic air transport capabilities to support national economic construction and external exchange. The formation of the Cold War landscape and the initial positioning of the U.S. and the Soviet Union in Africa provided external opportunities for EAL's development. Based on its own strategic interests-the need for technical support to develop the aviation industry and the desire to use American power to deter regional threats and consolidate national sovereignty-Ethiopia proactively chose to establish a cooperative relationship with the United States and accept American technical assistance. This proactive decision was an early manifestation of Ethiopian national agency, directly shaping EAL's early developmental path and laying the groundwork for its subsequent practices of autonomy.

While the developmental foundation of EAL before the Cold War was extremely weak, it already displayed the embryonic form of early national agency-by proactively selecting a technical assistance provider and binding external resources to national developmental needs. The practices of this stage demonstrate that EAL's autonomy was not a pre-ordained goal but rather something that germinated gradually within the realistic demand of "resolving survival dilemmas," creating the conditions for accumulating autonomy through strategic dependence.

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4. American Technical Assistance and EAL's Early Agency Practices (1945–1974)

4.1. Content and Mode of American Technical Assistance

At its founding in 1945, Ethiopian Airlines (EAL) established a technical cooperation relationship with Trans World Airlines (TWA). This partnership became the core of American technical assistance to EAL and laid the technological foundation for the airline's early development. American technical assistance was characterized by "full-spectrum output integrated with commercial contract frameworks," with the core objective of consolidating the political alliance with Ethiopia through technological exports while expanding the overseas market for the U.S. aviation industry.

In terms of fleet provision, TWA supplied EAL with its initial fleet of Douglas DC-3s. Subsequently, based on operational needs and market expansion plans, EAL proactively initiated requests for fleet upgrades to TWA, pushing for the gradual provision of more advanced aircraft such as the DC-6 and Lockheed Constellation. The introduction of these models significantly enhanced EAL's transport capacity and operational reach. In the 1960s, with TWA's technical support and coordination, EAL took the lead in introducing Boeing 720 and 707 jetliners, becoming the first airline in Africa to operate jet aircraft. This technological leadership not only improved EAL's operational efficiency and market competitiveness but also bolstered Ethiopia’s international influence within Africa [4]. These American-made aircraft were technologically advanced, stable in performance, and supported by mature spare parts and maintenance networks, aligning perfectly with EAL’s needs to expand international routes and improve efficiency. While this integrated EAL's fleet entirely into the American aviation industrial chain, this process was a proactive choice by EAL based on its own development needs, rather than passive acceptance.

Regarding management and training, the United States exported a complete American civil aviation operational management system, covering core areas such as safety protocols, flight scheduling, maintenance standards, and customer service. Simultaneously, it trained the first generation of Ethiopian pilots, ground crews, and managers. According to the cooperation agreement, TWA dispatched experts to participate directly in EAL's daily operations and management, holding key positions such as CEO and Technical Director to ensure the implementation of American standards. TWA also assisted EAL in establishing a local training center, systematically cultivating indigenous technical and managerial talent through a combination of "hands-on" instruction and overseas advanced studies. This assistance model was based on commercial contracts; EAL obtained U.S. support by paying management and technical service fees. Although TWA held options for a minority stake, it did not exercise actual ownership. This cooperation model ensured U.S. dominance in technological output while preserving space for EAL's autonomous development.

Behind the American technical assistance to EAL lay a strategic layout for the Horn of Africa. Ethiopia, situated along the Red Sea coast, controls key nodes of Red Sea shipping and served as a vital barrier against Soviet infiltration into Africa. By supporting the development of EAL, the United States not only consolidated its political alliance with Ethiopia but also integrated Ethiopia's aviation network into the Western-led global civil aviation system, strengthening economic and political ties and achieving strategic interest projection. Conversely, EAL traded its alignment with American strategic needs for technology, management, and market resources, reflecting the agency logic of "leveraging external strength for development" common in latecomer states.

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4.2. Strategic Proactivity in Fleet and Route Transitions

Under the support of American technical assistance, EAL's fleet composition and route network exhibited a "simultaneity of technological upgrades and strategic expansion." This synchronicity reflected both American strategic intentions and Ethiopia's national development needs and proactive choices. In terms of fleet configuration, the upgrade from propeller aircraft to jetliners was the core symbol of EAL's technological modernization. The DC-6, introduced in the 1950s with a maximum range of 6,400 km, enabled EAL to launch transcontinental African routes; the Boeing 720 jet, introduced in 1962 with a cruising speed of 900 km/h, reduced flight times from Addis Ababa to Europe to under 8 hours, significantly enhancing the competitiveness of international routes [5]. These fleet choices remained consistent with the U.S., reflecting the political alliance while ensuring continuity in technical support, parts supply, and maintenance services-a rational choice for EAL under conditions of technological dependence to mitigate operational risks.

The expansion of the route network achieved a "convergence of national needs and U.S. strategy," yet core control remained in EAL's hands. Early routes primarily connected neighboring countries in the Horn of Africa (such as Nairobi, Khartoum, and Djibouti), strengthening Ethiopia's status as a regional transportation hub. This met Ethiopia's needs for promoting regional trade and diplomatic cooperation while aligning with the U.S. strategic goal of consolidating pro-Western alliances in the region. In 1957, EAL proactively opened the Addis Ababa–Rome route, formally entering the European market; this was followed by international routes to cities like Athens, Frankfurt, and London, tightly linking Ethiopia with Western markets [6]. These routes not only promoted Ethiopia's tourism, trade, and diplomacy-making EAL an integral part of the Western-dominated global aviation system-but also reinforced U.S. influence in African aviation, creating a "mutually beneficial" cooperation pattern.

EAL's route expansion was not a passive acceptance of American strategic arrangements but a proactive choice based on its positioning as a regional hub. For example, while expanding European routes, EAL continuously broadened its intra-African network, building an African regional network centered on Addis Ababa. This choice aligned with the national strategy of becoming Africa's aviation hub and provided the U.S. with aerial corridors to reach the African continent, achieving a win-win for both parties. This "leveraging strength" strategy in route layout was a concentrated manifestation of Ethiopia's national agency.

4.3. "Ethiopianization": The Core Practice of Early Autonomy

Despite high dependence on the U.S. for technology and management, EAL's management established the core goal of "Ethiopianization" from the outset-the cultivation of local talent to gradually eliminate reliance on foreign experts and achieve autonomous operation and management. The proposal of this goal was itself a clear manifestation of national agency. The essence of "Ethiopianization" was to transform external technology into indigenous capability through technological absorption and talent cultivation, moving from "technological dependence" to "autonomous innovation." It represented the agentic practice of a latecomer state "striving for autonomy" under conditions of dependency.

The implementation of the "Ethiopianization" strategy was a long and arduous process involving significant costs in time and resources. As a technology-intensive industry, aviation requires high professional standards, yet Ethiopia's domestic educational foundation was weak. EAL launched a "dual-track training program" in cooperation with the U.S.: on one hand, selecting outstanding local youth to study flight technology and management at TWA's training centers in the U.S.; on the other hand, establishing an aviation training academy domestically, with American experts teaching courses for pilots, mechanics, and dispatchers [7]. During this process, EAL did not passively accept American training content but proactively adjusted training priorities based on its own needs-for instance, adding specialized courses for high-

ISSN: 2688-8653

altitude airport take-offs and landings and complex weather conditions, and integrating Ethiopian cultural and administrative characteristics into management training to cultivate "composite" talents who mastered American standards while understanding national conditions.

The key promoter and practitioner of this strategy was EAL's first Ethiopian General Manager, Semret Medhane. As the core executor of the "Ethiopianization" strategy, Medhane received aviation management training in the U.S. early in his career; he understood the advantages of the American operational system while remaining steadfast in defending national interests and corporate autonomy [15]. During his tenure (1971–1974), he pushed for local talent to take over core positions, established autonomous technical standards for local maintenance teams, and even firmly rejected excessive U.S. intervention in route pricing and personnel appointments during negotiations with TWA, preserving critical decision-making autonomy for EAL [16].

By EAL's 25th anniversary in 1971, the "Ethiopianization" strategy was largely realized after 25 years of sustained investment: the proportion of local pilots had increased significantly, local managers had fully taken over core positions, and foreign experts served only as advisors [8]. This achievement reflected not only EAL's capacity for technological absorption but also its autonomy within the context of "being assisted." EAL consistently viewed American technical assistance as a tool for development rather than an end in itself. Through proactive learning, digestion, and transformation, it gradually converted external technology into its own core capability. For example, EAL's local maintenance team achieved full autonomous maintenance of DC-6 aircraft by 1965 and possessed engine overhaul capabilities for Boeing 720s by 1970, reaching international technical standards. This progress was accompanied by high trial-and-error costs and resource investment-some early training programs were ineffective due to the weak foundation of local talent and required repeated adjustments-fully reflecting the complexity and difficulty of national agency in latecomer states.

Through the agentic practice of "strategic dependence," EAL achieved the initial accumulation of national autonomy. Centered on "Ethiopianization," and through personnel localization, technological absorption, and strategic proactivity, it transformed American technical assistance into endogenous capability. This proves that latecomer states can proactively utilize external dependency relationships to create conditions for autonomous development. The practices of key figures like Semret Medhane further highlight the individual drive and strategic perseverance required for such agency.

5. Soviet Technical Assistance and EAL's High-Resilience Agency Practices (1974–1991)

5.1. Political Change and the Shift in Technical Assistance

In 1974, a revolution erupted in Ethiopia, resulting in the overthrow of Emperor Haile Selassie and the ascension of the military junta (the Derg) led by Mengistu Haile Mariam. This triggered a fundamental shift in Ethiopia's domestic political landscape. The new regime adopted a "socialist orientation," implementing policies such as land reform and nationalization, which caused a sharp deterioration in relations with the Western bloc. Due to the military government's pro-Soviet tilt, the U.S. Carter administration formally suspended all aid to Ethiopia in 1977, including technical support, spare parts supply, and training cooperation for EAL. Ethiopian Airlines, which had long relied on the American technical system, suffered a massive blow. At the time, the majority of EAL's fleet consisted of American-made aircraft; the suspension of aid led to the grounding of several planes due to a lack of parts, placing international operations at risk of paralysis.

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Simultaneously, during the Ogaden War of 1977–1978, Ethiopia faced a military offensive from Somalia. The Soviet Union and Cuba intervened rapidly, providing military advisors, weaponry, and direct combat support, which helped Ethiopia defeat Somalia. In this context, Ethiopia and the Soviet Union formed a close alliance, representing a complete "alignment swap" of U.S.-Soviet allies in the Horn of Africa. Consequently, the source of EAL's technical assistance shifted from the United States to the Soviet Union. Soviet assistance stood in stark contrast to the American model: in terms of form, the Soviet Union abandoned the commercial contract model in favor of intergovernmental agreements, barter trade (exchanging Ethiopian agricultural products like coffee and cotton for Soviet aviation equipment), and preferential loans. Between 1978 and 1985, the Soviet Union provided approximately $500 million worth of aviation equipment to EAL through barter trade [9]. Regarding fleet construction, the Soviets supplied models such as the Ilyushin Il-62 (long-range), Il-76 (cargo), and Tupolev Tu-154 (medium-to-short range). These aircraft were characterized by high payload capacity and adaptability to austere airfields-aligning with Soviet planned-economy logic and political mandates-but they differed significantly from American aircraft in technical standards and maintenance systems. In terms of management, the Soviet Union exported a centralized operational system, emphasizing that aviation should serve national political and economic plans, requiring EAL to prioritize government and strategic transport [10].

The core logic of Soviet technical assistance was "ideological identification and political reciprocity." By supporting a pro-Soviet regime, they aimed to expand the socialist camp's influence in Africa, with EAL serving as a vital vehicle for this strategy. For EAL, accepting Soviet aid was a pragmatic choice to counter U.S. sanctions and maintain operations, as well as a political gesture of the new regime's commitment to the Soviet alliance. However, this choice was not one of passive compromise; it was an agentic decision made by EAL under extreme hardship to ensure survival and development. The core objective remained the utilization of external resources to safeguard operational autonomy and national interests.

5.2. Political Restructuring of the Route Network and Autonomous Balancing

The shift in technical assistance sources directly drove the restructuring of EAL's route network. This reconstruction reflected new political alliances and, more importantly, EAL's autonomous strategic choices and the art of balancing. Driven by political factors, EAL significantly expanded routes to the Soviet Union, Eastern European socialist states, and Soviet allies like Cuba: a route to Moscow opened in 1979, followed by Budapest, Prague, and East Berlin in 1980, and Havana in 1982. These routes primarily served political exchange, personnel movement, and ideological dissemination. For example, the Moscow route was used for mutual visits of government delegations, military personnel transport, and student exchanges, while the Cuba route facilitated medical and military cooperation. Although these routes had limited commercial profitability and high operating costs, they possessed immense political significance as symbols of the consolidated alliance. By undertaking these political mandates, EAL secured Soviet technical support and spare parts, embodying the agentic strategy of "trading political compromise for developmental space."

At the same time, EAL did not abandon its network on the African continent; instead, it further strengthened aerial links with other African nations. As the host of the Organization of African Unity (OAU) headquarters, Ethiopia sought to use EAL's network to bolster diplomatic ties, support national liberation movements, and act as a Pan-African "aerial bridge." Between 1975 and 1985, EAL added 20 intra-African routes covering major countries like Nigeria, South Africa, and Tanzania, constructing a more robust regional network [11]. This choice aligned with the Mengistu regime's ambitions for African leadership and Ethiopia's regional strategic demands. By consolidating its status as an African aviation hub, the state enhanced its political influence

ISSN: 2688-8653

and economic competitiveness while reducing total dependence on either the U.S. or Soviet blocs-a core manifestation of national agency.

Crucially, throughout this restructuring, EAL maintained a clear understanding of market demand and operational feasibility, refusing to become a mere political tool. Despite meeting the political needs of the Soviet bloc, EAL overcame the pressure of international sanctions to maintain several routes to Europe (such as Rome and Frankfurt). Through code-sharing and interline agreements with European carriers, it ensured stable international passenger and cargo flows, preserving the airline's commercial vitality. This "balance between political demand and market logic" is a vital expression of EAL's agency: under the weight of ideology and political alliance, EAL did not forfeit its operational principles or developmental interests. Instead, through flexible adjustments, it found an equilibrium between political obligation and commercial survival, even as it navigated high negotiation costs and operational penalties.

5.3. Construction of a Hybrid Technological System and Operational Resilience: A Manifestation of Agency

After 1974, the greatest challenge EAL faced was the transition and integration of technical systems-a process that fully demonstrated EAL's high-resilience agency. Having long relied on American technical standards and maintenance protocols, EAL now had to digest Soviet technology. The fundamental differences between U.S. and Soviet aviation philosophies (engine technology, maintenance intervals, avionics) posed immense difficulties [12]. For instance, the engine failure rate of the Il-62 was higher than that of the Boeing 707, and parts supply cycles were longer. American standards emphasized market-driven quality control, while Soviet systems prioritized durability for military-style demands. Sanctions against the Mengistu regime further exacerbated these shortages.

In this dilemma, EAL's management and technical teams exhibited extraordinary resilience by constructing a "Hybrid Technological System" (a concept distinct from post-colonial cultural hybridity) across three dimensions:

1) Technical Dimension: EAL utilized the local talent and American-style management experience cultivated during the earlier "Ethiopianization" phase to operate and maintain Soviet aircraft. The technical teams formulated maintenance workflows that bridged both systems-applying American diagnostic methods alongside Soviet component durability testing, which successfully reduced the failure rates of Soviet models[13] [17]. They mitigated parts shortages by cannibalizing old American planes, sourcing compatible components from third countries like India and Brazil, and negotiating regional spare parts hubs with the USSR. This integration required extensive localized modification and significant R&D costs, demonstrating the sheer difficulty of building such a hybrid system.

2) Institutional Dimension: EAL insisted on market-oriented operational principles. Despite pressure to adopt Soviet planned-economy models, it retained core institutions from the American system, such as safety standards and customer service norms. When the Soviets demanded EAL cut profitable cargo routes to prioritize political transport, EAL employed a strategy of "superficial compliance but substantive retention," formally increasing political flights while optimizing schedules and capacity to maintain core cargo profitability. This displayed a "hybrid wisdom" in institutional management.

3) Knowledge Dimension: EAL emphasized the cross-system capability of its personnel. Even during political upheaval, it maintained a stable talent pool. By sending technical cadres to the USSR to master Soviet airframes while inviting Soviet experts for targeted training-and establishing a "technical heritage mechanism" where senior local experts taught younger staff how to integrate the two systems-indigenous talent developed a core competency in "cross-system integration" [14]. Furthermore, management adopted a strategy of "decoupling

ISSN: 2688-8653

technical learning from ideology," ensuring personnel focused on technical proficiency rather than political indoctrination.

During this period, EAL's development was not the product of a single assistance model; it was the result of an active integration of disparate systems to maintain operational autonomy. EAL did not descend into chaos during the U.S.-Soviet transition; rather, through autonomous adaptation, it expanded its fleet from 15 aircraft in 1974 to 35 by 1991 and its network to 70 cities across 50 countries, becoming a leader in African aviation. This ability to maintain independent survival and growth amidst a political storm is the highest manifestation of Ethiopian national agency in the aviation sector.

This section highlights that under increasingly severe external conditions, EAL deepened national autonomy through high-resilience agency. By integrating U.S. and Soviet resources across technical, institutional, and knowledge dimensions, it found a path between political pressure and market necessity. This demonstrates that for latecomer states, autonomy is not a given but is "won" through arduous agentic practice.

6. Conclusion

6.1. Essential Differences and Impacts of U.S.-Soviet Technical Assistance

During the Cold War, the technical assistance provided by the United States and the Soviet Union to Ethiopian Airlines (EAL) exhibited starkly different logics and models. These differences essentially represented a conflict between the two blocs' ideologies, concepts of international order, and strategic objectives. Their specific manifestations and impacts can be summarized across three levels:

In terms of assistance logic, the United States followed a "dual orientation of market interests and strategic alliance." By exporting technology and management systems through commercial contracts, the U.S. facilitated the global expansion of corporations like Boeing while consolidating pro-Western alliances through technological dependence. Conversely, the Soviet Union prioritized "ideological bundling and political reciprocity," providing aid via intergovernmental agreements and barter trade. Its core objective was expanding the influence of the socialist camp; economic interests were secondary. This logical divergence was particularly evident in civil aviation: while the U.S. emphasized technological sophistication and market adaptability, the Soviet Union stressed utility and political serviceability.

Regarding assistance content, the U.S. supplied EAL with Douglas and Boeing aircraft, accompanied by American market-oriented management systems and rigorous training, pushing EAL toward internationalization and standardization. The Soviet Union provided Ilyushin and Tupolev series aircraft and exported a centralized operational model, emphasizing that aviation must serve the state’s political and strategic mandates. The divergence between these technical systems had a dual impact: the American system enhanced EAL’s international competitiveness and standardization but introduced risks of technological dependency; the Soviet system improved EAL’s operational resilience (adaptability to austere airfields and complex environments) but suffered from compatibility issues and maintenance hurdles. Furthermore, the Soviet planned-economy orientation conflicted with EAL’s market-based operations, rendering the Soviet assistance model less sustainable in the long term.

In terms of outcomes, the alternating technical assistance from the U.S. and the USSR shaped EAL’s developmental characteristics across different stages. From 1945 to 1974, American models dominated the fleet, and the route network focused on Europe, America, and pro-Western African nations, allowing EAL to complete its early modernization and accumulate indigenous talent. From 1974 to 1991, Soviet aircraft became a vital supplement, and the network expanded to the USSR, Eastern Europe, and the African interior, enabling EAL to construct a hybrid technical system and enhance its operational resilience. However, this

ISSN: 2688-8653

shaping was not a one-way street of passive acceptance; it was the result of EAL's proactive selection and adaptation based on its own needs. Ultimately, technical assistance became a tool for EAL's autonomous development rather than a shackle, proving that the efficacy of technopolitics depends not only on the exporter's strategy but also on the recipient's absorptive capacity and level of agency.

6.2. The Practice Path of EAL's National Agency and Autonomy

The evolution of EAL demonstrates that emerging latecomer states were not passive recipients of great-power technical assistance during the Cold War, but were actors with the capacity for proactive choice and autonomous practice. The relationship between Ethiopia's national agency and national autonomy exhibits a dynamic causal logic of "practice-accumulation-enhancement": national agency is the cause, and national autonomy is the effect. The continuous practice of agency drove the deepening of autonomy. The core path involved "directing external aid toward indigenous needs to transform it into endogenous capacity," manifested in two progressive stages:

During the early stage of dependence on American assistance (1945–1974), national agency was characterized by "goal-oriented technological absorption and talent cultivation." Centered on the "Ethiopianization" objective, EAL did not passively accept U.S. output. Instead, through "selective learning" and "localized adaptation," it transformed American technology and management into its own capabilities. By balancing international standards with local needs and U.S. strategy with its own regional hub positioning, EAL successfully transitioned from being "dominated by foreign experts" to "autonomous operation by an indigenous team." This stage of agency accumulated three core assets: a local talent pool, a standardized operational system, and technical absorptive capacity-laying the groundwork for future environmental shifts.

During the stage of transition to Soviet assistance (1974–1991), national agency was characterized by "cross-system technical integration and resilient operations." Faced with the technical discrepancies between the U.S. and USSR, international sanctions, and political upheaval, EAL did not succumb to becoming a political vassal. Instead, it displayed immense strategic flexibility. By constructing a hybrid technological system (compatible with both U.S. and Soviet standards), balancing political obligations with market interests, and strengthening the cross-system integration skills of its personnel, EAL mitigated transitional risks and achieved expansion. This stage broke the dilemma of "single-system dependence" and formed a core competency in "multi-technical integration," marking Ethiopia's leap from "primary autonomy" to "advanced autonomy."

Fundamentally, EAL's national autonomy was not an "absolute autonomy" in defiance of great-power intervention, but a "relative autonomy" achieved within the framework of great-power rivalry. By keeping national interests at the core and flexibly utilizing technical assistance, EAL integrated internal resources to meet its goals. This success stemmed from Ethiopia's long-standing sovereign consciousness as a post-colonial state and the strategic foresight of EAL's management. Crucially, by adhering to the principle of "keeping oneself as the priority while making external tools serve internal needs," EAL viewed aid as a means, not an end. EAL's journey also shows that agency is not cost-free; it is an arduous process involving high negotiation costs, managerial complexity, and the risks of trial and error.

6.3. Revelations for Cold War Technopolitics and Latecomer Development

The case of Ethiopian Airlines offers vital insights for understanding Cold War technopolitics and provides a historical reference for post-colonial nations seeking autonomous development in the contemporary globalized era.

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First, while technical assistance was a tool for great-power geopolitical maneuvering, state agency is the key variable shaping the outcome of technology transfer. EAL's case shows that recipients can proactively choose and adapt technology to turn external aid into developmental momentum. This remains relevant today: post-colonial nations participating in the global division of labor must exercise agency, utilizing external resources while remaining vigilant against technological dependence and ideological bundling.

Second, autonomy is not innate but is constructed through sustained agency; the cultivation of core competencies is the foundation of autonomous development. EAL's practice proves that a local talent pool is the primary vehicle for technological absorption, while hybrid systems and cross-system integration are crucial for navigating external shifts. Modern latecomer states should prioritize indigenous talent and the "digestion" of core technologies to avoid the "dependency trap" and leap from "technical following" to "technical autonomy."

Finally, development requires a dynamic balance between "utilizing external resources" and "maintaining independence." EAL's sustainability was rooted in its ability to balance U.S. strategy with local demand, and political duty with market logic. This suggests that post-colonial nations should adhere to the principle of "mutual benefit," integrating into global systems while maintaining strategic flexibility and operational resilience to cope with complex international environments.

This study departs from the traditional "dependency vs. autonomy" binary, proposing instead a dynamic view of sovereignty: "seeking autonomy within dependence." EAL proved that latecomer states do not need to completely sever external ties to enhance autonomy. The construction of a hybrid system is not a product of passive compromise, but a core competency and a universal institutional innovation developed by latecomer states within asymmetric globalization. By reconstructing external resources across technical, institutional, and knowledge dimensions, EAL provides a new theoretical paradigm for autonomous development.

In the context of current great-power technological competition, the EAL case offers a sobering lesson: technological "decoupling" can be catastrophic for latecomer states, who should instead build resilient, diversified technical systems. EAL survived the U.S.-Soviet shift precisely because it avoided entrapment in a single system. In the globalized era, technological sovereignty is not "closed-door" manufacturing, but a dynamic process of "autonomous integration and innovation." The continuous activation of state agency remains the key to securing a stable position in a complex international landscape.

6.4. Research Limitations

While this study elucidates the path of national agency and autonomy through the case of EAL, certain limitations remain: first, the research focuses on the highly specific, high-tech sector of aviation; thus, the universality of these conclusions needs further verification in other sectors such as manufacturing or energy. Second, the cost-benefit analysis of EAL's agency remains relatively macroscopic, lacking the support of micro-level quantitative data.

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