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Systemes d'Information et Management

Challenges, Opportunities, and Drivers in Digital Finance

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1. Introduction

Finance is often viewed as a complex, quantitative discipline, centered on the fundamental relationship between risk and return – a field where emotional considerations are set aside in favor of objective analysis and data-driven decision-making. This image was further reinforced as digitalization or automation rapidly transformed financial professions. For example, the trading on financial markets, in particular, has been deeply impacted by automatic traders. Chatbots assist clients in managing their assets, algorithms handle credit analysis, and RegTech supports financial institutions in complying with regulatory requirements. According to a recent study by the Bank for International Settlements (2024), investments channeled through Fintech companies reached around 900 billion dollars between 2019 and 2023 – more than double the amount invested during the previous comparable period. This has enabled them to shift the traditional boundaries between technology, finance, and society, transforming not only the tools but also the culture and values of financial professions.

For this reason, we seek to embrace an alternative perspective by exploring the social, behavioral, and organizational aspects of finance. The works gathered in this special issue provide a different perspective from the dominant paradigm in modern finance, which is rooted in concepts like rationality, perfect competition, informational and allocative efficiency (Fama, 1965), and random walk of price series (Markowitz, 1952). In this alternative framework, finance is viewed as an institutional construct (Chambost et al., 2016), shaped by a social and historical context that gives it a unique identity. Researchers adopting these alternative perspectives present financial phenomena in their various dimensions, thereby promoting research in areas beyond the quantitative analysis of asset price dynamics. This approach aims to highlight an ecosystem that is deeply dependent on a particular context and history, in which professional practices, organizations, instruments, techniques, and regulatory dynamics interact. These contributions thus open the door to a more cross-disciplinary and qualitative approach to research agendas. It is not about dismissing the "numbers," but rather about moving beyond their strict boundaries to broaden the perspective on the diversity of research subjects. Understanding the making of finance becomes even more crucial in a time when it encompasses not just numerical values, but also data and the digital practices that shape its use.

2. Interdisciplinary perspective: Management of Information Systems and Finance

Individuals, businesses, and institutions, including both providers and users of financial instruments and services, are increasingly adopting digital solutions. The integration of technology into financial systems (banks, markets, etc.) is not a new phenomenon, with its origins dating back to the 1970s, when super calculators and early computers were explored by investment firms. However, this trend has taken a significant turn with the rise of Fintechs over the past decade, coupled with advancements in artificial intelligence (Gomber et al., 2018). More recently, the Covid-19 crisis has further accelerated this digital transformation, particularly in consumer behavior and financial practices (Feyen et al., 2021). According to a study conducted by the Autorité de Contrôle prudentiel et de résolution (ACPR – the French Prudential Supervision and Resolution Authority), the number of customers using digital financial services through fully mobile banking or payment applications in France doubled between 2018 and 2020, based on data from the 15 largest industry players (ACPR, 2022).

This growing shift toward digitalization is evident at both the institutional and individual levels. On one hand, operational systems – transaction processing systems (TPS) – contribute to the decentralization of transactions at the market level (Gudgeon et al., 2020). On the other hand, the use of decision support systems (DSS) by professionals, individuals, or organizations provides ongoing support, or even substitutes, for strategic decision-making in investments (Gottschlich & Hinz, 2014). The use of these information systems influences human actions and behaviors, which, in turn, impacts institutions, banks, and markets.

Today, digital transformation in the financial sector is a central topic of discussion among regulators, consulting firms, and academics, particularly in relation to regulatory guidance and legislative frameworks (Currie & Seddon, 2022; Xu & Bao, 2023). Unlike digital transformation in non-financial industries, the financial sector faces distinct challenges due to its heightened requirements for security, regulatory compliance, and data privacy (Vives, 2019). In many industries, digital transformation focuses on boosting efficiency or improving customer engagement. In finance, however, it also requires maintaining the stability of the financial system and protecting the broader financial ecosystem (Rodrigues et al., 2023).

Regulators are confronted with a complex debate that goes beyond simply choosing legal approaches. The development of rules for our financial systems now requires a transdisciplinary process that is closely tied to the concepts of algorithms and artificial intelligence. To ensure the ethical and value-creating use of information systems, what role should regulations and incentives play? Effective regulation of RegTech and decentralized finance can be developed by integrating the knowledge and experience of stakeholders. This includes areas such as data analysis, reporting, Know Your Customer procedures, compliance, and identity management, grounded in their established practices and histories within a unified conceptual framework (Gudgeon et al., 2020; Werner et al., 2021).

3. Recent and emerging initiatives

The emergence of a research community at the intersection of these two sub-disciplines has been gaining momentum internationally for several years, particularly within top-tier journals. The *Journal of Management Information Systems* led the way with a special issue (Gomber et al., 2018) featuring seven articles on payment systems and crowdfunding. Three years later, *Information Systems Research* continued the trend with a special section including four articles – mostly on the same

topics, except for one focused on informational signals in financial markets. While *MIS Quarterly* has not published a dedicated special issue, it stands out for its steady interest in finance-related topics, publishing several articles each year that go beyond the narrow scope of Fintech.

This special issue also aims to bring together contributions on the design and use of information systems within financial services (Gomber et al., 2018, Gomber et al., 2017, Haried et al., 2021, Hendershott et al., 2021). We focus on key topics within Management of Information Systems (MIS), including regulation, ethics and accountability, the digitalization of customer relationships, cybersecurity risks, and the strategic scope and governance of technology. These issues are often overlooked and should drive discussions that extend beyond purely financial concerns. This special issue is linked to another complementary initiative: the GTAİM, a thematic research group, "*Information Systems challenges in Finance*" which will host its 4th session coordination in 2025 at the annual conference of the French Association Information & Management (AIM).

4. Challenges of the special issue

New financial ecosystems are taking shape – such as crowdfunding, cryptoassets and smart money – while existing ones continue to evolve, including open banking, neobanking, and algorithmic supervision. These transformations call for a renewed MIS perspective that incorporates broader issues such as governance, strategy, and organizational change. The studies at the intersection of information systems and finance, presented in this special issue, contribute to uncovering the often hidden and intricate mechanisms behind financial processes. By examining how information flows and technology transform the nature of financial intermediation, how data-intensive services are reshaping the banking sector, and how organizations strive to balance innovation with governance, this interdisciplinary approach offers valuable insights into the emergence of new financial risks. Such understanding enables individuals to better grasp how risk is generated, perceived, and managed in a technology-driven environment, fostering a more informed and critical engagement with the digital tools that increasingly shape modern financial markets, banking services, and corporate finance.

Topic 1: Crowdfunding Matching Platforms

Structurally stable in terms of organization since the creation of official stock exchanges, financial markets have undergone incredible transformations since the 1980s with automation, decentralization, and the gradual integration of computer-aided decision-making tools in trading desks (Arena et al., 2018). Today, financial systems can be described as a set or network of platforms that facilitate the connection between supply and demand for funding. Digital platforms thus represent a new economic and social model of exchange that transcends the traditional company/market dichotomy, instead relying on a system of intermediation functioning as "market-organizations" (Mazuyer, 2021, p. 11). El Yahyaoui (2021) takes this further by defining them as "complex heterogeneous objects ... located at the intersection of two 'worlds', that of the company and that of the market ... relying on a deeply transformed socio-technical environment" (p. 46). These platforms act as intermediaries between different types of economic players, but they also function like firms at the center of an ecosystem. In this system, all participants are connected and coordinate their actions based on the platform's rules. The digitization of financial systems has deeply changed how securities exchanges work. New models, like participatory ecosystems, offer interesting alternatives for both companies and individuals (Darmon et al. 2022, Gleasure et al. 2019). But how should we understand these new ways of connecting buyers and sellers from a legal perspective? And how can fairness be ensured in these new forms of exchange?

Promoting fairness begins by ensuring that accurate information is equally accessible to both companies seeking funding and the capital providers – especially small investors. While theory of signals is well known in traditional finance settings like IPOs or capital increases, it's still new when applied to equity crowdfunding. In this context, online platforms and virtual meetings change the way how financial information is shared and how fundraising is organized. This is the focus of the article "Transparence et proximité : l'équity crowdfunding à l'épreuve des rencontres digitales" ("*Transparency and Proximity: Equity Crowdfunding in the Digital Meeting Era*") by Laurence Attuel-Mendes and Céline Soulas. They study online interactive meetings hosted by crowdfunding platforms to connect investors with project founders. Using a combination of netnography and interviews, they looked at nine French platforms. Their findings show that these meetings vary widely in format, level of interaction, and visibility. Platforms try to balance open communication with risk management, while investors often want more direct access to both founders and other investors. The study reveals that digital meetings could be more effectively leveraged to improve transparency and build trust in crowdfunding.

Topic 2: Banking and Financial Services

The banking industry, and more broadly the everyday financial services offered to individuals and businesses, is also being profoundly reshaped by digital transformation. This includes organizational changes, product/vehicle innovation, and the structuring of new forms of competition.

While banks adapted to the internet in the 1990s with remote banking, the spread of connected devices has greatly changed how people and businesses use banking services. Managing customer data has now become a key strategic focus. Mobile applications now gather a vast amount of data for everyday services, going beyond traditional banking to include things like bills, insurance, official documents, and more. As customers expect quick, seamless, personalized services and the ability to manage things on their own, along with increased mobility, there is a constant need to improve the design of these apps to enhance the user experience. While simple processes like current account opening are already highly automated, more complex products, such as long-term loans, still face challenges. These include the need for compliance checks by analysts and ongoing customer support. However, these barriers are gradually being overcome through the development of expert systems, such as credit scoring tools (Dimitrescu et al., 2022), more advanced chatbots (Mogaji et al., 2021), and robo-advisors for investment advice (Brenner & Meyll, 2020).

Internally, managing big data and handling operational risks – especially around authentication, open banking data sharing, and fraud prevention – remain ongoing challenges. In addition to internal issues, traditional banks also face increasing competition. They must adapt to compete with new players, including fully digital banking providers (neo-banks) and major tech companies (GAFAM) (Clot, 2019), which are offering innovative payment and credit services supported by advanced data management capabilities.

Next, innovations using distributed ledger technologies such as cryptoassets present both opportunities and new competitors (Liu et al., 2023; Matsui et al., 2022; Rossi et al., 2019; Zamyatin et al., 2019). However, they also pose significant challenges related to personal data protection, risks to monetary sovereignty, system fragmentation, and operational issues, particularly in cybersecurity. This creates a delicate balance between offering a seamless user experience and ensuring the security of financial systems.

This special issue focuses on user experience, encouraging us to rethink the profiles of financial service app users and how certain personal characteristics affect their trust. The article "*Subjective Financial Well-Being and Trust in Mobile Financial Service Providers*," co-authored by Jessie

Pallud, Maxime Merli, and Aymen Ammari, addresses this topic. The study, based on a survey of 1,075 respondents and a qualitative comparative analysis, explores factors such as personal innovativeness (interest in trying new technologies), perceived security, financial well-being, financial anxiety related to risk perception, and the challenges of managing the mental load of finances.

This study is particularly innovative as it goes beyond just combining technological and financial explanatory variables. It also aims to analyze the combined effects of these factors to identify typical user profiles. The study integrates both emotional and cognitive dimensions. By identifying profiles of individuals likely to trust new financial and banking service providers, it raises questions about whether these technologies can truly enhance the quality of financial decisions for the broader public.

Topic 3: Financial Decision Making and Corporate Accounting

New technologies are transforming the finance function within companies. Investment in strategic information systems is a key driver for gaining competitive advantages. Embracing new digital tools and artificial intelligence is therefore a priority for financial departments (Dong et al. 2021, Tong & Tian, 2023). The goal is not just to speed up processes, improve communication, or reduce costs, but to create a truly augmented finance function that can address new risks and identify emerging trends in an increasingly complex environment. By quickly and accurately analyzing large volumes of data, decision-support and information-sharing systems are reshaping company structures, providing new opportunities for growth and innovation. For example, predictive analytics, data visualization, and robotic process automation are significantly altering strategic dynamics and business organization (Ma & Wang, 2023). Solutions like electronic invoicing, integrated procure to pay/order to cash systems, and Software as a Service (SaaS) are changing relationships with stakeholders such as service providers, employees, customers, and suppliers. However, the digital maturity of finance functions – especially in France and among smaller businesses – still has a long way to go.

For financial departments, it's crucial not only to rethink how they carry out their missions in a unified way (covering planning, reporting, and data analysis) but also to adapt to the changing organizational structure by blending traditional responsibilities with proactive digital transformation. What impact do these new practices have on governance and business strategy? How can smaller companies manage this change? What organizational structures, roles, and processes are needed for the new missions in financial management and information systems?

One important step is to understand how tools are being used, particularly those that employees use without official approval from their employer. This situation was highlighted during the pandemic when many of us, as academics, had to quickly select a video conferencing platform to continue our work. Some chose the institution's licensed application, while others opted for alternatives. This phenomenon, known as Shadow IT (SIT), is the primary focus of Isabelle Lacombe's article, "*Does the Cloud Hide IT Costs? The Hidden Costs of Cloud-based Shadow IT*". The article examines how SIT is encouraged by available solutions, particularly in SaaS mode, from an accounting and financial perspective. The large transport company featured in this study aims to detect SIT in order to "rationalize and decommission" solutions, thus reducing costs over four years. To achieve this, accounting and financial data are analyzed to identify expenses, particularly in license, which then prompts internal action to eliminate unnecessary costs. Two interviews are conducted to compare the perspectives of the finance and IT departments. Together with an analysis of accounting data, these interviews shed light on the hidden costs of Shadow IT (SIT). The study explores why employees bypass official IT policies to use their own tools and offers managerial recommendations on how governance – particularly financial governance – can help detect and manage these unauthorized practices.

5. Conclusion

These contributions emphasize the need to study financial phenomena within their real-world context, taking into account their social and technological dimensions. Engaging in regulatory debates only makes sense when financial and digital practices - as well as the cultures behind them - are fully considered. Regulation must not only be relevant, it must also be practical and implementable.

This special issue encourages the development of a research agenda that aligns with current regulatory priorities. Regulators are increasingly incorporating digital aspects into their frameworks, as shown by several major European initiatives. These include the Digital Operational Resilience Act (DORA), which targets operational risks in the financial sector; the Markets in Crypto-Assets (MiCA) regulation; and proposals like Open Finance, which focuses on data access in financial services, and the “Digital Euro”, which explores challenges related to stablecoins.

There is still a wide variety of unexplored research questions in digital finance that are both timely and relevant. This growing interest is clearly reflected in academic output: in 2015, Scopus indexed just one publication using the term “digital finance” whereas by 2024, the number had surpassed 300. Table 1 offers a detailed analysis of emerging topics, revealing a group of frequently cited keywords spanning four key thematic domains.

Thematic Areas	Emerging Topics
Digital Transformation of Finance	Financial APIs, interoperability of financial systems, financial cloud computing, financial recommendation systems, quantum computing in finance
User Experience and Consumer Protection	Digital financial divide and inclusion, influence of digital nudges, financial gamification, decentralized identification systems, financial metaverse
Risk Management and Regulatory Compliance	Algorithmic risk models, automated transaction monitoring, financial cybersecurity
Economic Impact and Ethical Issues	Central bank digital currencies (CBDCs), decentralized finance (DeFi), sustainable finance and green tech, embedded finance, regenerative finance

Table 1. Emerging topics in digital finance by keyword (Source: Scopus and authors)

These emerging topics create valuable opportunities for interdisciplinary collaboration between finance scholars and information systems experts, paving the way for a more sophisticated, inclusive, and fair financial system.

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Declaration of Non-Use of Generative AI Technologies:

We hereby declare that no Generative Artificial Intelligence (AI) technologies were used in the conceptualization, data collection, analysis, or writing of this manuscript.