

DIGITAL VALUE CHAINS – AN EXPLORATORY STUDY ON THE IMPACT OF DIGITALIZATION ON THE DEVELOPMENT OF VALUE CHAINS IN THE BANKING AND FINANCE INDUSTRY

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Abstract: *This research evaluates the impact of the digital transformation on the value chains of the banking and finance industry around the themes trust, efficiency, business model innovation and value chain player dynamics. A mixed method approach is used, comprising a review of scientific literature, qualitative interviews of industry experts and evaluation of selected real-world case studies. Findings suggest the trust and efficiency impacted by digitalization whereas the rise of new business models can be observed selectively and new players such as fintechs gaining power but do endanger of replace incumbent players only to a limited extent.*

Keywords: *Digital Transformation, Fintech, Business Model*

Introduction and research approach

Historically, banks have served as the central players in the financial ecosystem, acting as intermediaries between savers and borrowers. They provided businesses with essential liquidity to finance operations and investments, while offering interest-bearing accounts to individuals and organizations (Omarini, 2017). Banks not only managed money flows but also helped address information asymmetries between borrowers and lenders, playing a crucial role enabling trade and supporting economic growth (Lumpkin & Schich, 2020). Over time, the banking sector expanded globally with increasingly complex services and interbank lending structures.

In recent years, the rise of digital technologies and fintech startups has introduced significant disruptions to traditional banking models. Fintechs can offer financial services directly to consumers and businesses, often bypassing traditional banks, depending on regulatory environments. Crowdfunding platforms, for example, enable direct investment between individuals and businesses without the need for a bank to intermediate. This shifts the traditional relationship between savers and borrowers, as investors can now directly fund projects or companies and interact with them, a role traditionally reserved for banks (Omarini, 2017). As a result, the finance industry is experiencing a transformation in its value chains where digital platforms and new intermediaries are challenging the relevance and dominance of established financial institutions.

Hence, this research shall assess how digitalization will impact the value chains of the banking and finance industry along the following themes of trust, efficiency, business model innovation and value chain player dynamics. Accordingly, four research hypothesis have been developed:

H1: Digital technologies can help to overcome issues related to trust and transparency across value chains

H2: Digital technologies can help to allocate resources more efficiently and/or generally optimize flow of goods and processes within value chains



H3: Digital technologies can enable new business models, i.e., new forms of value creation and/or value capture

H4: The deployment of digital technologies can change the way how value chain players interact with each other, digital technologies can trigger the rise of new players within value chains and/or the disappearance of incumbent players

Although the impact of digitalization is researched to some extent on single firm-level, yet there is very limited research on how digitalization will impact the finance and banking industry on system level of value chains. Thus, research is exploratory and strived to derive initial insights that build the basis for further research. To tackle this, a mixed methodology approach was chosen as this improved validity and reliability of the findings, comprising comprehensive review of relevant scientific literature, qualitative expert interviews and evaluation of real-world case studies. The expert interviews were assessed using Mayring's methodology for qualitative research (Mayring, 2015) and all sources are compared along the research hypothesis to identify commonalities and differences.

Literature review

H1 (Trust): traditional centralized systems have been vulnerable to data breaches and identity theft, leading researchers to explore decentralized solutions such as distributed ledgers (Kumari & Devi, 2022). Additionally, the integration of Internet of Things-applications enhances real-time transaction verification (Hassan, et al., 2021). Decentralized technologies also offer potential improvements in governance. By embedding rules and regulations into digital platforms, blockchain systems can enable transparent automated enforcement without requiring traditional oversight institutions (Zetzsche, et al., 2020). Furthermore, digital solutions can speed up payment clearing and settlement processes, reducing time and costs (Guo & Liang, 2016). This can be especially beneficially for smaller companies that often face delays and barriers in accessing financial services. Decentralized finance and crowdfunding models empower smaller market participants, allowing them to compete more effectively with large financial institutions (Wang, et al., 2019) (Cai, 2018).

H2 (Efficiency): Digital technologies significantly contribute to improving efficiency across the banking and finance sector. Their use of data management, cross-border transaction and automated processes can streamline complex financial value chains (Chen, et al., 2024) (Kumari & Devi, 2022) (Popescu, 2020). The adoption of decentralized systems can also lower participation barriers, fostering greater inclusion for smaller businesses and players in emerging markets (Ozili, 2022) (Mustafa, 2024). Smart contracts and automation can speed up verification, auditing and decision-making processes, reducing human error and labour costs (Collomb & Sok, 2016) (Schär, 2021). Additionally, these technologies can cut transaction costs and minimize the need for intermediaries (Makarov & Schoar, 2022). Fintech companies and crowdfunding platforms demonstrate how leaner digital models can reduce system-wide costs and increase capital allocation efficiency, particularly when compared to traditional intermediaries (Lumpkin & Schich, 2020), (Lazarov, 2019). Artificial intelligence and machine learning now enable faster, more accurate assessment of creditworthiness and risk that traditionally required manual review and lengthy decision-making (Chen, et al., 2024). Advances in digital infrastructure and interoperability between financial systems are further enhancing transaction speeds, especially in cross-border and real-time payments (Vives, 2019). However, literature also emphasizes that the full benefit of these digital technologies can only be realized if they are widely adopted across entire value chains. Limited or isolated use by singly players may restrict their overall impact (Buitenhak, 2016).

H3 (Business Model Innovation): Digital technologies are seen as key enabler of new business models in the banking and financial services sector. They simplify lending and borrowing by connecting lenders and borrowers directly, sometime reducing the need for traditional banks as intermediaries (Far, et al., 2023). Crowdfunding platforms already demonstrate these capabilities. Some researchers anticipate the rise of global, more anonymous lending markets supported by digital verification processes (Schär, 2021). Meanwhile, tech giants like Amazon are blurring lines between commerce and financial services, using customer data to build new, monetizable service (Vives, 2019) (Omarini, 2017). Traditional banks could potentially adopt similar data-driven business models, though whether they can successfully pivot beyond their conventional services remains an open question. Additionally, banks may leverage artificial intelligence and automation to deliver more personalized services, aiding customer acquisition and upselling (Cai, 2018). However, the sector remains conservative and highly regulated which may slow down transformation. Despite their potential, digital technologies face significant

The use of digital technologies across financial value chains increases data availability, which can enhance transparency and improve the early detection of financial crises (Schär, 2021). Meanwhile, tech giants like Amazon are blurring the lines between commerce and financial services, using customer data to build new, monetizable services (Vives, 2019; Omarini, 2017). Traditional banks could potentially adopt similar data-driven business models, though whether they can successfully pivot beyond their conventional services remains an open question.

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H4 (value chain player dynamics): in the banking and financial services industry, digital transformation is reshaping value chains, enabling the rise of digital banks, fraud prevention systems and process automation. Larger banks with flexible IT infrastructures, cloud-based solutions and strong cybersecurity are well-positioned to benefit. They can scale investments and attract scarce digital talent more easily than smaller banks which may face significant financial and operational barriers in their digitalization efforts. Whether smaller banks can survive this transformation or whether the market will further consolidate remains an open research question. Beyond efficiency gains, digitalization offers banks new opportunities such as customer acquisition, data monetization and serving underserved markets through innovations like micro-credits. However, process automation and the adoption of artificial intelligence may reduce workforce needs, especially for rather transactional roles. Given demographic shifts and labour shortages, automation could help banks manage decreasing employee availability (Bueno, et al., 2024) (Lazarov, 2022).

From a consumer perspective, digital banking increases convenience but may disadvantage customers who struggle with digital interfaces, particularly in rural areas. While many banks maintain hybrid service models, it is uncertain whether full digitalization will alienate some customer segments (Crittenden, et al., 2017).

Automated loan decisions using algorithms offer consistent and standardized outcomes, reducing human bias and errors. However, these systems might muss local knowledge and nuanced decision-making that human bankers traditionally provided, potentially leading to lost business opportunities (Hamid & Ahmed, 2016). Fintechs and neo-banks that operate fully digitally and excel at using customer data are challenging traditional banks. Despite high entry barriers, these digital-native players could outpace incumbents in leveraging digital opportunities. Crowdfunding platforms also disrupt traditional banking by enabling



businesses to raise capital directly from the public, bypassing banks. Additionally, digital payment providers like PayPal are competing with banks in payment services, creating valuable customer data streams that can be monetized (Vives, 2019).

Digital platforms that compare financial products offer consumers more transparency and choice potentially disrupt the market of traditional brokers. These platforms profit through commissions and data monetization but may lack the personal connection that traditional brokers might offer. Whether these platforms will fully replace brokers or coexist alongside them is subject to further research (Eichengreen, 2021).

Obstacles to implementation: despite their potential, digital technologies face significant hurdles in banking. Their high energy consumption may limit wider use (Collomb & Sok, 2016) though layered verification systems could improve efficiency (Chen, et al., 2024). Cybersecurity is another key concern as banks manage highly sensitive customer data, requiring constant investment in data protection (Hassan, et al., 2021).

Regulation presents both a barrier and a necessity. While privacy and interoperability standards are needed (Wewege, et al., 2020), excessive regulation could hinder the growth and adoption of these technologies (Ozili, 2022). Moreover, the potential misuse of decentralized systems – such as tax fraud or criminal activities – raise regulatory challenges, especially given the inherent difficulty of controlling decentralized networks (Makarov & Schoar, 2022) (Guo & Liang, 2016) (Wronka, 2023).

Effective system-wide adoption would require collaboration among various players across financial value chains (Buitenhenk, 2016). However, achieving critical mass remain uncertain. Increased interconnectivity also introduces systematic risks where technical failures at one point could disrupt entire networks (Schär, 2021).

Some scholars suggest that partnerships between traditional banks and digital-native companies could combine technological expertise with trust and risk management (Vukoslavović & Tatar, 2025). Others argue that the adoption of trust-enhancing technologies will accelerate when incumbent players show signs of fragility (Koziuk, 2021). Ultimately, while digital transformation offers significant potential, further research is needed to balance efficiency gains with regulatory, security and systematic risks.

Results of expert interviews: qualitative interviews with eight selected experts of the industry have been conducted and reveal the following insights:

Efficiency as primary driver: all interviewed experts consistently identified efficiency gains as the key motivation behind the digital transformation in the banking and financial services industry. Digital technologies, especially artificial intelligence, machine learning, big data analytics and robotic process automation are widely applied to streamline processes, automate tasks such as contract processing and customer inquiry routing and enhance customer identification procedures. Experts emphasized that banks see significant potential for efficiency gains in particular for risk management, fraud detection and payment processing.

Customer-facing efficiencies were also highlighted, including artificial intelligence-driven personalization of marketing and sales efforts. However, concerns were raised regarding data privacy, regulatory constraints and the future balance between automation and human interaction, particularly in complex services like loan advisory.

Several experts foresee that basic banking processes will eventually become fully automated reducing the need for human labour while improving process quality and flexibility. Efficiency improvements are also linked to better resource utilization, such as

reduced office space and the ability to serve more customers with the same workforce through digital interfaces and platforms.

The motivations for these efficiency efforts include cost reduction, labour shortages, competitive benchmarking and the need to improve cost-income-ratios. Some experts also noted that digital platforms can help banks manage regulatory and compliance tasks more efficiently.

While experts broadly agree on the potential of artificial intelligence, they caution against overestimating its short-term impact, stressing that real benefits will depend on end-to-end process optimization and the ability to integrate artificial intelligence into decision-making effectively.

New business opportunities via data economy: although less emphasized, some experts identified digital enablers for new business models, in particular through the use of customer data to deliver individualized offerings and targeted marketing. This could help banks access new customer segments and markets. However, data privacy regulations and customer consent remain critical constraints.

Experts also highlight the growing need for hybrid customer journeys, combining digital and physical touchpoints. While customer data is being leveraged to enhance services, the development of a fully commercialized data economy where banks sell data to third parties as not supported by the interviews.

Fraud management: experts agree that digital technologies enhance fraud prevention, in particular through video-identification and Internet of Things-devices. However, they also caution that fraud cannot be entirely eliminated as fraudulent documents may still pass digital verification processes. Some experts see potential in distributed ledger technologies to address trust issues across value chains. Yet, high costs, limited scalability and unmet expectation have restricted blockchain adoption to niche applications such as smart contracts in insurance.

Regulation as a barrier: nearly all experts identify regulation – especially concerning data privacy – as major constraint on digital transformation in banking and financial services. Regulatory complexity and customer reluctance to share data limit the full use of digital technologies. Some customers fear potential negative consequences from data sharing while paradoxically disclosing more information on social media platforms. Experts stress that although regulation can slow digital progress, it also builds essential trust and provides clear operational frameworks. Additionally, internal compliance policies in some institutions may be stricter than existing laws. While regulations are often seen as obstacles, several expert recognize their importance in safeguarding data use and system integrity.

Cultural challenges: cultural resistance to change is a recurring theme across the expert interviews. Many experts note that employees may perceive digitalization as a threat, with generational differences affecting adoption rates. However, enthusiasm for digital solutions is not strictly age-dependent. The conservative nature of the banking industry, combined with skill gaps and unrealistic expectations about digital technologies, contributes to a slower pace of transformation. Experts emphasize the importance of managing expectations and building digital literacy. Lower barriers to using new technologies such as artificial intelligence could democratize digital tools and accelerate adoption. Structural challenges, including legacy IT systems and works council processes, were also identified as slowing factors.

Shifts in value chains and emergence of new players: the Covid pandemic significantly accelerated the digital transformation, leading to the rise of digital platforms and fintechs that have reshaped value chains. Experts describe digital platforms – some



operated by banks, others by independent players – as key enablers of more efficient customer access. While these platforms are unlikely to fully replace banks, they reduce staffing needs and may displace traditional intermediaries. Consolidation among platforms is expected.

Fintechs have intensified competition but have not replaced incumbent banks. Some experts highlight the evolving cooperation between banks and fintechs, blurring traditional boundaries. The increasing complexity of fintech ecosystem has even led to emergence of new aggregators and streamline fintech offerings.

Experts also noted the appearance of digital certifiers and changing role of brokers. While artificial intelligence could potentially replace some brokerage functions, human brokers may retain an advantage in offers localized or specialized expertise. Nevertheless, brokers must digitize to remain competitive.

Overall, experts agree that traditional banks will persist but with significantly leaner staffing structures due to widespread process automation. Furthermore, the digital transformation is driving convergence between banks, insurers and other financial service providers as customer data enables broader service offerings across sectors. Rapid digital adoption is seen as critical for incumbent players to remain competitive in an industry undergoing accelerated change.

These interviews were compared with 6 selected case studies from real world examples: Prosper Marketplace, LendingClub, Visa B2B Connect, HSBC digital vault, CHECK24 and Yodlee.

Research findings

A comparison of findings from scientific literature, expert interviews and selected case studies provides a comprehensive view of how digitalization is shaping financial value chains. Across all sources, the overall impact is consistently acknowledged although nuances in emphasis and practical relevance emerge.

H1 (Trust): all three sources agree that digital technologies can address trust and transparency challenges, though with differing levels of optimism. Scientific literature highlights blockchain, Internet of Things and smart contracts as key enablers of transparent, secure and more decentralized financial systems that reduce reliance on traditional intermediaries. The industry experts are more reserved, recognizing improvements through technologies like video identification and Internet of Things, but question the scalability and cost-effectiveness of blockchain outside niche applications. The case studies provide the strongest support as they demonstrate through platforms such as LendingClub, Visa B2B Connect and HSBC Vault how digital solutions effectively increase transparency, streamline processes and build user trust in real world financial transactions.

H2 (Efficiency): there is strong alignment across all sources regarding the efficiency gains enabled by digitalization. Scientific literature emphasizes the role of artificial intelligence, machine learning and digital platforms in reducing costs, accelerating processes and minimizing the need to traditional intermediaries. Experts confirm efficiency as a primary driver of digital transformation in the sector, citing the growing use of automated services and fraud detection systems. However, they also highlight current limitations such as regulatory hurdles and the need for integrated, end-to-end digital process redesign to fully realize efficiency potential. Case studies, including LendingClub, Visa B2B Connect and Yodlee, substantiate these theoretical and expert perspectives by illustrating tangible improvements in transaction speed, process automation and data-driven decision-making.

H3 (Business Model innovation): the hypothesis that digitalization can enable fundamentally new business models receives only partial support. Scientific literature acknowledges the potential for innovation through digital platforms, artificial intelligence and embedded finance, but also points to slow adoption, largely due to regulatory barriers and institutional inertia. Industry experts similarly view digitalization as enhancing rather than replacing existing business models, with data monetization constraint by privacy regulations and consumer consent requirements. Case study evidence is mixed: while platforms like Prosper and LendingClub clearly represent new peer-to-peer financial models, others such as Visa B2B Connect HSBC Vault focus more on efficiency improvements than introducing fundamentally new forms of value creation. Emerging cases like Yodlee and CHECK24 suggest potential for future data-driven business models whatsoever.

H4 (value chain structures and competitive landscape): all sourced consistently support the view that digitalization is significantly altering the structure of financial value chains and the interaction of their participants. Scientific literature describes how fintechs, neo banks and digital platforms are bypassing traditional intermediaries, introducing new customer access channels and disrupting established value flows. Industry experts confirm these dynamics, noting the rise of digital-first players, the evolving role of banks and increasing competition between incumbents and fintechs. The case studies offer concrete examples for this evolution: platforms like Prosper and LendingClub eliminate the need for intermediaries, Visa B2B Connect bypasses correspondent banks and CHECK24 reduces the role of brokers by directly owning digital customer interfaces. Across all sources, there is clear evidence that digital technologies are not only optimizing existing value chains but are also fundamentally reshaping industry structures, often to the benefit of agile, digital-native entrants.

In summary, the triangulation of literature, expert opinions and case studies confirms that digitalization in the financial sector is a transformative force for value chains, in particular increasing transparency, efficiency and competitive dynamics. However, the emergence of entirely new business models remains limited with most innovations building upon and enhancing traditional structures rather than replacing them.

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