

How Bricolage Strategy Drives the Dynamic Evolution of Platform Value Models — A Case Study of TikTok's Internationalization

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ABSTRACT

As host-country regulatory environments become increasingly complex and geopolitical uncertainties intensify, the strategic resilience of internationalizing platform enterprises has emerged as a focal point in international business research. Drawing upon the longitudinal case of TikTok, this study utilizes the ABCD model to investigate the pathways of strategic bricolage and their impact on the dynamic evolution of platform value models. The findings reveal that TikTok adopted differentiated bricolage sequences—aligning resources and strategies—in response to diverse international entry environments. This process shaped distinct configurations across three core elements: resource identification, resource reconstruction, and resource value, thereby driving the multi-dimensional evolution of its value models. Specifically, during its initial entry into overseas markets, TikTok followed a pure bricolage logic, leveraging existing core resources through trial-and-error to maximize resource utilization, which facilitated the establishment of an innovation platform. In contrast, when entering the North American market, the firm transitioned to a capability-seeking logic; guided by clear strategic objectives, it utilized acquisitions to bridge critical resource gaps, fostering a platform model centered on cross-regional user transaction networks. Ultimately, as the external environment shifted and its internal resource-strategy base matured, TikTok adopted an integrative bricolage logic—fusing resource exploitation with capability seeking—to construct a hybrid ecosystem platform characterized by "content + commerce" synergy. In this process, the ABCD model has become a critical strategic factor in addressing challenges related to resource imbalance and environmental uncertainty, demonstrating its powerful coupling effect. This study expands the application of international bricolage strategy and the ABCD model in the evolution of value models for platform-based enterprises, offering theoretical guidance and practical insights on how these enterprises can effectively align resources and strategies in their global development.

Keywords: *Strategic Bricolage ; Platform Enterprises; ABCD Model; Internationalization*

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INTRODUCTION

In the rapidly advancing global digital economy, TikTok has emerged as an innovative social media platform that transcends geographical and cultural boundaries, achieving explosive user growth worldwide. However, its internationalization trajectory has been far from seamless. Particularly in pivotal markets such as Europe, the United States, and India, TikTok's expansion has encountered formidable challenges. These encompass not only intense competition within transnational markets—driven by a reliance on innovation and shifting market demands (Hu & Liang, 2023; Feldkamp, 2021)—but also the strategic imperative of rapid adaptation and commercialization within stringent regulatory environments (Jia & Liang, 2021; Gray, 2021).

Bricolage is widely recognized as an effective mechanism for navigating rapid environmental shifts (Baker & Nelson, 2005; Johannisson & Olaison, 2007). Extant literature suggests that by recombining existing resources (Baker et al., 2003; Garud & Karnøe, 2003) and mobilizing underutilized assets (Desa & Basu, 2013), enterprises can mitigate the adverse effects of environmental turbulence. Nevertheless, scholars have noted that in responding to such upheavals, the specific resources and recombination methods vary significantly across different stages due to diverging strategic objectives (Su et al., 2016; Teece, 2007). This necessitates a more granular exploration of "how bricolage actually unfolds" by distinguishing between various resource types and processual stages (Lennerfors & Rehn, 2014).

With the rise of platform enterprises in the global market, the evolution of platform value models has become a central focus for both academia and industry. A platform's value model is not merely a reflection of its commercial strategy; it fundamentally shapes the user experience and the construction of the platform ecosystem. Among platform enterprises, innovation, transaction-oriented, and hybrid models represent the three primary business configurations. According to Evans and Schmalensee (2016) and Parker et al. (2016), these firms create value through multi-stakeholder interactions, with the mechanisms of value creation varying by platform type and strategic orientation. In the context of internationalization, platform firms entering diverse overseas markets confront ambiguous and heterogeneous stakeholder preferences, alongside significant uncertainty regarding the alignment of internal resources with local market conditions. Consequently, determining "how" and "in what manner" platform value models are bricolaged during internationalization constitutes a critical strategic choice, the outcome of which directly dictates the final configuration and viability of the platform's value model.

A review of extant literature reveals that while research on platform value models has incorporated various typologies (Ma & Lin, 2023; Cusumano et al., 2019), business strategies (Hagiu & Wright, 2015), and stakeholder perspectives (Evans & Schmalensee, 2016; Parker et al., 2016), most studies remain rooted in a static perspective. These works primarily analyze how external factors, such as technological characteristics and business environments, drive differentiation in organizational structures (Adner, 2017).

There is a conspicuous lack of research exploring the internal mechanisms through which international bricolage strategies drive the evolution of platform value models. Specifically, the generative role of strategy-resource alignment has been largely overlooked. Current theory has yet to reveal how firms dynamically advance the realization and evolution of diverse platform value models by synergizing resource identification, resource reconstruction, and resource value based on this alignment during internationalization. Furthermore, although bricolage research has identified different modes based on experience versus strategy (Su et al., 2016) or resources versus capabilities (Du & Pan, 2013), a systematic framework is still lacking to explain how fundamental differences in resource identification, bricolage design, and implementation lead to heterogeneous evolutionary pathways in platform value models. This gap limits the theoretical capacity to explain how strategic bricolage heterogeneously influences platform evolution. In practice, it leaves unanswered how platform enterprises with similar value models can utilize bricolage to establish distinct competitive advantages and "barriers of excellence," thereby hindering the practical applicability and guiding value of bricolage theory.

To address these gaps, this study focuses on the following three research questions: (1) As a resource management process (Salimath & Jones, 2011), how is strategic bricolage embedded in the evolutionary process of platform value models, and through what internal mechanisms does it drive this evolution? (2) Faced with uncertainty at different stages, how does the alignment of resources and strategy—through the synergy of resource identification, resource reconstruction, and resource value—form differentiated pathways that propel the evolution of various platform value models? (3) Does a dynamic transition between resource-seeking and capability-seeking logics exist during the evolution of platform value models?

To explore these mechanisms, this paper introduces the ABCD model to analyze the promotion mechanisms and evolutionary paths under different bricolage strategies across four dimensions: Agility, Benchmarking, Convergence, and Dedication. We establish an organic link between these path mechanisms, cross-border regulatory compliance, and platform model evolution. This study offers a novel theoretical perspective for the internationalization of platform enterprises. Especially amidst the rapid rise of digital platforms, exploring how bricolage shapes configurational differences across resource identification, design, and implementation to drive differentiated value models holds significant theoretical and practical value for firms navigating the dual challenges of resource imbalances and environmental uncertainty.

LITERATURE REVIEW

Bricolage Strategy

The concept of bricolage originated in anthropological research, initially defined as "making do with whatever is at hand" (Lévi-Strauss, 1966). It emphasizes the creation of new resource combinations through the rearrangement of existing elements. Evolving within the field of organizational management,

this concept has become a seminal framework for describing the behavior of resource-constrained entrepreneurial firms. Baker and Nelson (2005) define it as the "immediate act of combining resources at hand to address new problems or opportunities," encompassing three core dimensions: the object (resources at hand), the method (recombination), and the objective (new goals). Given the diversity of bricolage objects—ranging from various factor endowments in production to those in transaction domains—bricolage can be categorized into internal and external types based on the source of these endowments. Furthermore, variations in the application of the "objective-object-method" triad lead to significant disparities in outcomes and efficacy, necessitating an exploration of bricolage within specific environmental contexts.

Regarding the environmental uncertainty faced by platform enterprises during internationalization, the primary obstacle is the "Liability of Foreignness" (Srilate, 1995). This liability manifests in two dimensions: first, an unfamiliarity with the host country's market environment, which can be viewed as a fixed cost; and second, volatility in host government policies, consumer preferences, and exchange rates, which function as variable costs. The latter often becomes the focal point of a platform's strategic response. Like other internationalizing firms, platform enterprises entering new overseas markets lack the time and capital to search for or construct "optimal" expensive resources. Consequently, bricolage emerges as a strategic imperative, enabling platforms to leverage accessible internal and external resources (Vanevenhoven et al., 2011). Given the complexity of the global landscape, the environmental turbulence encountered by platform enterprises varies across different developmental stages. This necessitates a deeper exploration into which resources are most suitable and which combinations are most effective (Lennerfors & Rehn, 2014). To this end, we introduce the ABCD model to provide a granular analysis of these strategic mechanisms.

The ABCD Model

The ABCD theory is a strategic model proposed by South Korean scholar Moon H. C. (2014) to analyze the core factors contributing to the success of South Korean enterprises in the global market. The ABCD theory profoundly reveals how South Korean enterprises have achieved worldwide business success through four key dimensions: Agility, Benchmarking, Convergence, and Dedication. This theory not only helps to understand the global strategies of South Korean enterprises but also provides important strategic insights for the globalization of other enterprises.

Each dimension of the ABCD model possesses distinct strategic characteristics. Agility refers to a firm's competitive capacity to strike a balance between speed and precision. Benchmarking in global competition involves observing and learning from market leaders' experiences, followed by innovation and refinement to establish one's own best practices. Convergence emphasizes the mixing and optimization of accessible resources to generate synergy. Finally, Dedication requires persistent diligence aligned strictly with the firm's strategic goals.

In practice, the strategic mechanisms encompassed by the ABCD model extend significantly beyond the conventional boundaries of bricolage theory. For instance, the Convergence dimension not only underscores the importance of mobilizing available internal and external resources (the objects of bricolage) but also emphasizes achieving synergy through optimization (the method and objective of bricolage). Thus, while Convergence is intrinsically linked to the essence of bricolage, it also transcends it by incorporating broader principles, such as resource deployment criteria within diversification strategies. Furthermore, the remaining three dimensions—Agility, Benchmarking, and Dedication—further advance the bricolage framework by addressing strategic orientation (D) and the operational question of how to bricolage (A+B+C). Consequently, this study posits that for strategic bricolage to successfully guide platform enterprises in international markets, it is imperative to integrate the core components of the ABCD model into the processual mechanisms of bricolage. This integration constitutes the central analytical logic of our case study.

Platform Value Models

In the development of platform enterprises, transaction platforms and innovation platforms are two fundamental platform models. The former functions as an intermediary to facilitate market transactions, while the latter provides a technological foundation to promote the development and utilization of complementary resources. Many preeminent firms, such as Apple and Google, operate both types simultaneously. Their evolutionary logic suggests that innovation platforms naturally integrate transaction functions for monetization, while transaction platforms introduce innovative elements to enhance user stickiness (Cusumano et al., 2019). However, the classification and evolutionary mechanisms of platform value models transcend simplistic, single-factor explanations. They necessitate a focus on the fundamental elements of platform value creation (Parker et al., 2016), as well as more complex dimensions such as strategic objectives, motivations, structures, and governance. For instance, Tiwana (2013) posits that hybrid platform models are not merely a layering of business activities but a redistribution of governance rights. In a hybrid model, the platform both establishes the rules and actively participates in value creation. Based on the motivations behind strategic choices, Hagiu and Wright (2015) argue that when a platform seeks to move beyond transaction fees to exercise deep quality control, it pivots toward a hybrid or more vertically integrated model. Adner (2017) introduces a structural view of platforms as ecosystems, suggesting that the transformation of a platform's value model is essentially a redefinition of its value proposition. Furthermore, Xu Hui et al. (2024) propose the core mechanism of platform model innovation based on the 'learning-leverage' action logic.

Overall, numerous scholars have extensively explored the typologies and drivers behind the evolution of platform value models, covering complex dimensions such as organizational goals, motivations, structure, and governance. While these studies offer valuable insights, the direct and profound influence of strategic orientation on the evolution of platform value models—particularly from an internationalization perspective—remains under-researched. For social media platforms navigating

international expansion, the core mechanism of organizational behavior lies in how they utilize bricolage to rapidly deploy, integrate, and reshape resources, maintaining structural resilience amidst radical environmental uncertainty. For platform enterprises with similar value models, their ability to establish distinct competitive advantages and "barriers of excellence" hinges on the heterogeneity of their bricolage strategies; different strategic choices lead to divergent levels of platform competitiveness. In this process, bricolage not only dictates the initial resource configuration of a platform's value model but also—through the synergy of resource identification, resource reconstruction, and resource value realization—fosters an endogenous and sustainable evolutionary path. Therefore, investigating how strategic bricolage drives the organic evolution of platform value models through varied resource combinations and mechanistic couplings is essential for a deeper understanding of platform competitiveness.

RESEARCH METHODOLOGY

(1) Methodology

Given that the research question involves the detailed process of "how," this paper adopts a nested case study approach for inductive theory development and refinement (Eisenhardt, 1989; Eisenhardt & Graebner, 2007). First, key events in the target enterprise's vertical development are identified, seeking to uncover the emerging strategic mechanisms that drive the dynamic evolution of different platform value models. This approach allows for the establishment of causal linkages (Eisenhardt, 1989; Mao et al., 2016). The core advantage of nested case studies is their ability to focus on specific objectives, obtaining detailed, rich, and in-depth information that is more aligned with the research goals. The extreme case selected in this study involves a complex, nested internationalization network of a social platform. By distinguishing the different internationalization bricolage strategies implemented at various stages for different market entry contexts, and identifying the corresponding strategic mechanisms, this study helps develop a quasi-experimental replication logic (Eisenhardt, 1989; Liu & Ying, 2015), which minimizes interference from non-research factors in typical scenarios, leading to more explanatory theoretical insights. Finally, considering the aim to examine how international bricolage strategy drives the evolution of platform enterprise value models, this study aligns with the inductive, case-based approach used in most current bricolage research (Senyard et al., 2014).

(2) Case Selection

The goal of a single-case study is to identify an "Talking Pig" that is both extreme and insightful (Eisenhardt, 1989; Eisenhardt & Graebner, 2007). This study selects TikTok, a short-video social platform owned by the Chinese company ByteDance, as the case for research. The reason for this choice lies in TikTok's role as a leader among Chinese social platform companies expanding globally. Through its internationalization, it has gradually expanded in domestic and foreign markets, becoming the world's largest social media platform. Launched by ByteDance in 2016, the platform was initially promoted as "Douyin" in China and

rebranded as "TikTok" for international markets in the second half of 2017. TikTok's initial internationalization process encountered significant challenges: when it first entered the U.S. market in early 2015, it was ridiculed by *The New York Times* as "a pile of information trash from China." Furthermore, its North American product, TopBuzz, failed to meet even one-third of its target and eventually withdrew in 2020. In April 2019, TikTok faced a temporary ban in India; in October 2019, it was scrutinized by the U.S. Congress on the grounds of "data security threatening national security," and in July 2020, the Trump administration issued an executive order forcing ByteDance to divest its U.S. operations or face a ban. In response to this intense international regulatory pressure and policy intervention, TikTok fought back with resilience, ultimately relying on technology as a foundation, capital as a tool, and localization as a premise, withstanding the "Sword of Damocles" in its globalization process. This vivid case provides ample evidence for constructing the theoretical framework of "how international bricolage strategy addresses resource and environmental uncertainty to drive the evolution of platform enterprise value models." It is worth noting that from TikTok's international expansion in 2017 to 2025, the platform's global downloads surpassed 5.7 billion, with monthly active users exceeding 1.9 billion and reaching over 150 countries and regions. In just eight years, TikTok's international bricolage strategies to address cultural differences, regional regulatory barriers, and expand business value have been clearly implemented, offering substantial evidence for the development of this paper's theoretical model.

(3) Data Collection and Analysis

The data for this study primarily comes from secondary sources, including publicly available media reports and documents (such as company websites) related to TikTok. The data analysis process follows the typical inductive case study approach (Eisenhardt, 1989). First, data from various public sources and archival channels are triangulated to provide reliable and rich explanations of the research topic. Next, the confirmed information is organized chronologically to form a chain of evidence. Based on this, the two researchers independently read and analyze the original case materials to offer two different perspectives on the company's case. Third, through continuous comparison between the evidence and emerging theory, similarities in constructs and connections between different pieces of evidence are identified, and charts are used to analyze these findings, gradually clarifying the emerging theoretical model (Eisenhardt, 1989). This is an iterative process. The final analysis steps focus on TikTok's internationalization at different stages (divided into three phases), using resource identification, resource reconstruction, and resource value in the context of international bricolage strategy to explore how TikTok, through the strategic elements of the ABCD model, successfully addressed challenges related to resource imbalance and environmental uncertainty, ultimately driving the smooth evolution of platform enterprise value networks.

RESEARCH FINDINGS

This study adopts the most widely recognized definition of bricolage in organizational management:

"making do by applying combinations of the resources at hand to new problems or opportunities" (Baker

& Nelson, 2005). However, when applying this definition to the internationalization of TikTok, we find the conventional conceptualization to be insufficient. Specifically, the tripartite dimensions of bricolage—objects (resources at hand), methods (recombination), and objectives (new goals)—remain largely discrete, static, and abstract. To elevate bricolage to a strategic level and form an organic framework—namely, strategic bricolage—a further theoretical expansion is essential. For instance, while bricolage targets "resources at hand" to "address new problems or seize new opportunities," a critical intermediary link is often overlooked: resource identification. The imperative to respond to novel challenges or opportunities necessitates that a firm first identifies its available resources (assessing their completeness, strengths, and weaknesses). The core of resource identification lies in determining the strategic focus. Building upon this, the firm proceeds to resource reconstruction. In this stage, firms navigate two distinct contextual logics: maximizing resource utilization under a resource-driven strategy, and identifying optimal acquisition paths and actions under a strategy-driven approach (Du & Pan, 2013). Only after navigating these two stages can the ultimate objective of bricolage—resource value—be achieved, effectively addressing the problem or seizing the opportunity. Accordingly, starting from the foundational concept of bricolage and based on the complete processual logic of strategic response to environmental upheavals, this study delineates bricolage strategy into three interconnected phases: resource identification, resource reconstruction, and resource value. We subsequently explore the specific characteristics and manifestations of these phases within the context of the case company's developmental stages.

Stage 1: Innovation Platforms (2015 - Early 2017) — Resource-Driven Strategy and Market Value Validation

The period from 2015 to early 2017 marked the initial phase of ByteDance's international expansion, during which the firm deployed products such as TopBuzz and BuzzVideo to conduct pilot testing in North America, Japan, and Southeast Asia. In North America, TopBuzz was launched as a functional replica of the domestic "Jinri Toutiao" interface. By aggregating content from mainstream outlets like CNN and NBC, the platform leveraged ByteDance's established "push-based" recommendation algorithms to evaluate the receptivity of North American audiences to personalized content delivery. Conversely, the launch of BuzzVideo in Japan in late 2016 represented a departure from the news-aggregation model. Instead of replicating domestic strategies, the firm pivoted toward the short-form video sector, focusing on localized vertical categories such as automotive, technology, and regional culture, while collaborating with prominent local influencers to generate content. Throughout this stage, the core strategic priority was "algorithmic alignment"—iteratively refining recommendation logic to ensure technical resources were synchronized with the nuanced content preferences of international users.

However, market receptivity in North America revealed a significant institutional preference for the editorial authority of legacy media, such as *The New York Times* and *The Wall Street Journal*, over

algorithmically curated news snippets. Consequently, after four years of operational struggle to align with local consumer habits, TopBuzz was strategically discontinued in 2020. In contrast, BuzzVideo successfully secured a market foothold through its specialized content focus.

In emerging markets such as Southeast Asia, ByteDance pursued a strategy of localized investment via capital-driven alliances. (A notable example is the 2016 investment in Dailyhunt, an Indian news platform whose multilingual capabilities and 28 million monthly active users (MAUs) facilitated rapid penetration into South Asia's lower-tier segments. Similarly, in December 2016, ByteDance acquired a controlling stake in the Indonesian platform BABE. By leveraging BABE's established user base and local editorial expertise, ByteDance effectively mitigated content compliance risks in a fragmented regulatory environment.) This investment-led approach subsequently extended to the U.S. market with the February 2017 acquisition of Flipagram. This strategic move allowed ByteDance to internalize critical short-video patents and user behavioral datasets, providing the essential infrastructure for subsequent product iterations.

Resource Identification. Prior to the launch of TikTok, ByteDance had already established an effective preliminary global footprint. An assessment of its resource profile during this stage reveals that ByteDance's core resources consisted of its mature "information-seeks-people" algorithmic technology and substantial capital reserves. However, critical resource gaps persisted, specifically in overseas user behavioral data, localized operational expertise, and regional compliance resources. Consequently, the firm's resource base at this juncture was characterized by abundant internal resources (dominant technology and flexible capital) but scarce external resources (particularly data), with a highly concentrated and singular resource foundation (domestic-centric). This clear identification of resources allowed ByteDance to sharpen its initial strategic focus: it prioritized "market reconnaissance and content ecosystem cultivation" over immediate monetization, focusing instead on accumulating user data and localized experience to lay the groundwork for subsequent expansion.

Resource Reconstruction. Based on the identified organizational strengths and weaknesses, ByteDance employed a pure bricolage logic. This involved leveraging existing core resources (algorithms and capital) to design a trial-and-error strategy centered on market validation, thereby maximizing resource utilization efficiency while mitigating the scarcity of data and experience. Specifically, the firm's resource bricolage encompassed the following practices:

(1) Reconstruction Direction: Emphasizing the Organic Combination of Internal and External Resources for Synergy

The firm pursued a hybrid configuration of internal capital and technology with external local platform resources. By utilizing capital investments to form alliances with local platforms such as Dailyhunt and BABE and injecting its proprietary algorithmic technology, ByteDance established a "Capital + Technology + Local Operations" hybrid model. Furthermore, the firm emphasized synergy:

algorithmic technology was integrated with local content teams, allowing user data to optimize algorithms while leveraging local editorial teams to hedge against compliance risks, thus achieving a synergistic effect of "technology export + risk hedging."

(2) Reconstruction Efficiency: Maximizing Strategic Returns via Agility and Benchmarking

Agility Strategy: Precision and Speed in Trial-and-Error Adaptation. ByteDance prioritized rapid market validation through "low-cost, multi-line experimentation," launching several products—including TopBuzz and BuzzVideo—across North America, Japan, and Southeast Asia. Based on market feedback, the firm pivoted away from TopBuzz's news aggregation model (avoiding Western users' reliance on traditional professional media) and focused on the short-video sector. BuzzVideo precisely targeted local preferences like automotive and tech topics, collaborating with local creators to circumvent cultural misalignment.

Benchmarking Strategy: Localization of Learning and Best Practices. Learning from the failure of TopBuzz, ByteDance recognized that simply replicating domestic models was unfeasible and shifted its focus to researching overseas content consumption habits. By investing in Dailyhunt and acquiring a controlling stake in BABE, it learned localized multi-language operations and compliance expertise. Subsequently, it transformed the core "Algorithm + Content" logic of the domestic Douyin into an overseas best practice of "Algorithmic Adaptation + Local Content." For instance, TopBuzz adjusted its language models for English reading habits, and BuzzVideo optimized recommendation logic to match regional user preferences.

Resource Value. Through this phase of resource-driven strategic bricolage, the initial scarcity of data and operational experience was significantly mitigated. The firm achieved a preliminary integration of internal and external resources, thereby consolidating the foundation of its innovation platform and validating its market value.

Stage 2: Transaction Platform (Mid-2017 - 2018) — Capability-Seeking-Oriented, Integrating Global Resources

As TikTok's user base grew exponentially and its market influence continued to expand, ByteDance eschewed premature global dispersion. Instead, the firm established a strategic sequencing approach characterized by "phased expansion and regional prioritization." Under this strategy, ByteDance first validated the TikTok model in Asian markets, where cultural proximity was higher and competitive barriers were relatively lower. Building on this successful validation, the firm strategically pivoted to penetrate the mature North American market through targeted acquisitions. This orchestrated progression enabled ByteDance to complete its global resource integration, facilitating a decisive leap from a regional product to a unified global platform.

In May 2017, TikTok was launched in Japan (Drawing on previous operational experiences, TikTok utilized localized celebrity endorsements and precision advertising to penetrate the Japanese market. For instance, promotional booths in Shibuya engaged high school students with anime filters for dance videos, while strategic partnerships with telecommunications providers offered "data-free packages." These efforts propelled TikTok to the top of the App Store's free rankings within three months.), subsequently expanding into markets such as South Korea and Thailand, signaling the formal commencement of ByteDance's global expansion.

While TikTok established a foothold in Asia, the North American market remained a significant strategic gap, dominated by Musical.ly—a lip-syncing application developed by a Shanghai-based team with over 20 million daily active users (DAUs). With approximately 30% of its user base concentrated in North America and exhibiting high stickiness, Musical.ly represented a formidable "incumbent barrier" for TikTok. To navigate this, ByteDance adopted an entry strategy centered on "Strategic Acquisition and Technological Injection." (Following a transaction valued between \$1.0 and \$1.2 billion, ByteDance promised to retain Musical.ly's creative tools while integrating its proprietary recommendation algorithms. Post-acquisition, engineers immediately embedded a recommendation model featuring over 500 parameters into Musical.ly's system, resulting in a 30% increase in average user engagement time across various regions. This acquisition allowed ByteDance to bypass the 3-to-5-year lead time typically required for organic user accumulation, providing immediate access to a core North American demographic.) By January 2018, TikTok officially entered the U.S. market, gaining 5.5 million new active users in a single month. The integration of Musical.ly catalyzed TikTok's North American monthly active users (MAUs) to surge from less than 20 million to 50 million, ultimately surpassing 200 million global downloads and marking its transition from a regional product to a global platform.

Resource Identification. The M&A integration and large-scale expansion during this phase were driven by an underlying imbalance in resource allocation. By this stage, ByteDance's core resources had evolved to include its upgraded multi-dimensional recommendation algorithms, operational expertise validated in Asian markets, and substantial scaled capital. However, significant resource gaps remained, particularly regarding core user assets in the North American market and the capacity for cross-regional ecosystem integration. Consequently, the firm's resource profile was characterized as "robust core technology and ample capital, yet limited regional reach," necessitating external supplementation to bridge critical gaps. This identification of resource deficiencies directly informed the firm's strategic objectives: ByteDance clearly prioritized "global user scale expansion and the construction of a transaction-oriented platform," focusing on traffic integration and ecosystem scaling to rapidly capture global market share.

Resource Reconstruction. Recognizing these organizational strengths and weaknesses, ByteDance shifted to a capability-seeking logic during this phase. The firm first established a strategic goal of "global

integration and scaled expansion," subsequently utilizing acquisitions to bridge core resource gaps (specifically North American users) to achieve rapid alignment between strategy and resources. The specific bricolage practices included:

(1) Reconstruction Direction: Establishing a Unified Global User Ecosystem and Leveraging Scale Effects

ByteDance pursued a hybrid configuration of acquired user assets, proprietary algorithms, and cross-regional operational teams. This allowed the firm to dismantle regional barriers between the North American and Asian markets, creating a unified global user ecosystem. Furthermore, by utilizing user data from diverse regions to synergistically train its algorithms, ByteDance achieved "localized content with global distribution" (e.g., dancing videos from Tokyo being recommended to users in New York). Cross-regional collaboration among operational teams further optimized the user experience, generating significant scale effects.

(2) Reconstruction Efficiency: Utilizing Benchmarking and Convergence to Integrate Best Practices

Benchmarking Strategy: Enhancing best practices through strategic acquisition. ByteDance executed the acquisition of Musical.ly (valued at \$1–1.2 billion) with high efficiency; engineers were immediately deployed to inject proprietary algorithms, completing the integration of user data and content libraries within three months. This move bypassed a 3–5 year organic growth cycle. Moreover, the firm precisely identified the North American market's pain point—"high user stickiness but weak algorithmic support." Post-acquisition, ByteDance retained Musical.ly's creative tools while injecting its core recommendation engine, successfully capturing 6 million core North American users while minimizing churn.

Convergence Strategy: Growth effects through resource expansion and integration. Through the acquisition, ByteDance absorbed Musical.ly's user engagement models and localized community ecosystem expertise, gaining a deep understanding of content interaction preferences among North American youth. By fusing its algorithmic prowess with Musical.ly's established user base, the firm developed a best practice characterized by "personalized algorithmic recommendations + localized community interaction," resulting in a more than 30% increase in average user screen time across various regions..

Resource Value. By implementing this capability-seeking logic, TikTok not only bridged its core resource gaps but also established a unified global user ecosystem. The synergistic training of algorithms across regional datasets provided the structural support for the platform's global operations. This not only accelerated the growth of global market share but also provided the necessary foundation for the company's transition toward a transaction-oriented platform.

Stage 3: Hybrid Platform (2019 - Present) — Integration of Resource and Capability-seeking, Building Ecological Barriers

As TikTok's global influence expanded, the regulatory challenges it encountered since 2019 became increasingly severe. (This period was marked by a series of geopolitical shocks, including the permanent ban in India in June 2020 on national security grounds and the prolonged legal battle initiated by the U.S. executive order for divestiture, which eventually culminated in a finalized agreement in 2025. Influenced by these precedents, the European Union, Australia, and Canada launched comprehensive data audits, demanding transparency regarding TikTok's recommendation algorithms and cross-border data transfer protocols.)

Rather than adopting a singular defensive posture, ByteDance implemented a "Dual-Track Strategy" characterized by geopolitical risk stratification and business diversification. While utilizing legal mechanisms to mitigate losses, the firm accelerated its strategic transition to convert short-video traffic into e-commerce transaction value, thereby reducing its dependence on advertising revenue. (This commercial pivot involved designing collaborative supply chains for mature Western markets while constructing localized logistics infrastructures in Southeast Asia. Consequently, the revenue share from e-commerce rose from less than 5% to 15%, transforming TikTok into a "Content + Commerce" hybrid ecosystem—a transition that enhanced user stickiness and provided a critical buffer against external risks.)

Since 2022, the further fragmentation of the global geopolitical landscape has led to differentiated regulatory pressures across regions. In response to the global awakening of data sovereignty, TikTok upgraded "Data Localization" from a contingency measure to a long-term strategic priority, entering a phase of "Market-Specific Implementation." (In regions under high regulatory pressure, TikTok adopted a strategy of "Strategic Compromise for Survival." For instance, to address U.S. and European scrutiny, the firm implemented "Data Escrow and Algorithmic Transparency" models. The 2022 "Project Texas" placed U.S. user data under the custody of Oracle and subjected the recommendation engine to third-party audits. This was advanced in 2025 through "Project Texas 2.0," which involved the launch of an independent application. Under this new structure, majority ownership was transferred to U.S. entities like Oracle and Blackstone, with ByteDance retaining less than 20% through non-core technology licensing. This costly compromise successfully preserved TikTok's 150 million monthly active users in the U.S. Similarly, in Europe, TikTok prioritized compliance with the Digital Markets Act (DMA) by disclosing portions of its recommendation logic in 2024 to avoid anti-monopoly sanctions.)

Conversely, in high-potential markets, TikTok focused on balancing compliance costs with commercial interests. (Despite regulatory headwinds in Southeast Asia—such as Indonesia's 2023 ban on

foreign-owned live-stream commerce—TikTok achieved a "Compliance Breakthrough" through strategic acquisition. In January 2024, ByteDance acquired Tokopedia, Indonesia's second-largest e-commerce platform. By leveraging Tokopedia's local supply chain and established regulatory credentials, TikTok reactivated its regional e-commerce operations, achieving a GMV of over \$8 billion in 2024, representing a 60% year-on-year growth.)

Resource Identification. In this phase, the resource imbalances confronting TikTok became increasingly evident. On one hand, the firm possessed a robust traffic ecosystem with 1.9 billion monthly active users (MAUs) globally, extensive multi-regional operational expertise, and a continuously iterating algorithmic engine. On the other hand, critical resource gaps emerged in e-commerce supply chain assets, geopolitical compliance resources, and cross-sector business synergy mechanisms. Consequently, the firm's resource profile can be summarized as "abundant ecological resources coupled with a deficiency in critical operational assets," necessitating a dual approach of leveraging existing resources while simultaneously acquiring new ones.

Resource Reconstruction. Based on this identification of strengths and weaknesses, ByteDance adopted an integrative bricolage logic—a fusion of resource-seeking and capability-seeking approaches. This involved utilizing its core global traffic ecosystem to convert content engagement into e-commerce transaction value through convergence and synergy, thereby minimizing resource redundancy. Concurrently, to address gaps in compliance and supply chains, the firm supplemented its resource base through strategic acquisitions (e.g., Tokopedia) and partnerships (e.g., Shopify), employing agility and benchmarking strategies to ensure the alignment of these new resources with the existing ecosystem. The specific bricolage practices included:

(1) **Reconstruction** Direction: Constructing a "Content-Transaction-Compliance" Synergy

The firm aimed to build a comprehensive ecosystem where content, commerce, and compliance achieved an "1+1+1>3" synergy effect. ByteDance pursued a deep hybridization of content traffic, e-commerce infrastructure, compliance resources, and local supply chains, effectively transcending the boundary of "content for entertainment only." This maximized resource utility: content traffic served as a lead generator for e-commerce (e.g., a viral cheesecake video generating 300 orders in one hour), while transaction capabilities enhanced user stickiness, and compliance resources ensured operational continuity.

(2) **Reconstruction** Efficiency: Managing Risks and Driving Diversification via Agility and Benchmarking

Agility Strategy: Speed and precise in risk mitigation. ByteDance demonstrated remarkable speed in responding to external shocks: it rapidly launched Lemon8 as an alternative after the India ban, initiated emergency e-commerce collaborations with Shopify, and acquired Tokopedia to circumvent Indonesian policy restrictions. Simultaneously, a 200-member legal team worked overnight to compile evidence

against U.S. regulatory scrutiny. Furthermore, the firm implemented differentiated market strategies: "Project Texas 2.0" (data escrow and U.S. ownership) in the United States, "algorithmic transparency and compliance contraction" in Europe, and a "local acquisition + self-built supply chain" model in Southeast Asia. On the one hand, after the ban in India, the company quickly launched the alternative product Lemon8; urgently collaborated with Shopify to launch e-commerce business; acquired Tokopedia to break through Indonesian policy restrictions; a 200-person legal team sorted out evidence overnight to respond to U.S. regulation. On the other hand, it formulated differentiated strategies for different markets—"data hosting + U.S. capital holding" in the United States (Texas Plan 2.0), "algorithmic transparency + compliance contraction" in Europe, and "acquiring local e-commerce + building its own supply chain" in Southeast Asia, accurately matching regulatory and market needs.

Benchmarking Strategy: Learning and evolution toward best practices. The firm institutionalized a "compliance-first" principle derived from its experience with geopolitical risks. It also learned diverse supply chain models across markets (collaborating with mature platforms in the West while building independent infrastructure in Southeast Asia's growth markets). This culminated in best practices for "layered geopolitical risk response and localized e-commerce operations," such as the asset-light Shopify partnership model and the livestream-driven TikTok Shop model tailored to Southeast Asian consumption habits.

Resource Value. By implementing an bricolage logic of resource and capability seeking, TikTok successfully achieved an organic transformation of its global traffic assets (converting content engagement into e-commerce value) and minimized resource waste. Furthermore, by addressing critical deficiencies in compliance and supply chains through strategic acquisitions and partnerships, the company reinforced the alignment between new resources and its existing ecosystem. This stage effectively secured the firm's transition into a hybrid ecosystem platform.

ANALYSIS OF THE PROCESS MECHANISM OF TIKTOK'S PLATFORM INTERNATIONALIZATION EVOLUTION

This study finds that as a media platform navigating the challenges of resource imbalance and environmental uncertainty, TikTok implemented a systematic framework of strategic bricolage consisting of three sequential phases: resource identification, resource reconstruction, and resource value realization. This coherent strategic configuration enabled the enterprise to rapidly identify stage-specific resource characteristics and their corresponding strategic objectives amidst diverse regulatory landscapes and internationalization risks. Consequently, by employing a bidirectional adaptation mechanism that aligns resources with strategic priorities and embedding the relevant dimensions of the ABCD model, TikTok successfully facilitated the seamless functional iteration of its platform models. The detailed analysis is as follows:

The first stage of TikTok's internationalization was characterized by demand uncertainty, where the primary strategic challenge centered on the rapid validation of heterogeneous user preferences across North America, Japan, and Southeast Asia. Guided by the overarching strategic commitment (Dedication, D), the firm adopted Agility (A) through trial-and-error and Benchmarking (B) to facilitate adaptive learning. This enabled ByteDance to precisely calibrate its strategic bricolage orientation. At this stage, the firm identified its resource profile as "scarce," necessitating a utilization-oriented approach that maximized the efficiency of existing core assets—namely, advanced algorithms and capital. By implementing a resource-driven strategy, ByteDance injected its technological and financial capital into local platforms, creating an organic "hybrid configuration" that established the value foundation for its overseas content ecosystem.

The second stage of TikTok's internationalization began in mid-2017, when the company was in a period of rapid expansion. TikTok faced competitive uncertainty, marked by a significant resource imbalance between its established Asian presence and the untapped North American market, which was then dominated by formidable incumbents. Under the strategic commitment of the second stage (D), TikTok prioritized Benchmarking (B) and Convergence (C) to bridge its critical resource gaps. During this period, the firm identified its resource state as "void-heavy," shifting toward an exploration-oriented approach that followed a capability-seeking sequence. Specifically, ByteDance adopted a strategy-driven resource acquisition logic, setting an ambitious goal of "global integration and scale expansion." By acquiring key strategic assets (e.g., Musical.ly's user base) to match its strategic objectives, the firm not only catalyzed its global market share but also provided the requisite traffic infrastructure for its transition toward a transaction-oriented platform.

Since 2019, as global regulatory frameworks tightened and geopolitical landscapes fragmented, TikTok's operational environment has been defined by geopolitical uncertainty. The strategic imperative shifted toward hedging against complex multi-regional risks. Consequently, ByteDance mobilized a comprehensive strategic configuration encompassing Agility (A) for risk mitigation, Benchmarking (B) for regulatory compliance, Convergence (C) for ecosystem synergy, and Dedication (D) for long-term sustainability. At this mature stage, the firm's resource base evolved toward "ecosystem integration," requiring both the exploitation of existing ecological assets and the acquisition of diversified business resources to create a closed-loop system. By adopting a hybrid logic that fused resource-driven and capability-seeking sequences, TikTok achieved a "hybrid configuration" of content, commerce, and compliance. This integration effectively dissolved functional boundaries and established the core competitive barriers of a hybrid platform ecosystem.

Furthermore, by synthesizing the three stages of TikTok's internationalization, this study examines the alignment between the environment, strategy, and platform organizational model. On one hand, the systematic application of the strategic bricolage framework elucidates the underlying strategic

considerations and motivations driving TikTok's expansion. This framework further clarifies how the specific sequencing of bricolage activities dictates the evolutionary trajectory of platform value models. On the other hand, addressing environmental uncertainty requires not only proactive strategic design but also a feedback mechanism where strategic implementation informs subsequent bricolage activities—specifically in determining the optimal sequencing of resources and strategic priorities. By effectively embedding relevant dimensions of the ABCD model into the stages of resource identification and reconstruction, TikTok maintained a clear and iterative strategic focus. This integration facilitated a dynamic alignment between resources and strategy, ultimately enabling the successful transition of its platform's organizational value models.

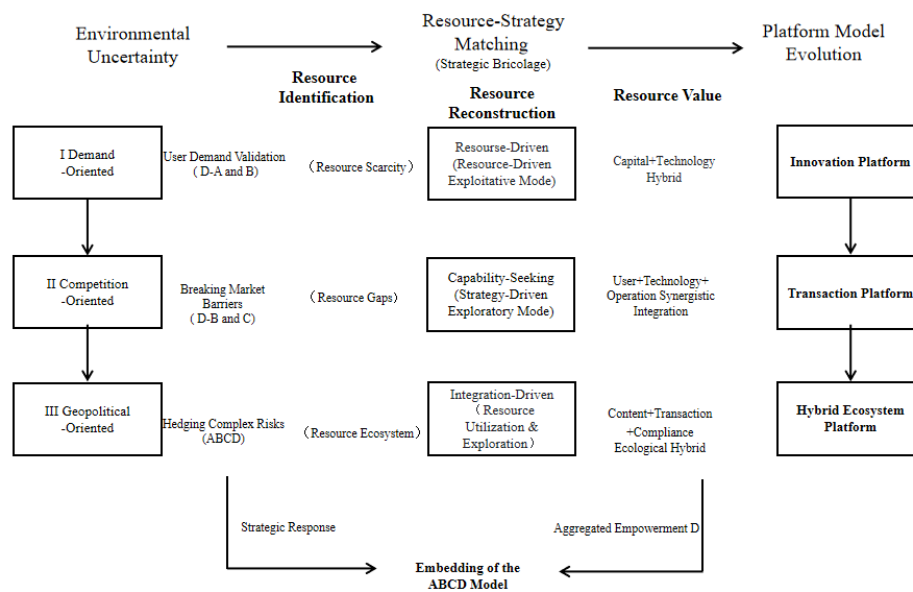


Figure 1 The Mechanism of Strategic Bricolage and the Evolutionary Trajectory of Platform Value Models

DISCUSSION AND CONCLUSIONS

This study investigates the core question of how strategic bricolage drives the dynamic evolution of international value models for platform enterprises. Through an in-depth, longitudinal analysis of TikTok, the research reveals that by implementing differentiated configurations across resource identification, resource reconstruction, and resource value (embedded within varying dimensions of the ABCD model) at different stages of internationalization, TikTok facilitated a significant bifurcation in its evolutionary pathways. Specifically, when faced with demand-driven uncertainty, the firm prioritized its abundant internal resources to drive strategic implementation, conducting exploitative bricolage to reinforce its hybrid advantage of "capital + technology," thereby establishing a competitive innovation platform. During rapid expansion characterized by competition-driven uncertainty, the firm transitioned to a

capability-seeking logic, acquiring external assets through exploratory bricolage to strengthen the synergistic integration of "users + technology + operations." This propelled its evolution toward a transaction-oriented platform to fully leverage global traffic and market share. Finally, when confronted with geopolitical uncertainty and bolstered by accumulated internal strength, the firm adopted an integrative logic—sequencing resources and strategy to both leverage existing assets and supplement diverse resources, creating a closed-loop ecosystem. At this stage, the realized resource value of "content + transaction + compliance" provided robust support for its transition into a hybrid ecosystem platform.

6.1 Theoretical Contributions

By addressing the dynamic evolution of international platform value models driven by strategic bricolage, this research extends the theoretical boundaries of extant literature in the following three areas:

First, this study deepens the conceptual understanding and scholarly articulation of bricolage. We argue that the static, three-dimensional definition of bricolage is overly reductive and fails to capture the complexities of corporate internationalization. To address this, the study elevates the concept of bricolage to the level of strategic bricolage. Drawing on its substantive essence, we delineate three core elements—resource identification, resource reconstruction, and resource value—to analyze the dynamic process driving platform value model evolution. The introduction of this new framework provides a novel theoretical tool for broadening the application scenarios of the bricolage concept and revealing the logical nexus between strategic bricolage and platform value models..

Second, this study utilizes an integrated "Resource-Strategy-ABCD" framework based on the case of TikTok's internationalization. Unlike Adner (2017), who emphasizes static structural alignment within ecosystems, our study elucidates how the "resource-strategy-ABCD" linkage acts as a dynamic process mechanism that enables platforms to navigate resource constraints during internationalization. Furthermore, while Cusumano et al. (2019) primarily focus on the functional classification of innovation and transaction platforms, this research reveals the internal logic through which ABCD-driven strategic choices propel the continuous evolution of platform value models toward a hybrid ecosystem. By doing so, this research transcends the limitations of traditional platform evolution studies that often analyze strategy or resources in isolation. Instead, it situates the alignment of strategy and resources within the complexities of the internationalization process, addressing the fundamental question of how effective strategic design and implementation can overcome resource scarcity and environmental uncertainty. Our findings suggest that strategic bricolage serves as a pivotal lever for strategic design, while the ABCD model—incorporating essential strategic factors—functions as a core tool for operationalizing this strategic bricolage. Together, they enable platform enterprises to effectively mitigate the dual challenges of resource limitations and environmental volatility during global expansion.

Third, this study advances the understanding of the dynamic efficacy of the ABCD model. The case analysis identifies a "stage-specific adaptability" of the model during the internationalization of platform enterprises, suggesting that the four dimensions are not implemented statically. Instead, the model's effectiveness hinges on prioritizing core dimensions that are strategically aligned with specific types of resource and environmental uncertainty. Furthermore, through the precision deployment of sub-dimensions, firms can significantly enhance the accuracy and impact of their strategic execution. This nuanced application establishes a novel strategic paradigm for multinational platform enterprises navigating the complexities of global competition.

6.2 Limitations and Future Research Directions

Despite its contributions, this study has several limitations that suggest avenues for future research. First, while the theoretical framework integrates strategic bricolage and the ABCD model, it may not encompass all determinants of platform value model evolution. Variables such as governance structures, regulatory policies, and external institutional environments likely exert varying degrees of influence on this evolutionary process. Future research could extend this analysis by investigating how divergent stakeholder interests and institutional disparities drive heterogeneity in platform evolution, thereby enriching our understanding of the complexity and diversity inherent in platform models.

Second, the methodology is constrained by its reliance on a single case study. Although the focus on TikTok facilitated a granular characterization of the mechanisms underlying strategic bricolage and platform evolution, the inherent limitations regarding generalizability must be acknowledged. Subsequent research could adopt comparative or multiple-case study approaches to test these findings across different organizational and cultural contexts, thereby strengthening the external validity and explanatory power of the proposed framework.

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CORPORATE SOCIAL RESPONSIBILITY AND AUDIT QUALITY: THE CRITICAL ROLE OF AUDIT COMMITTEE EXPERTISE IN EUROPEAN CONTEXT

Rakia Riguen and Amal Mahdhaoui

Abstract

Purpose: This study explores the relationship between corporate social responsibility (CSR) practices, audit quality, and the moderating effect of audit committee expertise in the European context.

Design/Methodology/Approach: Using a quantitative research design, we examine data from non-financial firms listed on the stoxx European companies over the period 2010-2022. We evaluate the

effect of CSR on audit quality using a range of regression methods, and we look at the ways in which the experience of audit committee members moderates this link.

Findings: Our findings are consistent with the theory that CSR initiatives have a positive impact on audit quality in European context. We argue that the audit committee expertise moderates the relationship between corporate social responsibility and audit quality. Our findings provide valuable insights for companies in developing markets, emphasizing the influence of CSR on audit quality and underscoring the role of audit committee expertise in enhancing its effectiveness.

Originality: This research advances the literature on CSR and audit quality by focusing on a rapidly developing market and offering guidance to companies in comparable environments. It underscores the vital role of audit committee expertise in unlocking the financial benefits of CSR practices.

Keywords : Corporate social responsibility, Audit quality, Audit committee expertise.

1. Introduction

Corporate social responsibility (CSR) has become a prominent theme across businesses, the media, and governments (Ditlev-Simonsen&Midttun, 2011). Over the past two decades, CSR engagement has grown significantly, largely driven by the need to meet stakeholder expectations (Campbell, 2007). According to stakeholder theory, an organization's success relies on how effectively it manages its relationships not only with financiers and shareholders but also with employees, customers, and the broader society in which it operates (Freeman, 1994). In contrast, agency theory views CSR as a potential misallocation of resources, suggesting that managers may over invest in CSR for personal gains rather than to maximize firm performance and value (Barnea and Rubin, 2010). Overall, while the literature presents both positive and negative perspectives on CSR's impact on firm performance, evidence tends to support a generally positive relationship.

The evolution of accounting and reporting practices, shaped by the growing importance of CSR, has presented new challenges for auditors. As companies incorporate CSR elements into their operations, auditors must now navigate the complex task of evaluating the relevance and reliability of non-financial information. Audit quality plays a crucial role in the information disclosure system, significantly influencing the quality of accounting information that guides stakeholders' decisions and actions (Francis, 1984). Wang et al.,(2018) suggest that employees in socially responsible companies tend to uphold higher ethical standards, which helps to reduce the likelihood of earnings management and thus supports the production of high-quality financial statements. Given that audit quality is a key component of financial reporting quality, it is expected that socially responsible managers will seek high-quality audits from external auditors to ensure the integrity of financial statements. If they do not, it may imply that CSR is being used as a facade rather than a genuine commitment. Additionally, several factors can influence the relationship between CSR and firm performance, with the audit committee being a key element that has been relatively underexplored. The audit committee is tasked with overseeing a company's financial reporting, internal controls, and risk management. Consequently, the expertise of audit committee members is crucial for effective corporate governance.

This study examines the link between CSR and the audit quality within the rapidly evolving European market. It also explores how audit committee members' experience influences the relationship between corporate social responsibility and audit quality in developing markets. Specifically, the study aims to determine whether audit committee expertise moderates, the

impact of CSR on audit quality. The study utilizes data from European companies and employs a quantitative research design. The sample consists of firms listed on the STOXX 600 index during the years 2010 to 2022. Various types of regression analyses are conducted to assess the moderating effect of audit committee member expertise on the relationship between CSR and audit quality.

This study contributes to the expanding research on the moderating impact of audit committee expertise on the relationship between Corporate Social Responsibility (CSR) and audit quality. We enhance the existing literature in several key ways. First, understanding the relationship between CSR and audit quality in these contexts is essential, as it presents both opportunities and challenges for businesses aiming to adopt CSR practices. Second, our findings have practical implications for companies operating in developing regions. We emphasize the importance of having audit committee members who can effectively navigate the complexities of CSR measurement and reporting and who possess the requisite expertise. Our research highlights the importance of selecting audit committee members with specialized knowledge, encouraging policymakers to view this expertise as essential for effectively overseeing and advancing CSR practices within regulatory frameworks.

Section 2 presents the theoretical framework. Section 3 reviews the pertinent literature, Section 4 describes the research data, model specification, and methodology, Section 5 analyzes the empirical findings and their interpretations, and Section 6 concludes with discussions and recommendations.

2. The theoretical framework

Ethical theories proposed by Carroll (1979) and Jones (1995) argue that companies should view CSR as an ethical responsibility. CSR activities, such as investing in research and development or participating in philanthropy, can generate long-term value for the company, benefiting both managers and shareholders. Stakeholder theory, originally introduced by Freeman (1994), suggests that a company is accountable not only to its shareholders but also to all stakeholders who play a significant role in driving its performance (Singh and Delios, 2017; Atkins et al., 2018). This theory emphasizes the importance of fostering strong relationships with key stakeholders to sustain and strengthen the company's legitimacy (Cho et al., 2019; Ye and Li, 2021). Additionally, companies in these markets may face challenges in effectively allocating resources, which could divert them from core business activities in favor of pursuing CSR, as suggested by the Resource Allocation Theory (Lopatta et al., 2022). According to agency theory, developing markets may face intensified conflicts of interest

between shareholders and managers, who are appointed to operate the company on the owners' behalf. Agency theory proposes that managers may prioritize their own self-interests, which may not always align with those of the owners (Raimo et al., 2021). In fact, audit committees expertise are essential in addressing these conflicts by offering oversight and guidance on CSR issues (Harun et al., 2020). In developing markets, audit committees play a particularly vital role in mitigating this risk through their oversight and guidance on CSR matters.

3. Literature review and hypothesis development

3.1 Corporate social responsibility and audit quality

The association between CSR and audit fees remains unclear. This study aims to enrich the literature by examining the impact of CSR performance on audit fees. Previous research on this relationship is limited and has produced mixed results, making this study a valuable contribution to addressing this gap. In this context, socially responsible firms are likely to seek high-quality audits from external auditors. This tendency stems from their elevated ethical standards, focus on reputation, and commitment to detailed disclosures qualities that enhance the transparency of financial reporting practices (Al-Shaer, 2020; Kim et al., 2012; Pérez-Cornejo et al., 2020; Wang et al., 2018). The opportunistic financial reporting hypothesis predicts a negative relationship between CSR and the demand for high-quality audits. According to this view, firms may engage in CSR activities as a form of reputation insurance, providing them with a “license to operate” even while engaging in socially questionable practices, such as opportunistic financial reporting (Petrovits, 2006). By actively participating in CSR, firms can send positive signals about the transparency of their financial operations to stakeholders, leading external stakeholders to perceive their financial reports more favorably (Hong and Andersen, 2011). Previous studies indicate that auditors typically charge lower fees to client firms with exceptionally high CSR performance and are less likely to issue going concern qualifications in their reports. The main finding of this research is that auditors consider CSR performance in their decision-making, taking into account factors such as the client's audit risk and litigation risk (Chen et al., 2011). It is important to note that the negative relationship between CSR and audit fees is observed in a competitive audit market, assuming other factors remain constant. In this context, contrary to stakeholder expectations, some firms may leverage a socially responsible image to engage in unethical practices like opportunistic financial reporting (Prior et al., 2008). If firms intentionally adopt a socially responsible image to mask the effects of socially unacceptable practices, such as earnings

management, they may be less inclined to seek high-quality audits from external auditors. Therefore, we propose the alternative hypotheses :

H1 : CSR practice negatively affects audit quality of firms in European context

H1.b : Environmental disclosure negatively affects audit quality of firms in European context

H1c: Social disclosure negatively affects audit quality of firms in European context

3.2 Audit committee expertise : moderating effect

In recent years, the relationship between the audit committee and CSR has attracted growing attention (Santos et al., 2024). The role of the audit committee, along with its attributes of independence and financial expertise, has been examined through various theoretical lenses, including economic and psychological perspectives (Uyar et al., 2023). Firstly, from an economic perspective, agency theory posits that audit committees enhance the quality of information disclosure by overseeing both top management and auditors, thereby helping to reduce agency costs and issues arising from the separation of ownership and control (Bedard and Gendron, 2010). This oversight includes mitigating information asymmetry related to CSR that may be exploited by opportunistic managers. Secondly, the psychological perspective, grounded in director expertise literature, suggests that experts and non-experts differ in their decision-making and problem-solving behaviors. Consequently, the expertise paradigm has been applied to explore the relationship between the financial expertise of audit committee members and the outcomes of audit committee performance (Bedard and Gendron, 2010). Therefore, the expertise of audit committee members is considered a key factor in advancing sustainability practices and disclosures within a company (Bualy and Ajmi 2020). By offering oversight and guidance on social and environmental risks and opportunities, audit committee members with higher expertise can help ensure that companies manage their CSR activities effectively and responsibly (Pozzoli et al., 2022). In fact, it can be argued that audit committee members with financial expertise have a deeper understanding of the importance of sound reporting practices and adherence to top reporting standards (Mangena and Taurigana, 2007). Their financial expertise enhances their effectiveness in ensuring compliance with general rules and regulations and specifically equips them to enforce adherence to CSR-related standards, such as the GRI framework (Yu et al., 2016). Similarly, Dwekat et al., (2022) found that audit committee expertise positively affects CSR disclosure in a sample of European firms listed on the STOXX 600 index from 2012 to 2018. The authors suggested that audit committee members with higher expertise are better equipped to

recognize the importance of CSR disclosure and work more effectively with management to ensure the company provides accurate and relevant information regarding its CSR activities. The role of audit committees, particularly those with members possessing significant financial and audit expertise, is increasingly recognized as a critical factor in ensuring high audit quality. Research has shown that audit committees with financial expertise are better able to understand and assess the quality of financial reporting and its alignment with CSR disclosures (Yu et al., 2016). These committees provide effective oversight, ensuring that CSR activities are genuinely aligned with the company's overall financial integrity.

In recent findings, it has been observed that audit committees with greater expertise act as a moderating force against the potential negative impacts of CSR on audit quality. For instance, studies like those by Dwekat et al., (2016) have found that expert audit committees play a crucial role in ensuring transparency in CSR reporting, enhancing the credibility and reliability of financial statements. Therefore, even when CSR practices could obscure true financial health, an expert audit committee is likely to ensure that audits are thorough, and financial reports are accurate and compliant with best standards.

In developing markets, measuring and reporting CSR impacts can present significant challenges. Audit committee expertise (ACE) plays a crucial role in addressing these challenges by ensuring accurate reporting and enhancing the credibility of CSR initiatives in the eyes of stakeholders. Moreover, the audit committee's expertise can help align the interests of owners and managers regarding CSR in these markets. Managers may be more motivated to engage in CSR activities when they recognize the oversight provided by knowledgeable audit committee. This alignment is essential for strategically integrating CSR initiatives into the company's operations. Recent studies suggest that the expertise of the audit committee can indeed moderate or reduce the negative effect CSR might have on audit quality, as their knowledge and experience lead to stronger oversight and more rigorous auditing practices. Thus, we hypothesize that :

H2 : The negative effect of CSR on audit quality is moderated for companies with a higher level of audit committee expertise.

H2a : The negative effect of environmental disclosure on audit quality is moderated for companies with a higher level of audit committee expertise.

H2b : The negative effect of social disclosure on audit quality is moderated for companies with a higher level of audit committee expertise.

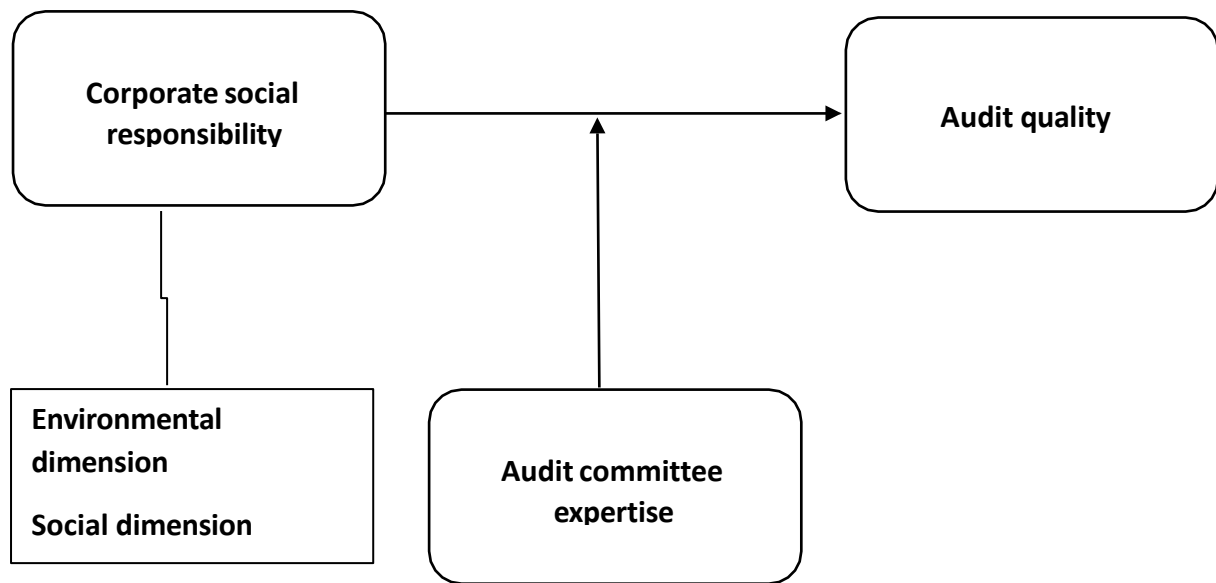


Figure 1: The conceptual framework

4. Research design

4.1 Sample data

This paper used a sample of 207 European companies. This number is limited due to the exclusion of publicly traded financial and related companies (banks, insurance companies). The need to exclude these companies from the sample is justified by the fact that all these institutions meet specific criteria regarding the legal control of their accounts due to the specificity of their financial data. These companies were observed over a period of 12 years from 2010 to 2022. The data were collected from the Thomson Reuters ASSET4 database (Datastream). Additionally, it should be noted that these companies included in our sample operate in various sectors (industrial, commercial, and services).

(Insert table 1)

4.2 Measurement variables

4.2.1 Dependent variable : Audit quality

Previous studies use several proxies to measure audit quality. In their synthesis paper on audit quality measures, DeFond and Zhang (2014) proposed a framework in which they classified comprehensive audit quality measures previously used into two categories: outcome-based measures and input-based measures.

The first category includes proxies that are consequences of the audit process, such as significant anomalies (Lennox and Pittman, 2010) and the

opinion on the going concern (Menon and Williams, 2010). However, the second category includes proxies directly related to decisions made by the board of directors or audit committee based on observable data such as auditor size (Wang et al., 2008) and audit fees (Abbott et al., 2003).

For this study, to measure audit quality, we chose to use the method adopted by (Carcello et al., 2002; Aldamen et al., 2018; Mnif and Cherif, 2020). Indeed, these Authors have used the natural logarithm of audit fees to measure the demand for high-quality audits. Audit fee data were collected from the Thomson Reuters ASSET4 (Datastream) database.

4.2.2 Independent variable

- ✓ **Corporate social responsibility:** This study measures the CSR performance using score across three dimensions (social, environmental, and governance) calculated by Thomson Reuters Eikon Asset4 for each company. The CSR disclosure score is a means of providing information to users for better understanding of the company's risks and opportunities associated with social expectations and potential investments (Giannarakis, 2014). Thomson Reuters Eikon Asset4 provides an annual CSR score ranging from 0 to 100 points for each company. Thomson Reuters' (ASSET4) CSR score is an overall company score based on information related to environmental, social, and corporate governance pillars (Zeng, 2021; Bacha et al., 2021). For this study, we measured corporate social responsibility performance using average scores of the social and environmental dimensions of Asset4 ESG (Saeed et al., 2022). The environmental score (CSR_E) is based on factors such as the impact of company business practices on land, air, and water, including living and non-living natural systems and ecosystems (missions reduction, resource conservation, and environmentally beneficial product innovation). The social score (CSR_S) is based on factors such as customer, employee, and societal trust and loyalty in the company (community involvement, diversity, human rights, job quality, health and safety, training, and development). Audit quality is considered an important governance element likely to limit opportunistic behaviors of managers; for this reason, only social and environmental performance will be used.

4.2.3 Moderating variable: Audit committee expertise

In this study, we incorporate Audit Committee Expertise (ACE) as a moderating variable to explore its effect on the relationship between CSR and audit quality. While ESG ratings from DataStream evaluate corporate governance through various dimensions, including board structure and shareholder rights, ACE specifically focuses on the expertise of audit committee members. This makes ACE a more precise and focused measure of governance quality, offering a deeper insight into its role in shaping the CSR-financial performance relationship.

In line with prior studies (Iliev and Roth, 2018; Kılıç et al., 2021a, 2021b), audit committee expertise is proxied by the score depending on the existence of an audit committee having at least three members and being at least one “financial expert” within the meaning of Sarbanes-Oxley.

4.2.4 Control variables

- ✓ **Firm Size:** Several previous studies have emphasized the importance of the relationship between firm size and audit quality. Indeed, according to DeFond (1992), size significantly explains the choice of an auditor belonging to an international network. In other words, as the firm size increases, it is more likely to be audited more effectively by a higher-quality auditor due to the availability of human and financial resources within these firms. Thus, according to the audit approach, Simunic (1980) justifies that a company holding numerous assets, inventories, and receivables requires more diligence from the auditor. There is, therefore, a positive relationship between firm size and audit quality. Audit size is measured by the natural logarithm of the total assets of the company.
- ✓ **ROA:** According to Kent (2006) and Skinner and Srinivasan (2010), there is a significantly positive relationship between this variable and proxy audit fees for audit quality. Also, Lajmi et al. (2011) found a positive and significant association between performance and the audit quality index. Therefore, there is likely a positive relationship between performance and audit quality. Performance is measured by net income divided by total assets (Mafrolla & D’Amico, 2016).
- ✓ **Market to book value:** Companies with higher M/B ratios may hire high-quality auditors as a signaling mechanism to the market, indicating the reliability of their financial statements and their commitment to transparency (Titman, S., & Trueman, B. (1986).
- ✓ **Free cash-flow:** Superior audit quality may be associated with more extensive procedures, and auditors may adjust their fees based on the level of effort required for companies with significant available cash flows. Companies with high FCF or growth have high audit fees and higher debt balances; FCF agency fees (Griffin et al., 2009).
- ✓ **Leverage:** leverage can be considered a contractual feature as it is seen as a solution to shareholder-manager conflicts (Jensen & Meckling, 1976). In turn, the external auditor is tasked with reducing agency conflicts through their verification of the credibility and reliability of the company's financial and accounting statements. Thus, the more indebted the company, the more agency conflicts increase, the more useful it is to resort to quality audit by ensuring the sincerity of financial information as well as compliance with contractual clauses (Piot, 2003; Velury et al., 2003).
- ✓ **Inventory Ratio:** This could prompt auditors to pay particular attention to inventory management and valuation, given their importance to the company's financial position

(Johnstone et al., 2004). If inventory represents a significant proportion of total assets, this could increase the complexity of auditing this item.

(Insert table 2)

4.2.5 Model and estimation method

To test my hypothesis, we estimate this model as described below:

$$AQ_{i,t} = \beta_0 + \beta_1 CSR_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 ROA_{i,t} + \beta_4 MBV_{i,t} + \beta_5 FCF_{i,t} + \beta_6 LEV_{i,t} + \beta_7 INV/TV_{i,t} + \sum_{n=i} \beta_n YEARS_{i,t} + \epsilon_{i,t} \quad (1)$$

$$AQ_{i,t} = \beta_0 + \beta_1 CSRE_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 ROA_{i,t} + \beta_4 MBV_{i,t} + \beta_5 FCF_{i,t} + \beta_6 LEV_{i,t} + \beta_7 INV/TV_{i,t} + \sum_{n=i} \beta_n YEARS_{i,t} + \epsilon_{i,t} \quad (1.1)$$

$$AQ_{i,t} = \beta_0 + \beta_1 CSRS_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 ROA_{i,t} + \beta_4 MBV_{i,t} + \beta_5 FCF_{i,t} + \beta_6 LEV_{i,t} + \beta_7 INV/TV_{i,t} + \sum_{n=i} \beta_n YEARS_{i,t} + \epsilon_{i,t} \quad (1.2)$$

Equation (1) allows the estimation of the main effects of CSR on audit quality.

To examine the proposed hypothesis, that the impact of CSR on the audit quality is more important in firms with presence of audit committee expertise. We estimate equation, which includes ACE. According to hypothesis 2, we estimate the model (2) as described below:

$$AQ_{i,t} = \beta_0 + \beta_1 CSR_{i,t} + \beta_2 ACE_{i,t} + \beta_3 CSR * ACE_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 ROA_{i,t} + \beta_6 MBV_{i,t} + \beta_7 FCF_{i,t} + \beta_8 LEV_{i,t} + \beta_9 INV/TV_{i,t} + \sum_{n=i} \beta_n YEARS_{i,t} + \epsilon_{i,t} \quad (2)$$

$$AQ_{i,t} = \beta_0 + \beta_1 CSRE_{i,t} + \beta_2 ACE_{i,t} + \beta_3 CSRE * ACE_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 ROA_{i,t} + \beta_6 MBV_{i,t} + \beta_7 FCF_{i,t} + \beta_8 LEV_{i,t} + \beta_9 INV/TV_{i,t} + \sum_{n=i} \beta_n YEARS_{i,t} + \epsilon_{i,t} \quad (2.1)$$

$$AQ_{i,t} = \beta_0 + \beta_1 CSRS_{i,t} + \beta_2 ACE_{i,t} + \beta_3 CSRS * ACE_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 ROA_{i,t} + \beta_6 MBV_{i,t} + \beta_7 FCF_{i,t} + \beta_8 LEV_{i,t} + \beta_9 INV/TV_{i,t} + \sum_{n=i} \beta_n YEARS_{i,t} + \epsilon_{i,t} \quad (2.2)$$

The study uses generalized least squares regression (GLS) with Stata 15 to investigate the moderating effect of gender diversity on the relation between corporate social responsibility and audit quality.

5. Empirical results

5.1 Descriptive statistics

Table 3 presents descriptive statistics of all the variables. As can be seen from this table, the variable audit committee expertises (ACE) have a mean of 52.471, with a standard deviation of 29.812, indicating significant variation in the expertise levels across firms. The minimum value of 3.152 suggests that some companies have very low levels of audit committee expertise, while the maximum of 86.97 indicates a few firms with highly skilled audit committees. This wide distribution of ACE values is consistent with findings from Li et al., (2020), who highlight the diverse expertise levels in audit committees across firms. Audit quality (AQ) has a mean of 8.484 and a relatively low standard deviation of 1.493, reflecting that audit quality is fairly consistent across firms, although there is still some variation. The minimum value of 0 points to firms with very poor audit quality scores, while the maximum of 15.392 shows that some companies achieve higher levels of audit quality. This variation in AQ is consistent with prior research suggesting differences in audit practices across firms (Chen and Kumar, 2019). As for CSR performance, the mean for owner-related CSR (CSR_P) is 63.196, with a high standard deviation of 17.375, indicating notable variability in the CSR activities related to owners. The minimum value of 1.495 suggests that some firms engage minimally in owner-related CSR, while the maximum of 96.96 indicates that other firms place substantial emphasis on these activities, reflecting the diverse CSR strategies identified in previous studies (Brammer and Millington, 2008).

(Insert table 3)

5.2 Correlation analysis

Table 4 reports the correlations among the variables. As a rule of thumb, a correlation of 0.70 or higher in absolute value may indicate a multicollinearity issue (Zhang et al., 2020). The results show that the highest correlation coefficient of 0.610 appears between AQ and SIZE. There is no multicollinearity problem as no correlation coefficients are greater than 0.70.

(Insert table 4)

Multicollinearity was also, checked by calculating the variance inflation factors (VIF). The highest observed VIF value in the study variables is 2.0, which is well below the conventional cutoff of 10.0.

6.3 Results and discussion

Table 5 presents the results of estimating Model (1) to test the hypothesis. The coefficient of 0.045, significant at the 1% level where **H1** is confirmed, suggests that higher levels of CSR associated with owners have a negative impact on audit quality. This implies that the costs of CSR initiatives driven by owners may outweigh their immediate financial benefits, potentially diverting attention and resources away from maintaining high standards of financial reporting and auditing practices. This finding is consistent with Chen and Wang (2020), who observed that owner-led CSR can sometimes reduce firm profitability, particularly when CSR activities are not aligned with the firm's core business strategy. Similarly, Lu and Wang (2017) argue that while CSR may offer long-term benefits, the initial costs associated with its implementation can dilute these advantages, explaining the short-term negative effects observed in this analysis. These results are also supported by Choi et al. (2010), who found that owner-driven CSR initiatives can lead to excessive costs that negatively impact short-term profitability, especially when those initiatives are not directly linked to the firm's core business operations. Furthermore, Ioannou and Serafeim (2015) emphasize that while CSR can have a positive long-term effect on firm performance, its short-term impact may be limited due to high upfront costs required for its implementation.

These findings contribute to the growing body of literature on the effects of CSR on firm performance and audit quality, suggesting that the immediate costs of CSR, particularly when driven by ownership, can have a negative impact on governance and audit quality. Positive effects, however, may only materialize over the long term, after these initial costs have been absorbed and integrated into the firm's operations.

The results for environmental CSR (CSR E) show a coefficient of -0.003, significant at the 1% level, indicating a very weak negative effect hence H1.a is confirmed. This suggests that environmental CSR, which often involves significant upfront investments in sustainable practices and eco-friendly technologies, may incur costs that do not immediately translate into financial returns. Feng and Wang (2020) note that environmental CSR can negatively affect short-term financial performance due to the high initial costs associated with green initiatives, such as investments in renewable energy, waste reduction systems, and sustainable supply chains. Similarly, Gao et al. (2019) argue that while environmental CSR is essential for longterm corporate sustainability and can enhance a firm's reputation; its immediate financial benefits are often limited or delayed, as the financial payoff from green investments typically

takes time to materialize. Furthermore, studies such as those by Al-Tit et al., (2020). Goyal and Joshi (2019) suggest that firms engaged in environmental CSR may face challenges in quantifying the short-term financial impact of these initiatives, making it harder for stakeholders to perceive immediate returns. These findings support the view that environmental CSR, while beneficial in the long run, may not always provide quick financial rewards, and its value may only be fully realized after several years, once the investments have been absorbed and fully integrated into the firm's operations.

For social CSR (CSR S), the coefficient is 0.018, but the result is not statistically significant ($p\text{-value} = 0.841$) hence **H1.b** is unconfirmed, suggesting that social CSR activities, such as community development, employee welfare, and education programs, do not have a measurable impact on the Audit quality. This finding implies that the short-term effects of social CSR might be less pronounced or harder to detect in the context of this study, potentially due to the nature of these activities, which are often more intangible and long-term in their benefits. Social initiatives may not lead to immediate financial returns, as their value is often realized in areas such as brand reputation, employee satisfaction, and community relations, which can take time to manifest in measurable outcomes. This aligns with the view of Ioannou and Serafeim (2015), who suggest that while social CSR can have a neutral to positive impact on firm performance over the long term, its immediate effects on financial performance are less significant. Additionally, Brammer and Millington (2008) argue that social CSR may be perceived as a cost or a non-financial commitment in the short run, especially if stakeholders do not directly associate it with increased profitability or competitive advantage. Moreover, some studies (Martínez-Conesa et al., 2017) indicate that the impact of social CSR is context-dependent, varying across industries and regions, which could explain the lack of a significant effect in this particular study.

The control variable SIZE has a positive relationship with audit quality, as indicated by a coefficient of 0.822 to 0.829, significant at the 1% level. This finding supports the view that larger firms benefit from economies of scale, greater access to resources, and more capital, as highlighted by Serrasqueiro & Nunes (2020). On the other hand, firms with lower profitability, as measured by return on assets (ROA), show a negative relationship with audit quality (coefficient = -0.156), suggesting that lower-profitability firms often face challenges in capital allocation and operational efficiency, which can lead to lower audit quality. This aligns with the findings of Chen et al. (2019) and Cheng et al. (2014), who noted that firms with low ROA are typically less efficient. Additionally, firms with higher book-to-market ratios tend to achieve better performance, reflecting the long-term returns of undervalued

firms (those with a higher book value relative to market value), as supported by Fama & French (2006) and Basu & Hwang (2019). Furthermore, a positive relationship between free cash flow and performance (coefficient = 0.023 to 0.026, significant at 5% and 1%) suggests that firms with higher free cash flow are better positioned to invest in profitable opportunities and navigate financial challenges, which is consistent with the findings of Koch & Hossen (2020) and Jensen (1986), who emphasized the flexibility provided by excess cash flow. Finally, a negative relationship between leverage (debt-to-assets ratio) and performance (coefficient = -0.619 to -0.670, significant at 1%) highlights that firms with higher levels of debt tend to perform worse due to increased financial risk, a finding consistent with Chen & Strange (2015) and Titman & Wessels (2018), who argued that higher leverage heightens the risk of financial distress and reduces profitability.

The results presented in Table 6 show the moderating effect of Audit Committee Expertise (ACE) on the relationship between Corporate Social Responsibility (CSR) and Audit Quality (AQ). The coefficient for CSR P (owner-related CSR) is -0.056, significant at the 1% level, indicating a negative direct relationship between CSR and audit quality, **H2** is confirmed. This suggests that CSR initiatives driven by company owners may have a detrimental effect on audit quality, possibly due to a shift in focus from financial accuracy to CSR activities that are not immediately tied to financial performance. However, the moderation effect of Audit Committee Expertise (ACE) is positive and significant, with a coefficient of 0.038, suggesting that a more experienced audit committee can help mitigate the negative impact of owner-driven CSR on audit quality. Audit committees with higher levels of expertise are better equipped to ensure that CSR activities are aligned with high auditing standards, thus protecting the integrity of the financial reporting process. Previous studies, such as Hassan and Mahadeo (2020), have also highlighted the potential for owner-driven CSR to undermine audit quality if not properly supervised. Furthermore, Krause et al. (2017) emphasize the importance of audit committee expertise in mitigating such negative effects, underlining the crucial role that expert committees play in maintaining robust audit quality despite potentially conflicting corporate priorities.

For environmental CSR (CSR E), the direct effect on audit quality is negative, with a coefficient of -0.062, significant at the 1% level. This suggests that companies with a strong focus on environmental CSR may struggle to maintain high audit quality. The negative relationship could be attributed to the complexity and challenges in verifying environmental claims, which often require specialized knowledge and resources that go beyond typical financial auditing practices. However, the moderating effect of audit committee expertise

(ACE) is positive and significant, with a coefficient of 0.021, indicating that audit committees with greater expertise can help mitigate the negative effects of environmental CSR on audit quality. Expert audit committees play a key role in ensuring the accuracy and transparency of environmental disclosures, which enhances the overall quality of the audit process. Studies such as Li et al. (2020) emphasize that environmental CSR presents auditing challenges due to the lack of standardized metrics and the complexity of environmental reporting. Knechel et al. (2016) highlight that audit committee expertise is crucial in addressing these challenges and ensuring the integrity of environmental disclosures.

In the case of social CSR (CSR S), the direct effect on audit quality is positive and significant, with a coefficient of 0.062, significant at the 1% level. This suggests that companies involved in social CSR activities, such as community development, employee welfare, and ethical business practices, tend to exhibit higher audit quality. However, the moderating effect of audit committee expertise (ACE) on the relationship between CSR S and audit quality is not significant, with a coefficient of 0.032. This implies that the presence of an expert audit committee does not significantly influence the positive effect of social CSR on audit quality in this study. Social CSR activities are often seen as less risky and more aligned with ethical standards, which may explain the lack of significant moderation. As noted by Brammer and Millington (2008), social CSR activities are typically well-aligned with transparency and ethical business practices, which can positively influence audit quality. The absence of significant moderation suggests that social CSR may not present the same auditing challenges as environmental or owner-related CSR, which tend to involve more complex or difficult-to-verify disclosures.

7. Conclusion

This study provides valuable insights into the relationship between Corporate Social Responsibility (CSR), audit quality, and the moderating role of audit committee expertise in the European context. The findings enhance our understanding of how different types of CSR, environmental, and social CSR affect audit quality, and how the expertise of audit committees influences this relationship.

The analysis reveals that owner-related CSR (CSR_P) and environmental CSR (CSR_E) have a negative impact on audit quality, particularly in the short term. Specifically, owner-related CSR tends to be costly, often diverting attention and resources away from rigorous financial reporting and auditing practices. These findings align with previous research, such as Chen and Wang (2020), which suggested that CSR initiatives led by owners can sometimes reduce

profitability when they are not aligned with the company's core business strategy. Similarly, Lu and Wang (2017) argue that while CSR may offer long-term benefits, its initial costs can have a detrimental effect in the short term. Choi et al. (2010) also observed that owner-driven CSR initiatives can lead to high costs that negatively affect short-term profitability, especially when these initiatives are not directly tied to the company's business operations.

In terms of environmental CSR (CSR_E), the negative relationship with audit quality can be attributed to the high initial investments required for sustainable practices, such as renewable energy, waste management, and eco-friendly technologies. Feng and Wang (2020) point out that these investments typically do not lead to immediate financial returns. Gao et al. (2019) argue that, while environmental CSR is crucial for long-term sustainability, its financial payoff often takes years to materialize. Li et al. (2020) also emphasize the challenges auditors face when dealing with environmental CSR due to the lack of standardized metrics and the complexity of verifying environmental disclosures. These results are consistent with earlier research that suggests environmental CSR can complicate the audit process, leading to a decline in audit quality.

However, the expertise of audit committees plays a critical role in mitigating these negative effects. Although owner-related CSR and environmental CSR have negative effects on audit quality, audit committee expertise helps counterbalance these effects. Experienced audit committees are better equipped to ensure that CSR activities align with strong governance practices and maintain financial reporting integrity. This finding supports the work of Krause et al. (2017), who emphasized the importance of audit committee expertise in mitigating the negative effects of complex CSR practices on audit quality. Hassan and Mahadeo (2020) also argue that expert audit committees are essential in supervising CSR initiatives, ensuring that they do not undermine audit quality.

Moreover, the moderating effect of audit committee expertise is significant in the case of environmental CSR. While environmental CSR has a negative effect on audit quality, audit committee expertise mitigates these challenges by ensuring transparency and accuracy in environmental reporting. This finding aligns with Knechel et al. (2016), who highlighted that environmental CSR presents specific auditing challenges, but audit committees with the right expertise can ensure the integrity of environmental disclosures.

On the other hand, social CSR (CSR_S), which includes activities such as community development, employee welfare, and ethical business practices, shows a positive impact on audit quality. However, the moderating effect of audit committee expertise on this relationship is not statistically significant. Social CSR activities are often perceived as less risky and are

typically well-aligned with ethical standards, which may explain the absence of a significant moderation effect. This finding is consistent with Brammer and Millington (2008), who argued that social CSR activities tend to be seen as less costly and more directly aligned with transparency and ethical business practices, which could naturally enhance audit quality. The lack of significant moderation suggests that social CSR may not present the same auditing challenges as environmental or owner-related CSR, which often involve more complex or difficult-to-verify disclosures.

The findings of this study contribute to the growing body of literature on CSR and audit quality, particularly in developing markets. The research underscores the importance of audit committee expertise as a crucial governance mechanism for helping companies navigate the complexities of CSR and ensuring that CSR practices do not compromise audit quality. As Zhang et al. (2020) pointed out, the ability of audit committees to oversee complex CSR activities is essential to maintaining the integrity of financial reporting. Furthermore, the study highlights that while CSR practices may offer long-term benefits in terms of sustainability and reputation, they can create short-term challenges that need to be effectively managed.

In conclusion, this study highlights the complex relationship between CSR and audit quality. While certain CSR practices, particularly owner-related CSR and environmental CSR, can have a negative impact on audit quality in the short term, audit committee expertise plays a key role in mitigating these effects. Experienced audit committees are essential in ensuring that CSR initiatives are integrated into corporate governance and financial reporting practices without undermining audit quality. Therefore, companies especially those in developing markets should pay close attention to the selection of audit committee members with the necessary expertise to oversee CSR activities and maintain high standards of audit quality.

Overall, this research emphasizes the importance of strong governance structures in managing the trade-offs between CSR and audit quality. Future research could explore how CSR impacts audit quality in different industries and regions, as well as how audit committees can adapt to the growing challenges posed by CSR practices in an increasingly complex economic environment.

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Table1: Sample selection

	Number of firms
Initial sample	600
Financial Firms	108
Missing Firms	285
Final Sample	207
Duration of Study	2010 to 2022
Total Observations	2691

Table 2 : Variables measurement

Variables	Symbols	Measurements retained by reference to previous studies	Authors
Dependent variables	Audit quality	Natural logarithm of audit fees	(Carcello and al., 2002; Aldamen and al., 2018; Mnif and Cherif, 2020)
Independent variables	Corporate social responsibility	This is a score developed by ASSET4 which consists of a series of items which measure the social and environmental performance of companies.	(Zeng, 2021; Bacha and al., 2021 ; Saeed and al., 2022)
	Environmental dimension	This is a score made up of a series of items that count the environmental performance of the company developed by ASSET4.	(Zeng, 2021; Bacha and al., 2021 ; Saeed and al., 2022)
	Social dimension	This is a score developed by ASSET4 which consists of a series of items that measure the social performance of companies.	(Zeng, 2021; Bacha and al., 2021 ; Saeed and al., 2022)
Moderating variable	Audit committee expertise	the score depending on the existence of an audit committee having at least three members and being at least one “financial expert” within the meaning of Sarbanes-Oxley.	Iliev and Roth, 2018; Kılıç et al., 2021a, 2021b

Control variables	SIZE	Natural logarithm of the company's total assets for the current year	DeFond (1992)
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	Return on assets (ROA)	Net income divided by total assets.	(Mafrolla & D'Amico, 2016).
	Market to book value (MBV)	It is the book value of equity divided by the market value of equity.	(Titman and al.,1986)
	Free cash-flow (FCF)	Net income less accruals divided by total assets.	(Griffin and al., 2009)
	Leverage (LEV)	Total debt divided by total assets.	(Piot, 2003; Velury and al., 2003).
	Inventory ratio (INV/TA)	It is the total firm inventory for the current year divided by total assets.	(Johnstone and al., 2004).

Table 3 : Descriptive statistics

Variables	Mean	SD	Min	Max
AQ	8.484	1.493	0	15.392
CSR_P	63.196	17.375	1.495	96.96
CSR E	64.519	22.470	0	98.9
CSR S	61.872	20.564	2.99	98.73
ACE	52.471	29.812	3.152	86.97
SIZE	16.303	1.565	12.138	20.939
ROA	7.522	7.579	-53.22	97.06
B/MV	3.401	4.131	-62.3	43.58
FCF	1.965	5.869	-22.472	79.169
LEV	0.242	0.149	0	1.007
INT/TA	0.426	1.199	0	13.972

AQ : audit quality ; CSR_P Corporate social responsibility; CSR E: environmental dimension of CSR; CSR S: social dimension of CSR; SIZE: natural logarithm of total assets ; ROA : Net income divided by total assets ; B/MV : the book value of equity divided by the market value of equity ; FCF ; Net income less accruals divided by total assets ; Loss: a dummy variable which takes the value one if the company recorded negative profits during year t, 0 otherwise ; LEV : Total debt divided by total assets ; COMPLEX: the sum of total inventory and accounts receivable, scaled by total assets ; INT/TA : the current year's total firm inventory divided by total assets.

*, **, *** indicate significance at the 0.10, 0.05, and 0.01 levels, respectively.

Table 4: Correlation matrix

Variables	AQ	CSR_P	ACE	SIZE	ROA	B/MV	FCF	LEV	INV/TA
AQ	1								
CSR_P	0.3344 0.000	1							
ACE	0.2182 0.000	-0.3305 0.000	1						
Taille	0.610 0.000	0.4670 0.000	0.2970 0.000	1					
ROA	-0.1392 0.000	-0.1574 0.000	0.0122 0.5433	-0.2118 0.000	1				
BTM	-0.0851 0.000	-0.0902 0.000	0.0549 0.0062	-0.1827 0.000	0.4518 0.000	1			
FCF	0.1889 0.000	0.0323 0.1073	0.0553 0.058	0.2140 0.000	0.0926 0.000	0.0493 0.0141	1		
LEV	0.1483 0.000	0.1898 0.000	0.1043 0.000	0.2249 0.000	-0.2636 0.000	-0.0325 0.1059	-0.0457 0.0228	1	
INT/T	0.2585 0.0000	0.1316 0.0000	0.1292 0.0000	0.3419 0.0000	0.0018 0.9294	-0.0664 0.0009	0.0622 0.0019	-0.0692 0.0006	1
VIF	1.45	1.38	1.18	2.0	1.65	1.32	1.13	1.20	1.39

AQ : audit quality ; CSR_P Corporate social responsibility; CSR E: environmental dimension of CSR; CSR S: social dimension of CSR; SIZE: natural logarithm of total assets ; ROA : Net income divided by total assets ; B/MV : the book value of equity divided by the market value of equity ; FCF ; Net income less accruals divided by total assets ; Loss: a dummy variable which takes the value one if the company recorded negative profits during year t, 0 otherwise ; LEV : Total debt divided by total assets ; COMPLEX: the sum of total inventory and accounts receivable, scaled by total assets ; INT/TA : the current year's total firm inventory divided by total assets.

*, **, *** indicate significance at the 0.10, 0.05, and 0.01 levels, respectively.

Table 5: Regression results

Variables	Model 1	Model 1.1	Model 1.2
CSR P	-0.045 (0.001) ^{***}		
CSR E		-.003 (0.000) ^{***}	
CSR S			0.018 (0.841)
SIZE	0.822 (0.000) ^{***}	0.829 (0.000) ^{***}	0.802 (0.000) ^{***}
ROA	-0.156 (0.004) ^{***}	-0.016 (0.003) ^{***}	-0.015 (0.004) ^{***}
B/MV	0.122 (0.000) ^{***}	0.124 (0.000) ^{***}	0.122 (0.000) ^{***}
FCF	0.024 (0.027) ^{**}	0.023 (0.032) ^{**}	0.026 (0.016) ^{**}
LEV	-0.620 (0.000) ^{***}	-0.619 (0.000) ^{***}	-0.670 (0.000) ^{***}
INV/TA	-0.062 (0.335)	-0.063 (0.568)	-0.0623 (0.334)
Constant	-4.802 (0.000) ^{***}	-4.952 (0.000) ^{***}	-4.774 (0.000) ^{***}
Wald chi2	4830.85	4855.01	4799.80
N-Obs	2691	2691	2691
Rbetween	0.546	0.557	0.456

AQ : audit quality ; CSR_P Corporate social responsibility; CSR E: environmental dimension of CSR; CSR S: social dimension of CSR; SIZE: natural logarithm of total assets ; ROA : Net income divided by total assets ; B/MV : the book value of equity divided by the market value of equity ; FCF ; Net income less accruals divided by total assets ; Loss: a dummy variable which takes the value one if the company recorded negative profits during year t, 0 otherwise ; LEV : Total debt divided by total assets ; COMPLEX: the sum of total inventory and accounts receivable, scaled by total assets ; INT/TA : the current year's total firm inventory divided by total assets.

*, **, *** indicate significance at the 0.10, 0.05, and 0.01 levels, respectively.

FACTORS AFFECTING CUSTOMER PERCEPTION TOWARDS DIGITAL BANKING SERVICES IN TIRUCHIRAPPALLI DISTRICT

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Abstract

The financial sector is developing at a rapid pace. Digital banking is become a necessary component of our daily lives. The practice of customers doing their financial transactions online without physically visiting a bank branch is known as digital banking. Digital banking has replaced traditional brick-and-mortar banking. Customers who use digital banking replace checks and other paper transactions with computers, smartphones, and other devices. With the development of computers, cell phones, the internet, and information and communication technology, it is possible to draw clients to digital banking by highlighting the advantages of its offerings. Users feel that digital banking is convenient, ubiquitous, instant transfer of funds and they are satisfied with digital banking services. The implications of the study, suggestions to enhance digital banking services and scope for future research is also being highlighted in This study investigates the factors influencing customers' perceptions towards digital banking services in Tiruchirappalli District.

Keywords: Digital banking, Customer perception, Convenience, Security, Technology.

Introduction

Digital banking leverages technology to offer banking services, enabling customers to carry out various financial tasks using devices like computers, smartphones, and tablets. From accessing accounts and transferring funds to paying bills and applying for loans, it eliminates the

need for visiting a physical bank branch. Also referred to as "internet banking" or "web banking," it provides all the traditional services of a local branch through online platforms.

Digital banking provides a variety of advantages for its customers. It eliminates geographical limitations, allowing customers to access their accounts anytime and anywhere. Its convenience and innovative features appeal to users of traditional banking. By offering internet-based services, digital banking saves time, is easy to use, and involves nominal transaction fees. With its self-access system, it has reduced customer attrition while boosting customer loyalty. Additionally, advanced security measures, such as intrusion detection systems and virus control tools, ensure that digital banking services remain safe and reliable.

In India, the government's push towards a cashless economy, coupled with advancements in information technology, has accelerated the adoption of digital banking services. Tiruchirappalli (commonly known as Trichy), a major city in Tamil Nadu with a diverse demographic and economic profile, presents a unique case for studying customer perceptions of digital banking. While the urban population may show a high level of digital engagement, rural and semi-urban pockets within the district might exhibit varying degrees of adoption and satisfaction. Customer perception is crucial, as it influences the acceptance and sustained use of digital banking services. Perception is shaped by several factors, including ease of use, security, trust, user awareness, customer support, and perceived benefits. Socio-economic variables such as age, education, income level, and digital literacy also play a significant role in shaping attitudes toward digital banking.

Key factors that affect customer perception towards digital banking services in the Tiruchirappalli district.

1. **Convenience and Accessibility:** One of the main factors driving the positive perception of digital banking is its convenience. Customers in Tiruchirappalli prefer digital banking services because they allow them to access their bank accounts and perform transactions at any time and from anywhere. This eliminates the need to visit physical bank branches, especially in rural areas where banking infrastructure may be limited.
2. **Trust and Security:** Trust is a critical factor in shaping customer perception towards digital banking. In Tiruchirappalli, concerns about the security of online transactions,

personal data protection, and the fear of fraud and hacking are significant barriers. The implementation of secure technologies like encryption, two-factor authentication, and biometric verification is crucial in building customer confidence.

3. **Technological Infrastructure:** The quality and reliability of internet and mobile network infrastructure are important in determining how well digital banking services are received. In Tiruchirappalli, customers in both urban and rural areas may face challenges related to internet connectivity, affecting their ability to access and effectively use digital banking services. Inadequate technical infrastructure can lead to dissatisfaction and low adoption rates.
4. **Awareness and Education:** The level of awareness about digital banking services directly influences customer perceptions. In Tiruchirappalli, many customers may not be fully aware of the range of services offered through digital platforms. Banks and financial institutions need to invest in customer education and outreach programs to raise awareness about the benefits of digital banking, how to use it, and its safety features.
5. **Customer Support and Service:** The quality of customer support is a crucial factor in shaping perceptions. In Tiruchirappalli, the availability of effective customer service through digital channels such as live chats, help desks, and customer support hotlines can significantly enhance the user experience. Efficient problem resolution fosters trust and satisfaction among users.
6. **Technological Literacy:** The level of technological literacy among customers also plays a vital role in their perception of digital banking. In Tiruchirappalli, there is a digital divide where younger, more educated individuals are more likely to adopt and trust digital banking services compared to older or less technologically literate populations. Ensuring that users of all age groups and educational backgrounds are capable of understanding and using digital banking services is essential.
7. **Cost-Effectiveness:** Digital banking services are often perceived as more cost-effective compared to traditional banking, particularly in terms of transaction fees and operational costs. Customers in Tiruchirappalli who find digital banking services to be cheaper are more likely to adopt and have a positive perception of these services.

8. **Regulatory Framework and Government Support:** Government policies and regulations promoting digital banking, such as financial inclusion initiatives and support for FinTech start-ups, can influence customer perceptions. In Tiruchirappalli, customers may have more confidence in digital banking if they perceive it as being well-regulated and supported by local and national governments.
9. **Cultural and Social Influence:** Social factors such as peer influence, cultural attitudes toward technology, and community practices also affect customer perception. In Tiruchirappalli, where traditional banking practices may dominate, individuals are more likely to trust digital banking services if they see family members, friends, or influential community leaders using them.
10. **Ease of Use and User Experience:** The design and user-friendliness of digital banking platforms, such as mobile apps and online portals, significantly affect customer satisfaction. If customers in Tiruchirappalli find these platforms intuitive, easy to navigate, and responsive, they are more likely to have a positive perception of digital banking services.
11. **Personalization:** Digital banks that offer personalized recommendations based on customer data and behaviour can create a sense of being valued, which leads to positive perceptions. Customization options, such as tailored financial advice or specific product recommendations, also contribute to customer satisfaction.

Recent trends in digital banking services reflect the rapid evolution of technology, changing customer expectations, and the competitive dynamics in the financial industry.

1. Mobile Banking Expansion

- **Increased Mobile Usage:** With the widespread adoption of smartphones, mobile banking has seen a sharp increase. Customers now prefer banking on-the-go through apps, accessing features like balance checks, fund transfers, bill payments, and loan applications.
- **Mobile-First Design:** Many banks are now focusing on mobile-first strategies, where the mobile app is the primary interface for customer interaction, providing all banking services in one place.

2. AI and Chatbots for Customer Service

- **Artificial Intelligence:** AI is transforming digital banking by automating customer service, personalizing banking experiences, and providing predictive analytics. AI-powered chatbots and virtual assistants handle customer queries, support, and transactions in real time.
- **Personalized Banking:** AI helps banks provide tailored financial advice and offers based on individual customer behaviour, preferences, and spending patterns.

3. Open Banking and API Integration

- **Open Banking:** Open banking refers to the practice of banks providing third-party financial service providers access to customer data through secure APIs (with customer consent). This encourages innovation and allows customers to access a wider array of financial products and services.
- **Collaborations with FinTech:** Banks are collaborating with fintech startups to offer advanced digital services like budgeting tools, investment management, and alternative lending options.

6. Contactless Payments and Digital Wallets

- **Contactless Payments:** The use of Near Field Communication (NFC) technology for contactless payments has surged. This includes tap-to-pay services on credit/debit cards, smartphones, and wearables.
- **Digital Wallets:** Digital wallets like Google Pay, Apple Pay, and Samsung Pay have gained widespread acceptance, allowing users to store payment information and make secure online and offline transactions.

7. Biometric Authentication

- **Enhanced Security:** Digital banking services are increasingly incorporating biometric authentication methods, such as facial recognition, fingerprint scanning, and voice recognition, to enhance security and provide a more convenient login experience.
- **Zero-Friction Experiences:** Biometrics help create frictionless experiences, allowing users to access their accounts and approve transactions with minimal effort.

8. Robotic Process Automation (RPA)

- **Automation of Routine Tasks:** Banks are adopting RPA to streamline routine tasks like data entry, account opening, compliance checks, and customer service processes. This reduces human error and increases operational efficiency.
- **Cost Reduction:** RPA helps reduce operational costs by automating low-value tasks, enabling banks to focus on more complex, value-added services.

9. Voice Banking

- **Voice Assistants for Banking:** Integration with virtual voice assistants such as Amazon Alexa, Google Assistant, and Apple Siri is becoming more prevalent in digital banking. These assistants can facilitate transactions, provide balance updates, and answer banking-related queries.
- **Hands-Free Experience:** Voice banking is particularly popular for its convenience, offering customers a hands-free method to access and manage their accounts.

10. Enhanced Fraud Prevention Techniques

- **AI and Machine Learning for Fraud Detection:** Banks are leveraging AI and machine learning algorithms to detect unusual activity, patterns, or fraud in real time. These technologies can help prevent fraudulent transactions before they happen.
- **Two-Factor and Multi-Factor Authentication:** Multi-layered authentication methods are becoming standard, offering stronger protection against cyber threats. For example, one-time passwords (OTPs) and biometric verification are often used together.

11. Data Privacy and Compliance

- **Regulations and Privacy:** With stricter regulations on data privacy (like GDPR in Europe and similar laws globally), banks are increasingly focusing on secure handling of customer data. Customers are becoming more aware of how their data is used, and banks need to comply with regulations to maintain trust.

- **Customer Consent and Transparency:** Banks are focusing on transparency regarding data usage, providing customers with more control over their information.

12. Digital Identity and KYC Automation

- **KYC Automation:** Digital banks are using advanced technologies like biometrics, video KYC, and AI to simplify and speed up the Know Your Customer (KYC) process for onboarding new customers. This reduces the time and paperwork associated with traditional KYC.
- **Digital Identity:** The use of secure digital identities is gaining traction as it allows customers to verify their identity online more efficiently and securely.

Several challenges that financial institutions, regulators, and customers must address. Some of the key challenges include:

1. Cybersecurity and Fraud Prevention

- **Data Breaches:** Digital banking systems are vulnerable to cyber-attacks, hacking, and data breaches, which can result in financial loss and compromised customer information.
- **Fraudulent Activities:** With the rise of online transactions, there is an increased risk of fraudulent activities such as identity theft, phishing attacks, and account hacking.

2. Regulatory Compliance

- **Evolving Regulations:** Digital banks must comply with a complex landscape of financial regulations, such as anti-money laundering (AML), know-your-customer (KYC) policies, and data protection laws like GDPR.
- **Cross-border Regulations:** International expansion complicates compliance due to different regulations in different regions.

3. Customer Trust and Adoption

- **Trust Issues:** Many customers are wary of digital-only banking, especially when it comes to security and the potential loss of personal interactions with traditional bank staff.

- **Digital Literacy:** Not all customers are familiar with digital banking technologies, especially older generations or those in underserved communities. This can slow adoption and increase customer service challenges.

4. Infrastructure and Technology Issues

- **System Downtime:** Technical failures or server outages can disrupt services, leading to customer dissatisfaction and potential financial losses.
- **Legacy Systems Integration:** Many digital banks have to integrate with legacy banking systems, which can lead to inefficiencies and errors during the transition.

5. Digital Divide and Accessibility

- **Limited Access to Technology:** In some regions, access to the internet, smartphones, or other essential technology remains limited, making digital banking services inaccessible to certain demographics.
- **Usability Challenges:** Digital platforms need to be intuitive and user-friendly to cater to diverse customer needs, including those with disabilities.

6. Competition

- **Fintech Startups:** New fintech companies are disrupting traditional digital banking by offering specialized services, better user experience, and lower fees. This increases competition for established banks.
- **Non-Banking Entities:** Technology giants such as Google, Apple, and Amazon are also entering the financial services space, further intensifying competition.

7. Data Privacy and Protection

- **Data Security:** Protecting sensitive customer data, including financial information and personal identifiers, is a significant challenge for digital banks.
- **Privacy Concerns:** Customers are increasingly concerned about how their data is being used, shared, and stored, especially with the rise of artificial intelligence and big data analytics.

8. Cost and Profitability

- **High Initial Investment:** Setting up digital banking platforms requires significant investment in technology, cybersecurity, and infrastructure.
- **Revenue Generation:** While digital banking services offer cost savings, ensuring profitability through revenue models such as interest, fees, and loans remains a challenge.

10. Consumer Behaviour and Expectations

- **Demand for Instantaneous Services:** Customers increasingly expect real-time, seamless services such as instant money transfers, payments, and loan approvals, which can strain system capacities.
- **Customization and Personalization:** Customers demand highly personalized experiences, which require banks to utilize advanced analytics and machine learning tools to tailor services to individual needs.

Recent Trends in Digital Banking Services, with a keen focus on relevance to customer perception particularly in regions like Tiruchirappalli.

1. Explosive Growth of UPI & Payments Infrastructure

- India's Unified Payments Interface (UPI) now handles over 640 million transactions daily, making it one of the world's fastest and most adopted digital payment systems
- The RBI's Digital Payments Index rose by 10.7% in FY 2025, signalling deepening digital adoption supported by stronger infrastructure.
- Customers perceive UPI-based services as highly convenient, fast, and cost-effective, which influences stronger positive perceptions toward digital banking.

2. Expansion of Central Bank Digital Currency (CBDC)

- India's e-rupee is being integrated into popular UPI apps via UPI-interoperable QR codes, currently part of a pilot involving several major banks .
- This seamless integration can strengthen the perception of trust and innovation in digital banking, especially among tech-aware users.

3. Rise of Neo-Banks & Embedded Finance

- Digital-only banks (neo-banks) are gaining traction, offering banking without branches, often tied into UPI, embedded finance, and lifestyle apps .
- Features such as zero-balance accounts, micro-loans via UPI, and multilingual/voice-based interfaces cater to semi-urban or rural users with limited digital literacy .

4. AI-Driven Personalization & Hyper-Automation

- Banks now use AI for hyper-personalization, offering tailored advice, budgeting tools, and contextual financial products based on customer data .
- Hyper-automation—using RPA, machine learning, and biometrics speeds up onboarding, reduces friction, and enhances efficiency, contributing to customer satisfaction.
- Virtual assistants and AI-powered chatbots in multiple Indian languages improve accessibility and user support .

5. Enhanced Security, Trust & Cyber-Resilience

- With rising concerns such as a reported 70% increase in digital payment fraud—banks are strengthening security via multi-factor authentication, biometrics, and AI-based fraud detection.
- Regulatory bodies and organizations—such as Airtel Payments Bank—are introducing user-centric features like one-click panic buttons to bolster trust and transparency.

6. Digital Credit Revolution & Financial Inclusion

- Digital credit via embedded finance—pre-approved lines through UPI apps or instant micro-loans—reduces dependence on traditional collateral-based lending, enabling wider inclusion .
- Startups like RUGR are delivering vernacular, agent-based financial services in rural regions, making digital banking more approachable for underbanked segments .

Implications for Customer Perception in Tiruchirappalli District

- **Convenience & Speed:** Widespread adoption of UPI and fast payment settlement bolsters trust in digital channels.
- **Accessibility:** Voice banking support, vernacular interfaces, and neo-bank products address literacy constraints in non-urban areas.
- **Security & Trust:** Enhanced cyber protections and transparent features can help reduce perceptions of risk.
- **Personalization:** AI-based offers—like relatable savings tips or proactive fraud alerts—may increase perceived usefulness and trust.
- **Inclusion & Credit Access:** Easier access to digital credit and financial products increases perceived value and empowerment.
- **Cultural Relevance:** Localized digital tools and multilingual support make digital banking more relatable, particularly in semi-urban and rural pockets.

Trend	Customer Perception Driver
UPI & Digital Payments	Convenience, trust, low cost
Neo-Banks & Embedded Finance	Inclusion, accessibility, user-friendliness
AI-Driven Personalization	Relevance, utility, tailored engagement
Security Enhancements	Reliability, transparency, reduced perception of risk
Digital Credit Access	Empowerment, speed, financial autonomy
Vernacular and Voice Interfaces	Cultural fit, ease of use, broader outreach

Review of literature

Chama et al. (2021) study the factors influencing the adoption of electronic banking services among bank customers. The study confirms that trust, perceived usefulness and social influence

affect the adoption of e-banking. This study makes useful contributions by clearly identifying the factors that affect e-banking adoption.

Massilamany & Nadarajan (2017) examined the factors influencing the adoption of digital banking services in Malaysia. The dependent variable is digital banking adoption and the independent variable are trust, security, knowledge, self-efficacy and convenience. The results of this study depicts that there is a significant influence of dependent variable on the independent variables.

Gupta (2017) In a conceptual study the researcher has studied the evolution of Indian Banking System from conventional to convenience (cash to click) mode. In this study the secondary data have been used to examine the trends of banking system. This study has explained the types, merits and demerits of each form of digital transactions. The researcher has also highlighted the challenges of digital mode. In this study, the researcher states that there should be proper security system, protection of data and suggests to educate the people to use digital systems which helps to achieve the mass usage of digital transactions.

Yeremenko & Rudskaya (2016) In a conceptual paper the researchers studied the innovations made by the banking business in Russia. By theoretical backgrounds they elaborated the concept of digital banking, that is – innovations in banking, payment systems from cards to digital banking to digital banking, have been discussed in this study. The researchers enunciate that banks should adopt the state-of-the-art technology and provide services at reasonable cost and also enhance the customers' loyalty for online services which will ultimately trigger customers to embrace the modern banking technology.

Sharma and Malviya (2014) have shown that customer awareness and access to digital infrastructure (e.g., smartphones, internet connectivity) play a vital role in digital banking adoption. In regions with lower digital penetration, such as rural parts of Tiruchirappalli, awareness campaigns and user training can significantly improve perception.

Agarwal et al. (2009) observed that age, education, income, and digital literacy significantly influence customer attitudes toward digital banking. Younger, more tech-savvy individuals are more likely to adopt and positively perceive digital banking services, while older customers may face challenges due to lack of familiarity or fear of technology.

Venkatesh et al. (2003) in their Unified Theory of Acceptance and Use of Technology (UTAUT) emphasize the role of social influence. In communities with high social interaction, recommendations from friends or family often impact customer choices in adopting new technologies.

Objectives of the study

- To understand the concept of digital banking services in Tiruchirappalli district.
- To identify the factors that induce the customers to prefer digital banking services over conventional banking services.
- To offer suggestions to improve the digital banking services in Tiruchirappalli district.

Statement of the problem

The customers will expect the security while they transact in online banking. Even though the customer is well educated they may hesitate to transact and reluctant to change with the new innovative services offered by the banks. Those who are not aware of fraudulent activities such as skimming, phishing and spyware etc will lose their money. The customers who are transacting in digital banking services find it difficult to adopt the new procedures and they could not understand the technical aspects of the steps involved in digital banking services. Despite these possibilities the customers have the barriers like psychological barrier, social barrier and technical barrier etc in internet banking, which affect the growth of Internet banking. The eventual success of the technology depends on the satisfaction of the customers. But the factors like such as poor network connectivity, cost constraints and delayed service would affect the level of satisfaction of the customers who are involved in digital banking services. In this regard research has been undertaken on factors affecting customer perception towards digital banking services in Tiruchirappalli District.

Limitations

- The prime suggestion is that the security and privacy issues should be resolved.
- The banks have to create trust in the minds of their existing and potential customers.

- They have to assure that using digital banking transactions are reliable, safe, secured and steadfast.
- The banks should guarantee to the customers that personal and financial information will be kept confidentially.
- The banks website, applications should be developed in such a way that it is easy to navigate and hassle-free.
- The transaction fees should be fixed at a nominal rate.
- The Government should concentrate on improving the internet access and take actions against the cyber frauds and hackers.
- Enriching the digital banking facility and providing expedient and ubiquitous services at an affordable cost will induce the customers towards digital banking services.
- All these will create trust among the customers and will subsequently help to elevate the adoption of digital banking services.

Scope of the study

The main objective of the study is to understand the concept digital banking services in India and to identify the factors that influence the customers to prefer digital banking services over conventional banking services. Furthermore, this study suggests the banking companies how to popularize their banking product and services to their customers and to general public at large. The study is useful for the both public and private banking companies to feel the pulse of the customers.

Research Gap

The literature reviews relating to the result of digital banking concept are deeply analyzed from several perspectives. It is obvious that all the studies have attempted to analyse customers' perception on E-Banking/ Internet Banking/ Digital banking services with many different constructs. The analysis of the review of literature unleashed an abundance of innovative thoughts aimed at identifying the perception on digital banking services. The most of the studies have focused on extent of adoption of digital banking; some have studied factors affecting continued usage of digital banking, service quality, impact, customer satisfaction, etc. Thus, most of studies were limited to either one or two aspects of digital banking. This study is focused the identify the prime factors affecting the customers perception towards digital banking services. The 'Digital India' campaign has the potential to transform the Indian banking industry. Therefore, Research

attention is required to point out the most influencing factors inducing the customers to adopt digital banking in Digitalized India. This was identified as research gap after a thorough review of literature.

Research Methodology

Methodology is a systematic way to solve the research problem. It may be understood as a science of studying how research is done scientifically. The study is descriptive in nature. The present study is focused on identifying the factors influencing the customers' perception to prefer digital banking services over conventional banking.

- **Data Collection:** Primary Data were collected with the help of well-structured questionnaire. Secondary sources include research articles, journals, books, etc.

- **Sampling Design and Size:** Convenience sampling was used for collecting the responses from the digital banking service users. The questionnaires were issued to 178 respondents. But only 150 questionnaires were in usable condition and were taken up for the statistical analysis of the study.

- **Questionnaire Structure and Design:** The questionnaire consists of two parts. Part I deals with the demographic profile and Part II related to the factors affecting the customers perception towards digital banking services.

- **Statistical Analysis:** The collected primary data were statistically analyzed using SPSS version 23. Statistical Tools used are Percentage Analysis, Exploratory Factor Analysis.

Data analysis and interpretation

The process of statistically evaluating the primary data and determining the results are explained in this section. The primary data collected with a help of a structured questionnaire was taken up for the statistical analysis of the study. Frequency Analysis and Factor Analysis was expended in this study.

Frequency Analysis: The distribution of respondents based on their gender, age, marital status, educational qualification, occupational level and annual income was evaluated and results are portrait in the following table:

Table:1.1 Frequency Table representing the Demographic profile of the Respondents

Demographic Variables	Categories	Frequencies	Percentages
Gender	Male	56	37.3
	Female	94	62.7
	Total	150	100.0
Age Group (in years)	Below20 years	5	3.3
	21-30 years	103	68.7
	31-40 years	28	18.7
	Above40years	14	9.3
	Total	150	100.00
Marital Status	Married	57	38.0
	Unmarried	93	62.0
	Total	150	100.0
Educational Qualification	High School	3	2.0
	Diploma	5	3.3
	UG	48	32.0
	PG	69	46.0
	Professional Degree	25	16.7
	Total	150	100.0
Occupational Status	Student	34	22.7
	Employed	57	38.0
	Business	11	7.3
	Professional	15	10.0
	Others	33	22.0
	Total	150	100.0
Annual Income	Below1 Lakh	35	23.3
	1 Lakh – 3 Lakhs	52	34.7
	3 Lakhs –5 Lakhs	21	14.0
	Above 5 Lakhs	42	28.0
	Total	150	100.0
Preference of Digital Banking	Always	53	35.3
	Often	37	24.7
	Sometimes	40	26.7
	Rare	16	10.7
	Never	4	2.7
	Total	150	100.0
Digital Banking Devices	Personal Computers	14	9.3
	Laptops	48	32.0
	Smart phones	88	58.7
	Total	150	100.0

Years of Accessing	Less than 2Years	41	27.3
	3– 5 years	78	52.0
	Above5years	31	20.7
	Total	150	100.0
Satisfaction Level	Highly Satisfied	34	22.7
	Satisfied	95	63.3
	Neutral	21	14.0
	Total	150	100.0

Source: Primary Data

The frequency analysis reveals the demographic profile distribution of the digital banking service users – Majority 94% are Female. In age wise classification majority of the respondents are in the age group of 21-30 years. 93% of the respondents are unmarried, 69% of the respondents are Post Graduates, 57% of the respondents are employed, 52% of the respondents are earning rupees 1lakh to 3lakhs annually. 53% of the respondents are prefer to use digital banking Always. 88% of the respondents prefer to use smart phones for their digital banking transactions. 78% of the respondents are using digital banking services for more than 3 years. Majority 95% of the respondents are Satisfied with their digital banking usage.

Factor Analysis: The exploratory factor analysis was executed by using Principal Component Matrix Method and Varimax Rotation, to identify the factors influencing the customers towards digital banking services. 25 variables were taken up for the analysis out of which 3 variables were eliminated since the factor loading was very low and the rest 22 variables were reduced to 5 factors. The result of rotated component matrix is being given below:

Table 1.2–Table representing variables with factor loadings and its naming.

Factor Naming	Variables	Factor Loadings
Factor – 1 Transaction Speed	Digital banking transfers are completed quickly when compared to traditional methods.	0.773
	Digital banking saves travel time and energy as we need not to stand in queue in banks or to pay utility bills.	0.733
	Within few minutes even the high value transfers can be made in Digital banking.	0.702

Factor – 2 Compatibility	Digitalbankingsavestimeasitisavailable24x7	0.681
	Digital banking improves the speed of transaction.	0.565
	I enjoy using Digital banking as it suits me.	0.813
	I think that using Digital banking fits my lifestyle.	0.785
	I believe that using Digital banking enhances my image.	0.780
Factor – 3 Connectivity	I consider that using Digital banking is hassle-free.	0.776
	I think digital banking is compatible with the way I like to shop.	0.625
	The services should be easily accessible and portable.	0.729
	I expect the services to be available whenever I need it.	0.704
	The internet network should be adequate to ensure success of Digital banking.	0.644
Factor–4 Security	I expect that Digital banking connection is available anywhere and anytime.	0.573
	Security matters have significant influence on using Digital banking.	0.813
	I am concerned about my security while using Digital banking.	0.739
	Higher confidence in your network service provider is essential for safe transaction.	0.649
	Digital banking transaction requires technical experience for performing secured transfers.	0.643
Factor – 5 Convenience and Benefits	Users can easily do their various payments anywhere and anytime.	0.669
	It is a great compliment to cash.	0.606
	Digital banking saves time, energy and money.	0.558
	Discounts, rewards cash-back offers received on Digital banking are appreciable.	0.414

Source: Computed Data

Factor–1 “Transaction Speed” – Time saving was considered to be highly significant factor for the adoption of electronic banking facility as the transactions are completed in a jiffy while compared to conventional payment methods.

Factor–2 “Compatibility” –The customers’ perception towards adoption digital banking is possible only if the technology is compatibility with the lifestyle. Compatibility feature is significant for smart phones and digital banking usage, as people consider that technology should be compatible with their lifestyle. Therefore, these points culminated to profoundly state that Compatibility can be considered as one of the important factors of Digital banking.

Factor–3“Connectivity”–Connectivity refers to the speedy access, usability, appearance of interface and navigation facility. Therefore, these points culminated to profoundly state that Connectivity can be considered as one of the important factors of Digital banking.

Factor–4“Security”–It is found that security hinders the usage of electronic payment system. Therefore, these points culminated to profoundly state that Security can be considered as one of the important factors of Digital banking.

Factor–5 “Convenience and Benefits” – Accessibility (anytime, anywhere) is found to be more important variable of convenience. On the other Benefit (saving of cost, time and energy) was found to the significant factor that drives the customers to acceptance and usage of electronic payment system. Therefore, these points culminated to profoundly state that Convenience and Benefits can be considered one of the important factors of Digital banking.

Findings

1. The results of this study that majority of the respondents are in the Age group. Most of the respondents are Employed and earning a moderate income.
2. The customers prefer to do digital banking transaction Always rather than visiting the bank.
3. The customers prefer Smart phones to prefer their digital banking transactions as it is very compatible for them. The respondents are having more than 3 years in using digital banking services.
4. Most of the respondents feel satisfied by doing their banking transactions digitally.
5. The users of digital banking transactions are influenced by the factors such as Transaction Speed, Compatibility, Connectivity, Security, Convenience and Benefits.

6. These factors are significant towards the adoption of digital banking.
7. The respondents feel that using digital banking services are very much beneficial for the many ways. Customers agree that doing the banking transactions saves their time and cost.
8. The fund transfers are made instantly just by a click. The digital banking services are ubiquitous and convenient.
9. The findings also indicated that customer service quality plays a crucial role in shaping perceptions, with effective customer support enhancing overall satisfaction. Additionally, demographic factors such as age, income, and education level were found to influence how customers engage with and perceive digital banking.

Suggestions

- Digital banking services must generate and induce the customer attention to online banking services by the better marketing and advertisement strategies. Customers should be informed about its convenience features, advantages and benefits of using digital banking services.
- The procedure for initial set-up difficulties should be streamlined by providing necessary assistance.
- Bankers should provide the customer reassurance and information regarding trust of digital banking activities, which will certainly improve the application of security and privacy of the digital banking services.
- To enhance the digital banking services, the bankers should help the customers by developing the secured practices in digital banking and management of risk should be made aptly.
- A boost in the degree of expediency to customer, that will increase the level of customer satisfaction.
- Concentrate on the enlightening the suitable network information and digital infrastructure.
- Customer support system should be enhanced for digital banking services and improve the dimensions of management strategies
- Offering of reward points, incentives trousers will motivate them to use digital banking services.
- The knowledge of digital banking service uses should be provided to the customers,

specially to gadgets illiterate customers through workshops and seminars which will certainly enhance the digital banking value and volume.

- Government must concentrate on developing the internet facility, information and communication technology. to promote digital banking facilities in India.

Scope for future research

This study is focused only on the users (customers) perception towards digital banking services. The future research can be performed with businessmen, bankers, corporate perception. The perception of non-users can be performed to identify the reason for not adopting digital banking services. A comparative study on the users and non-users of digital banking services can be carried out and identify the prime reason for adoption and non-adoption of digital banking services.

Conclusion

This study on the factors affecting customers' perception towards digital banking services in Tiruchirappalli District highlights several key determinants that shape customer attitudes and behaviours towards digital banking. The research revealed that convenience, security, ease of use, and trust are the most significant factors influencing customer perceptions and their adoption of digital banking services. While the majority of customers in the district appreciate the convenience and time-saving aspects of digital banking, concerns regarding security, lack of awareness, and technological literacy still act as barriers for some groups. Many customers expressed hesitation due to fears of online fraud and data breaches, emphasizing the need for enhanced security features and educational initiatives from to address these challenges and improve adoption rates, banks and financial institutions should focus on increasing awareness, improving security measures, offering user-friendly interfaces, and providing comprehensive customer support. Furthermore, targeted efforts to enhance digital literacy, especially among older and less tech-savvy populations, will be essential in fostering greater trust and usage of digital banking services.

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