

The Potentials and Challenges of Blockchain Application in FinTech in the Developing Countries - a Mauritius experience

Dr. Rebecca Natrajan SFHEA

Faculty of Entrepreneurship, University of Roehampton Partnership & Ulster University Programme QAHE – London,

Dr. Chiene Ike Orji,

Faculty of Management, SBS Swiss Business School, Zurich, Switzerland,

Abstract: The adoption of Blockchain and FinTech innovation has grown at a rapid pace in the developing economies. Predictably, it provides these economies with global financial inclusion. Ditto for the African economies, especially Mauritius, which aspires to be a FinTech Hub and positioned to lead the Blockchain and FinTech innovation in the region. This paper aims to identify the potentials and challenges of Blockchain application in the FinTech industry in developing economies, using Mauritius as a case study. Real-life situations such as mitigation measure against Covid-19, for instance, brought about an uptick in the number of customers who make online purchases as opposed to the in-person shopping tradition in Mauritius; just as unmet customer needs in financial transactions are driving the interest in Blockchain-powered financial services in other economies of the region and other developing economies. The findings in this study shows that there is a combined will in the private and public sectors in maximizing the potentials of this innovation in Mauritius, but not particularly the willingness for collaborative exploitation. The Mauritius experience has important implications for understanding financial innovations and developing sustainable and inclusive finance.

Keywords: *Blockchain, FinTech, Blockchain in Mauritius, Blockchain in Africa, Developing economies*

I. Introduction

In recent years, technology-driven innovation, especially in financial services, otherwise referred to as "FinTech," has attracted increasing attention. Driven by the customer expectations of ease of doing business and elevated level of service consumption, many new FinTech start-ups and the traditional financial services industry as a whole are looking for new pathways to successful business models and the creation of enhanced customer experience (Mohan, 2020; Kaufmann et al., 2018; Cosby et al., 2016). FinTech start-ups and established players in the financial services industry explore and extrapolate the true potential of Blockchain technology as fundamental to the current and future financial service offering in what could be best described as a creative deconstruction of financial service delivery (Mention, 2019; Notheisen, Hawlitschek&Weinhardt, 2017). Covid-19 has proved that digital banking is no longer optional. It highlights the need for digital banking and the need for speed and scale.

While the traditional financial service firms as banks, for instance, are hooked on to the Blockchain revolution to efficiently transform key areas of the financial services, notably in operations management (Morabito, 2017), FinTechson the other hands, has simplified customer-centric approach to financial services. For instance, FinTech start-ups enable the hitherto unbanked populace and create the opportunity for the previously unbanked and "unbankable" members of the society to be active participants in the economy utilizing unique business models and innovative Blockchain-powered technologies. FinTech firms focus on serving customers with speed, reliability, convenience, and affordability (Mohan, 2020). FinTechs relying on Blockchain as the underpinning backbone technology provide disruptive business models in the financial sector, ranging from accelerated IPO and private equity exchange, smart contracts that enable faster, authenticated, and verifiable straight-through transaction processing, eliminating brokers, exchanges and banks who are the traditional intermediaries.

In all known successful and exploratory cases where Blockchain technology will be exploited in the future, both in its "permissioned" (e.g., LIBRA Coin) and "permissionless" (e.g., Bitcoin) models of implementation, the Blockchain presents itself as a secure, decentralized self-regulated and governing platform among the participants on the ecosystem of peer-to-peer payment and accounting (Christidis&Devetsikiotis, 2016). The challenge of adopting technological innovation such as Blockchain in an increasingly digitized business world requires a clear understanding of the role of information technologies and how they can be fastened to shape new businesses and scale-out expanded business models to real-life issues. Blockchain innovation has enormous potentials but also relative challenges in different settings.

As a developing nation with a high interest in exploiting technology, Mauritius provides a perfect study case. Mauritius strives to lead the African sub-region into the digital economy with massive investment in information technology infrastructure and portends to be the region's FinTech hub. The study nonetheless could be extrapolated to other developing economies of Africa and beyond because, as Mohan (2020) observed, emerging markets and developing nations generally have a sizable stake in FinTech. Arguably, it is in the developing world that Blockchain application in FinTech meets the real-world needs. Nevertheless, not many investors in this space are looking at the developing countries where the real potentials and impact on the global economy lies. Highlighting these potentials and addressing the challenges provides a compass against pitfalls in the investment and adoption of Blockchain technology in myriads of ways in which it is set to underpin businesses, especially in the FinTech industry in the developing economies. Therefore, this study is guided by two research questions:

1. What is Blockchain and its applications in FinTech?
2. What are the challenges and potentials of Blockchain and FinTech innovation/adoption in the developing economies?

II. Literature review

Blockchain technology has metamorphosed beyond its origins as the technology that powered Bitcoin and new digital monies as an alternative investment asset for which it is best known, and heads to a broad field of economic applications. It is increasingly recognized as one of the leading technological innovations of the 21st century that has the potential to reshape and disrupt several economic activities beyond the consumer-to-consumer transactions but also with the potential to redesign the interactions in business, international trade, politics, and the larger society especially in the developing societies (Alt, Beck & Smits (2018); Atzori (2015). Along with mobile technology and IoT, Blockchain technology has been identified by WEF, as the key to the government and corporations' sustainable development goals, especially when combined with environmental, social, and governance frameworks (Bourgi, 2020).

The Blockchain distributed ledger technology increases the effectiveness and speed of reconciliation (real-time processing) and increases the security of transactions between parties involved in buying and selling and their banks (Morabito, 2017). The ability to allow information to be distributed but not copied is one of the unique Blockchain offerings. So that only one person is the owner of each piece of information at one point in time. Considering such attributes of the technology, including decentralization, transparency, immutability, and automation, Blockchain is set to be adapted and implemented in a broad spectrum of industries ranging from Pharmaceutical, Financial, Logistics to Educational institutions.

There is a quiet revolution on Blockchain-enabled financial services in the African sub-region and elsewhere, ranging from small businesses' payments to remittances sent home from migrant workers. For instance, Nigeria is number two in the globally fast-growing peer-to-peer bitcoin marketplace, with transactions valued at more than \$566 million in 2020. HSBC Bank Bangladesh resorted to using Blockchain-powered letters of credit in cross-border trade settlement, importing 20000 tons of fuel from Singapore. Both cases are prime examples of using Blockchain technology to transparently, securely, and swiftly navigate the often restrictive and complicated banking and financial policies (Edward-Ekpu, 2020; Haig, 2020).

FinTech, which at its infancy was a term used in reference to technology applied to the back-end operations of established consumer and trade financial institutions, is increasingly establishing itself as Technologies that disrupt conventional financial services, such as mobile payments, money transfers, loans, fundraising, and asset management (Marr, 2017; Zavolokina, Dolata & Gerhard, 2016). The survey by Basel Committee on Banking Supervision (an agency of Bank for International Settlements, BIS) in 2017 identified sectorial areas where FinTech innovation is already actively exploited in the financial services industry, namely; credit, deposit and capital raising services, payment, clearing and settlement services, and investment management services. Hence, FinTech could be understood as both back-end

operations and front-end consumer serving financial technology. As an increasing number of technology entrepreneurs step into the industry, they transform it, adapt it to specific financial services, and address unmet social needs.

Conceptually, FinTech may be viewed as a financial service that uses innovative technology to fulfill major business requirements such as efficiency, cost reduction, business processes improvement, rapidity, flexibility, and innovation. The word 'FinTech' is often used, on the other hand, to refer to firms, especially start-ups, which act as facilitators of services of this kind provided by traditional financial institutions. Hence, as Kauffmann et al. (2018) observed, FinTech is both a "portmanteau of financial technology" but equally refers to an emerging financial services sector in the 21st century.

The rapid rise of FinTech has changed the business landscape in the financial service sector, long overdue for more innovative solutions. FinTech start-ups have lowered entry barriers to the financial services market, elevated the role of data as a key commodity, and drive the emergence of new business models, which are often disruptive. While acknowledging the potential threat posed by FinTech, an increasing number of traditional players in the financial services nonetheless perceive FinTech as a challenge that can be turned into an opportunity considering its potential to provide more flexibility, better functionality, and aggregation of services. (Romānova&Kudinska, 2016). Hence the recent tendencies by traditional banks to increase investment in FinTech. This tendency has equally served as a boost to investment in the FinTech industry. For instance, investments in FinTech increased substantially in 2018, with total global investment dollars across mergers and acquisitions, private equity and venture capitals from 18.9 billion dollars in 2013 to \$111.8 billion in 2018 and \$135.7 billion with 2693 deals globally in 2019 (Pollari&Ruddenklau, 2020; Pollari&Ruddenklau, 2019).

At a glance, it would appear that FinTechs are in direct competition with the traditional financial institutions, which to an extent they are. However, the value is more in understanding the symbiotic value relationship that could emerge from the value offerings and business model emanating due to their coexistence. This is especially true when considering the precipitating factors to the emergence of FinTech and how it underpins the traditional institutions. As Zavolokina, Dolata & Gerhard (2016) observed, the factors that stimulate financial service innovation are the same as the ones that drive the rise in FinTech, namely "market incompleteness, unfulfilled needs of market players; agency issues and information asymmetries, referring to conflict of interests between the involved parties; transaction, search or marketing costs, meaning innovations which aim at cost reduction."

While some of the FinTech start-ups are looking to compete directly with financial institutions, others have primarily focused on developing cloud, artificial intelligence (AI), and machine learning products to enable banks and other financial institutions to launch their FinTech solutions or enhance their internal efficiencies. Many FinTech companies have recognized the opportunity to help banks comply and get ready for open banking, such as data sharing, customer management, consent, entitlement, and digital identity management (Pollari&Ruddenklau, 2019). As FinTech will continue to drive effective change in the coming decades, established banks are learning that collaboration with FinTech entities offers the best road to remaining competitive.

2.1 Potentials and Challenges of Blockchain in FinTech in the developing economies

The growth potential for Blockchain is vast and on the rise. Via public-private partnership deals, Blockchain technology is finding real-world utility across Africa to solve some of the continent's burning issues and is being explored and exploited in different spheres of societal living from insurance, banking, and public accounting to road transportation (Awan-Namayo, 2019). Blockchain technology provides a platform for Africa to elevate itself to greater relevance in the global economy. Decentralized technologies as Blockchain have gained momentum in Africa though still in the early stages, effectively addressing the most pressing economic, social, and political problems of the continent.

Especially for the FinTech, Africa provides untapped potential for growth in business and Blockchain adoption. Considering the high level of mobile phone penetration in Africa, with 80% of the population in possession of mobile phones, the African market is generally well suited for FinTech growth. Cryptocurrency is becoming a de facto currency for international trade, and various digital financial transactions are becoming mainstream. As Akin Sawyerr (2020) noted, "People often find it difficult to move money around within the continent, so they resort to various Blockchain platforms for this." Bitcoin, for instance, is increasingly popular for payments within the continent and for imports from Asia by many African merchants.

As nearly 60% of the population is still unbanked, the continent provides tremendous market potential especially for financial services where FinTech by the nimble nature of services it provides is most suited to service (Shumsky, 2020). FinTech innovators are starting to get in on the action as the race to dethrone cash is heating up in the continent. FinTech providers can start building their businesses on a clean slate and avoid the challenges and setbacks experienced in already well-serviced developed markets. Unlike Europe and other developed markets, financial services are not a nice-to-have in Africa but a need-to-have. For instance, Mpesa in Kenya alone has over 200 million subscribers in a short space of its existence. The trend is the same in most African countries where the rural populace is experiencing digital penetration, boosting economic participation and integration into the digital economy for this set of hitherto untapped potentials. Mainstream financial institutions are also exploiting the FinTech innovation opportunities in front-end customer service and back-office activities using Blockchain technology as the backbone to fulfill specific needs for defined customer segments. Here also the traditional institutions have the advantage to synergize with and leverage on the business opportunities provided by the FinTech providers.

The potentials notwithstanding, challenges abound in the introduction and adoption of FinTech in the region, similar to commonly known challenges elsewhere, albeit relative variances and peculiarities of the local environment. The challenges identified in the developed societies with more advanced adoption of Blockchain technology are also visible in the developing societies at the early stages of adoption. The most identified cross-societal challenges include:

- Awareness of the product and potentials
- Technological security challenges
- Image of the precursor products - bitcoin, crime, misuse, and money laundry
- Political /legal- regulation/governance/security
- Consumer protection and
- Mindset and economic acceptance

III. Methodology

This study adopted the qualitative method of inquiry. The focus of this study and choice of the qualitative methods used was derived from a comprehensive literature review of journal articles dealing with different aspects of Blockchain and FinTech (Lim, Bahr & Leung, 2013) and the nature of the study participants and the environment. The approach of this study is based on two main steps: (i) a case study approach considered relevant when analyzing emerging complex phenomena such as the adoption and use of, Blockchain and FinTech (Eisenhardt, 1989; Yin, 1994) for theory building (Benbasat, Goldstein & Mead, 1987). (ii) conducting a literature review.

Initially, the research used focus group discussion to derive the interview questions. Then using the questions, a semi-structured interview was conducted via phone, email, and skype. Secondary sources were also used when analyzing information related to the research organizations. This research considered ethical practice, and it ensures that the respondents who participated in the questionnaire for semi-structured interview are aware of why the research is being conducted and how their answers will be secured. For example, the researchers assured the respondents that information on income accrued, profitability, consumer orientation, and key suppliers will remain undisclosed and protected throughout the process.

IV. Research findings

Generally, the issues faced in the adoption of Blockchain technology in both the advanced and the developing economies share some similarities such as highlighted in the preceding section. The most peculiar of the challenges in Blockchain innovation and exploitation in the developing societies and Mauritius in particular based on this study is informational. Awareness is at the root of the setback to the accelerated take-off of technological adoption, even when the advantages to the economy are apparent. As Awan-Nomayo (2019) observed, a lack of awareness is one of the most significant barriers to the more broad-based use of the technology in the region in general. He further observed that the "absence of clear-cut regulations and minimal support from various governments have also had a negative impact on the rollout of pilot projects that could provide solutions to some of the problems plaguing the continent."

The probing questions in the semi-structured interviews were meant to ascertain the status, potentials, and constraints to adopting and using Blockchain technology in Mauritius. They were framed around the following question categories; business opportunities, level of maturity (adoption stage), awareness, environment for entrepreneurs, and government incentives.

- i) **Business opportunities:** The main economic sectors of Mauritius are manufacturing (12.5%), the financial sector (11.1 %), followed by tourism, retail, and ICT (5- 6 %). This is an opportunity-ripe scenario for late-stage technology adopters, especially in the financial sector, which occupies the second position in Mauritius's economic sectors. Findings show that business opportunities are abundant as the fundamentals are in existence. However, it requires the determination to explore the terrain and navigate the often-complicated relationship between the economy and politics.
- ii) **Awareness:** Only a few entrepreneurs, mostly financial institutions, are able to distinguish between FinTech products and Blockchain technology. Financial institutions that sanction the loan for start-ups, government agencies, and government authorities have little awareness or no awareness about Blockchain. However, educational institutions create awareness among the students who pursue business or information technology degrees providing examples, which are more theoretical in nature. This equips them with the requisite theoretical understanding, which will be useful as a foundation for building up products and services around the technology.
- iii) **Entrepreneurial investments opportunities:** The current business climate created a platform for investment opportunities in the manufacturing industry, such as the export of pharmaceuticals, the export of medical devices, and the jewelry sector's mainstays of the economy. This provides opportunities to adopt Blockchain in the logistics and distribution of these products and broaden the scope of application beyond the FinTech industry.
- iv) **Economic incentives for adoption:** The incentives offered for business start-ups are more favorable to the manufacturing units than the FinTech companies are. Economic factors such as financial five-year plans are more favorable to most manufacturing and pharmaceutical sectors than FinTech. However, in addition to the ongoing campaign, more initiatives and educational level awareness can enhance these environments to support early and late adopters. There is a small shift in the direction due to COVID -19 and the effort undertaken by the African Mauritius FinTech hub and the financial systems the embedment of Blockchain implementation culture is encouraged.
- v) **Macro environmental influences:** There is a relative lack of support from the government in facilitating investments in this industry, as exemplified in the excess documentation required from the government to execute the programme. Though the government runs several programmes through MAFH(Mauritius African FinTech Hub), the bank and government organizations' inquisition on the entrepreneurial trade secrets prevents the entrepreneur from seeking institutional support. Often there is a mistrust based on real or potential fear of politicization, poaching on intellectual proprietary, and dismantling the enterprise. As one of the Blockchain entrepreneurs in the study puts it:
"We do not want to share our information with the government as the bureaucracy is too much, and also we afraid our credibility will be lost."

V. Conclusion

Blockchain technology is set to govern the future of global trade and finance with enormous promise in cost reduction, transparency, and security. However, at its current level of dispensation, both research and practice are still struggling to understand the true potential of Blockchain technology and the framework that ensures value generation. Ditto for the developing economies, mostly forgotten in the discussion, but which peculiar challenges nonetheless needs to be identified, and its experiences shared. In fact, Africa like other developing economies have provided Blockchain and FinTech the impetus they lacked elsewhere and portend to be the best use case for Crypto.

The components of a business environment such as political, technological, economical, sociological, and legal environment play a pivotal role in the survival and growth of any innovation. Applications of Blockchain in FinTech are still in their infant stage in Mauritius, and it requires mentorship and support from the early adopters in the advanced economies and the host government agencies. The Mauritius Africa FinTech Hub (MAFH) is a fast-growing ecosystem where entrepreneurs, corporations, governments, tech experts, investors, financial service providers, universities, and research institutions can collaborate to build cutting-edge solutions for the emerging African market.

In Mauritius, as is also in most of the developing economies, navigating the terrain of the often-confounding business and political environment is cumbersome. However, in Mauritius, the fundamentals are present in technological infrastructure and the willingness to adopt the technology. A few things highlighted in the preceding sections nonetheless need to be addressed if the potentials of Blockchain technology and the regional FinTech hub aspiration would be realized. The environment in Mauritius and the region offers a fertile and rewarding environment for investors interested in Blockchain-powered investments especially in the financial services industry.

References

- [1]. Alt, R., Beck, R. &Smits, M.T. (2018). FinTech and the transformation of the financial industry. *ElectronicsMarket*, 28:235-243
- [2]. Awan-Namayo, O. (2019). Africa Using Blockchain to Drive Change. *Cointelegraph*, September
- [3]. Atzori, M. (2015). Blockchain Technology and Decentralized Governance: Is the State Still Necessary? University College of London - Center for Blockchain Technologies. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2709713
- [4]. Benbasat, I., Goldstein, D. K., & Mead, M. (1987). The case research strategy in studies of information systems. *MIS Quarterly*, 11(3)
- [5]. BIS (2017) Sound Practices: Implications of fintech developments for banks and bank supervisors. Bank for International Settlements publication. BIS website (www.bis.org)
- [6]. Bourgi, S. (2020). The World Economic Forum calls blockchain key to sustainable digital finance. <https://cointelegraph.com/news/world-economic-forum-calls-blockchain-key-to-sustainable-digital-finance>
- [7]. Christidis, K. &Devetsikiotis, M. (2016). Blockchain andSmart Contracts for the IoTs, IEEE Access, Special section on the plethora of Research in IoT, pp. 2292-2303, 2016
- [8]. Cosby et al. (2016). BlockChain Technology: Beyond Bitcoin. *Applied Innovation Review*, Issue No. 2 June 2016
- [9]. Edward-Ekpu, U. (2020). Nigeria is now the No.2 bitcoin market on this fast-growing global marketplace. Quatz Africa. <https://qz.com/africa/1947769/nigeria-is-the-second-largest-bitcoin-market-after-the-us/>
- [10]. Eisenhardt, K. (1989). Building Theories from Case Study Research. *The Academy of Management Review*, 14(4), 532-550. Retrieved December 30, 2020, from <http://www.jstor.org/stable/258557>
- [11]. Haig, S. (2020). HSBC Bangladesh uses blockchain to import 20,000 tons of fuel oil from Singapore. *Cointelegraph*. <https://cointelegraph.com/news/hsbc-bangladesh-uses-blockchain-to-import-20-000-tons-of-fuel-oil-from-singapore>
- [12]. Kaufmann, R. J. et al. (2018). On the Fintech revolution: Interpreting the forces of innovation, disruption and transformation in financial services. (2018). *Journal of Management Information Systems*. 35, (1), 220-265.
- [10]. Lim, M. K., Bahr, W. & Leung, S. (2013). RFID in the warehouse: a literature analysis (1995-2010)ofitsapplications, benefits, challenges and future trends. *International Journal of Production Economics*, 145 (1), pp. 409-430.)
- [11]. Marr, B. (2017). The Complete Beginner's Guide To FinTech Everyone CanUnderstand. <https://www.forbes.com/sites/bernardmarr/2017/02/10/a-complete-beginners-guide-to-fintech-in-2017/#a46b67533402>
- [12]. Mention, A-L. (2019). The Future of Fintech, *Research-Technology Management*, 62:4, 59-63,
- [13]. Mohan, D. (2020). The Financial Services Guide to Fintech Driving Banking Innovation ThroughEffective Partnerships. Kogan Page Publishing
- [14]. Morabito, V. (2017). Business Innovation Through Blockchain. The B3 Perspective. Springer International Publishing
- [15]. Notheisen, B., Hawlitschek, F. &Weinhardt, C. (2017). Breaking Down the Blockchain Hype – Towards A Blockchain Market Engineering Approach. Association for Information Systems, Spring
- [16]. Pollari, I. &Ruddenklau, A. (2019). The Pulse of Fintech 2018. Biannual global analysis of investment in fintech. KPMG publications
- [17]. Pollari, I. &Ruddenklau, A. (2020). Pulse of Fintech H2 2019. KPMG publications

- [18]. Romānova, I. &Kudinska, M. (2016), "Banking and Fintech: A Challenge or Opportunity?", Contemporary Issues in Finance: Current Challenges from Across Europe Contemporary Studies in Economic Financial Analysis, Vol. 98
- [19]. Sawyerr, A (2020) Africa Tech summit Kigali February 2020, AppsAfrica publication
- [20]. Shumsky, P: (2020). How to Launch a Digital Bank in Africa: Top 5 White Label Solutions. <https://www.finextra.com/blogposting/18843/how-to-launch-a-digital-bank-in-africa-top-5-white-labelsolutions>
- [21]. WEF (2019). Building Value with Blockchain Technology: How to Evaluate Blockchain's Benefits. WEF publication.
- [22]. Yin, R. K., (1994). Case Study Research Design and Methods. Applied Social Research and Methods Series. Second edition. Thousand Oaks, CA: Sage Publications Inc.
- [23]. Zavolokina, L., Dolata, M. &Schwabe, G. (2016). FinTech -What's in a Name? In: Thirty- Seventh International Conference on Information Systems, Dublin, Ireland