Fintech and Sustainability

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Current concerns about environmental issues have led to many new trends in technology and financial management. Within this context of digital transformation and sustainable finance, Fintech has emerged as an alternative to traditional financial institutions. This paper, through a literature review and case study approach, analyzes the relationship between Fintech and sustainability, and the different areas of collaboration between Fintech and sustainable finance, from both a theoretical and descriptive perspective, while giving specific examples of current technological platforms. Additionally, in this paper, two Fintech initiatives (Clarity AI and Pensumo) are described, as well as several proposals to improve the detection of greenwashing and other deceptive behavior by firms. The results lead to the conclusion that sustainable finance and Fintech have many aspects in common, and that Fintech can make financial businesses more sustainable overall by promoting green finance. Furthermore, this paper highlights the importance of European and global regulation, mainly from the perspective of consumer protection.

Keywords: Fintech ; sustainability ; green investment ; socially responsible investing (SRI) ; green finance ; greenwashing ; digitization

1. Introduction

Currently, more and more new issues are emerging that affect financial management. These are the consequence of increasing customer concerns for sustainability and respect for the environment in the goods and services they purchase and consume, as well as with growing digitization.

Important examples of these issues are corporate social responsibility (CSR) and environmental, social, and governance (ESG) factors. Similarly, the 2030 Agenda for Sustainable Development Goals (SDGs) promoted by the United Nations plays an important role in combating climate change.

The growing awareness of global warming and its negative impact on the planet means that customers are increasingly demanding ecological or environmentally friendly products for a more sustainable lifestyle. Customers, investors, and public administrations are exerting increasing pressure on organizations to obtain more transparent information on the environmental impact of their activities. For example, Nielsen Media Research reports that “66% of global consumers” (and 73% of millennials) [1] “are willing to pay more for environmentally friendly products. Thus, when these customers perceive firms to be socially responsible, they may be more willing to buy the products of these firms, and at a higher price” [2].

Hence, firms strive to differentiate their products and their brands from their competitors, setting up “green marketing” campaigns and modernizing their technologies. In addition, they compete for consumers’ approval by advertising their products as environmentally friendly. These green marketing initiatives “are helpful to consumers by letting them know which products possess said green properties, but only if the claims in advertisements and product descriptions are honest and accurate” [3].

On the one hand, the innovations of green technologies provide additional financial resources, because green investment is an alternative option for financing such modernization. On the other hand, the existing competition for obtaining green-oriented investors and consumers leads to the use of “greenwashing” by companies as an unfair marketing instrument [4].

Greenwashing is a set of deceptive behaviors or practices that deliberately mislead consumers about the ecological activities of an organization or the environmental benefits of a given product, which appear to be sustainable but are not. Such practices are conducted using ambiguous words and images in the description of the environmental features of a product or via vague, unprovable, and even false ecological claims, exaggerating the ecological features of the product by omitting or masking important information, or by presenting data in a misleading way.

In other words, “greenwashing” is an attempt by a company to make its products appear environmentally friendly when, in reality, they are not. The concept was created by Jay Westerveld in 1986 and can be defined as “the intersection of two firm behaviors: poor environmental performance and positive communication about environmental performance” [5].

Certain factors, such as CO2-neutral certification, contribute to this phenomenon, as they allow a highly polluting company to appear ecologically sound by attaching a green label with this kind of certification for its products. However, such labels are not always meaningful, and it is important to distinguish reliable companies and those providing independent verification with standardized protocols from those that are not.

Greenwashing practices undermine the credibility of any corporate social responsibility (CSR) endeavor, since they threaten to negate the effects of communicating a company’s efforts to act in an environmentally and socially responsible manner. At the same time, they threaten to erode customer confidence. “Whereas reporting about corporate social responsibility (CSR) initiatives is a reasonable and even often economically sound thing to do, greenwashing threatens to dilute the entire CSR movement, thereby reducing the pressure on companies to act economically and socially responsibly”. Moreover, we must consider that “greenwashing is hard to detect with reasonable effort, so it goes unnoticed most of the time”, and “even if greenwashing is detected, it is not perceived as very negative” [6].

As a result, “consumers increasingly mistrust statements regarding CSR, as they suspect they are being lied to, or important information is being withheld”. Moreover, because greenwashing is not often detected, it “thereby does not have any negative consequences for the respective manufacturer or vendor” [3].

In addition, concern for the environment and sustainability not only affects consumers but also investors, who increasingly consider certain non-financial attributes in their investments, such as environmental, social, and governance (ESG) criteria. Related to this is socially responsible investment (SRI), which “appeals to investors who wish to go beyond the financial utility of their investments and derive non-financial utility by investing in companies that reflect their social values” [7].

It must also be considered that “investors are increasingly willing to incorporate into their investment decisions not only financial criteria (returns and risk), but also the non-financial attributes of SRI” [8] and that “country-specific factors tend to affect the relationship between corporate social and financial performance” of a company. Another issue to bear in mind is that “there is some evidence that the label “socially responsible” might be more a marketing strategy, thus not assuring investors that an SRI fund is really socially responsible” [8].

Related to the above are “green bonds”, a type of fixed-income instrument applied exclusively to the partial or full financing or refinancing of eligible green projects, whether new and/or existing, which are in line with the four core components of Green Bond Principles (GBP) [9]. There are different kinds of green bonds on the market, and in 2019, $257.7 billion in green bonds were issued, a 51% increase on the 2018 figure and constituted a new world record [9].

Furthermore, as the supply and demand for sustainable financing have evolved, several providers of (new) products and services have emerged over recent years. These providers offer solutions for the (new) needs or demands set out in the new sustainability paradigm. These new products and services have emerged in support of the ecological transition process to promote the link between sustainability and economic and financial activities. Their various objectives include increasingly available information on climate; support for the design of more sustainable products and services; and the improvement of public transparency and information. For example, in Spain, the Fundación Ecología y Desarrollo, or ECODES (Ecology and Development Foundation), offers a climate-change risk assessment model that enables the financial sector to assess the predisposition to risks and opportunities of its credit and investment portfolios. This service was designed to be used by the banking sector, but is also useful for other financial sector entities, such as fund managers, investment advisers, insurance companies, and public sector entities in charge of socio-economic planning and development [10]. On a global level, the organization that conducts this kind of activity is the Intergovernmental Panel on Climate Change (IPPC), the United Nations body for assessing the science related to climate change [11].

Notwithstanding the above, digitization, internationalization, and risk analysis must not be forgotten. These are some of the most widespread business practices in the current era and are being increasingly used in the financial field, in general, and financial management, in particular.

Within the digital and technological context, the special importance of so-called “Fintech” must be highlighted. Fintech refers to the latest technologies used in innovative financial products and services. This is one of the most important new markets in recent times, and this cutting-edge business model has great potential for the collaboration of different types of institutions, both public and private.

Fintech [12] comprises digital innovation and modern technology to improve, develop, and automate financial services and is used to assist and support firms, investors, and customers in managing their financial activities using specialized applications and software [13]. Fintech generally attracts customers with more user-friendly, efficient, transparent, and automated products and services [14].

More specifically, Fintech includes new applications, processes, products, and business models in the area of financial services, consisting of one or more financial services, mostly or entirely provided over the internet, “simultaneously by various independent service providers, typically including at least one licensed bank or insurance company” [15]. Some of the financial services provided may include investment advice (robo-advising), credit decisions, asset trading, digital currencies, automatic transactions, payment settling, crowdfunding, person-to-person transactions (P2P), and smartphone wallets [15].

The current era in the evolution of Fintech is called “Fintech 3.0”, which began in 2008, and whose first years were dominated by the global crisis and financial turmoil, when there was a loss in trust in the banking system. Then, technological firms began to operate using peer-to-peer networks outside the regulatory framework (in fact, 2000 of these platforms were developed in China) [16] and to apply new technologies in the financial markets, changing the way of doing business in all financial sectors [17]. This development is ongoing [17], and banks today are being displaced by technological firms and start-ups at a rapid pace [16]. According to Moro-Visconti, Cruz Rambaud, and López Pascual, some of the reasons for this rapid evolution of Fintech are the sharing and circular economy, favorable regulation, and information technology [14].

Initially, the largest Fintech market was developed in the US, followed by the UK (the most important Fintech market in Europe) [18]. The European and American Fintech properties and background differ from the Asian Fintech, which specifically offers solutions for a lack of existing banking infrastructure [19].

Establishing Fintech is easier in well-developed economies, because the infrastructure and market regulations are there already. This infrastructure and affordable technology are critical to creating sustainable, unique financial innovation, although Fintech development often occurs in economies where access to loans is more difficult [18]. In fact, “scalability plays a key role in new financial start-ups, and Fintech’s profits remain quite small until a scalable number of customers has been convinced. This scalability of processes can be achieved by platform creation, which leads to economies of scale and, hence, reduced costs, and user networks being built” [17]. Additionally, “financial inclusion can positively affect the economy in terms of poverty reduction and economic growth, and innovations in digital finance can positively influence banks’ performance and profitability” [17][20]. “Fintech’s key advantages are greater control of customers’ personal finance, rapid financial decision-making, and the ability to make and receive payments within seconds, although this results in a trade-off between efficiency and (data) security” [17][20]. Therefore, “from a regulatory perspective, the greatest challenges are then to ensure both consumer and investor protection and to guarantee financial stability” [17].

Fintech “allows performing business transactions from anywhere at any time, which gives flexibility to all actors” [13]. Companies that have developed Fintech have more innovative methods of extending banking services to customers and investors through cellphone apps, with increased flexibility and efficiency of financial services, and with the promise of saving time and costs through the use of digital technologies [13]. Furthermore, Fintech is a key driver “for financial development, inclusion, social stability, and integrity, and consequential sustainable development through building an infrastructure for an innovative digital financial ecosystem” [12]. It makes financial services more accessible, efficient, and affordable for customers and changes the ways of providing traditional services, representing the digitization of the financial industry [17].

“Fintech is also regarded as an engine for sustainable economic growth as a new industry having different characteristics from the traditional financial industry”. With high expectations for growth, global Fintech investments have greatly increased. In fact, KPMG reported that “global investment in Fintech has doubled more than six times, from $18.9 billion to $111.8 billion between 2013 and 2018” [21].

Moro-Visconti, Cruz Rambaud, and López Pascual state that, “despite the young age of Fintech, many of these firms are experiencing significantly faster growth than their traditional financial services peers” [14]. In addition, since they belong to a growing industry and not a mature one, they are slightly more volatile than IT firms and much more volatile than traditional, established banks. This higher volatility was reflected in March 2020 in a much steeper fall than banks, followed by a more sustained recovery, “incorporating the digital resilience typical of most technological firms”. “Whereas Fintech and technology stocks have fully recovered from the negative peak of 23 March 2020, banks (as of 30 June 2020) were still some 25% below their pre-COVID-19 prices” [14].

Experts claim that “Fintech has the potential to disrupt and transform the financial sector by making it more transparent, secure, and less expensive” [15], as financial products traditionally offered by licensed credit institutions (payment services and loans, among others) are now also offered by Fintech. It supports a greater diversity of products and providers, and offers improved risk management, with its ability to obtain instant customer feedback and use it to power real-time adjustments in the services offered [14].

However, for the last decade, large financial institutions have increased their interest, along with investments, in Fintech innovations, to the point that, in 2019, most competitive financial institutions considered Fintech to be their major investment [15]. Both operate in the same (financial) market and sometimes share customers [14]. In fact, it is expected that financial institutions will be able to reduce their costs and increase customer inclusion with the help of Fintech, leading to an increase in profits. Thus, Moro-Visconti, Cruz Rambaud, and López Pascual also believe that Fintech will “disrupt and reshape the financial industry by cutting costs, improving the quality of financial services, and creating a more diverse and more stable financial landscape” [14]. It will also lead to greater access to finance and investment, which offers great potential to transform not only finance but economies and societies, in general, through financial inclusion and sustainable, balanced development [14].

At present, new sector entrants aim to develop new, more customer-centric and digitally enabled services and, with key technology evolving “rapidly alongside changing consumer needs, industry leaders will be forced to compete with start-ups and tech companies for the new business models” [15]. Market leaders can benefit from this technological disruption, since “they have more financial resources and greater economies of scale for introducing new lines of business, compared to competitors”, and the “amount of resources allocated to R&D&I can increase the agility of market leaders to mitigate damage from potential external disruptive innovations” [15].

“Fintech’s technological advantage over traditional financial institutions is the key driver of success and competitive advantage. Fintech’s technologies should have a value-added for the customer (“customer-centricity”), and mobile and data-based services can enhance efficiency. Another characteristic of Fintech is its ability to connect people or services through platforms” [17].

“Nowadays, customers choose the best service from a variety of companies, and traditional financial institutions increase their investments in external financial start-ups to stay competitive” [17]. This type of collaboration between Fintech and traditional institutions can take different forms, such as partnering, outsourcing, or investment as a venture capitalist [17].

Banks have changed their role in funding new financial technology entrepreneurs, since they now serve as a major provider of funding for young companies. Thanks to digital technology development, they have shifted from traditional money-lending activities to become stakeholders in Fintech and, therefore, equity investors [17]. Some authors [17] recommend “collaboration and trust-based relationships to mutually benefit Fintech and established banks”, as Fintech “must be operated by experienced founders with a clear vision”, because “investors expect founders to run the business successfully from Day 1” [17]. Moro-Visconti, Cruz Rambaud, and López Pascual state that all these ideas can be summarized by the word “co-opetition”, according to which Fintech and banks are both able to compete and cooperate [14]. It is frequent practice for banks to internalize Fintech by buying it, so both “converge towards a common market, with co-opetition strategies that reduce conflicts of interest and other governance concerns. This strategic convergence is also catalyzed by the very fact that banks are digitizing their business models, thus reducing their atavistic differences” [14].

Fintech is the most cutting-edge technological innovation in the field of finance. Although most Fintech is specialized in one market segment, it can create value in every field of finance, using different business models, such as: payments, wealth management, crowdfunding, lending, and capital market business models [17]. They also use various tools, such as “cryptocurrencies and blockchain, new digital advisory and trading systems, artificial intelligence and machine learning, peer-to-peer lending (P2P), equity crowdfunding, and mobile payment systems” [22]. Currently, M-banking (mobile banking) and digital payments are the most popular Fintech solutions, with growing significance due to contactless pandemic prescriptions [14].

Fintech is quite disruptive because of its great innovations for the financial system and other infrastructure, which affect many other areas, such as the economy, society, and the energy sector [22]. Furthermore, Fintech has several effects on social, environmental, and ecological benefits in promoting the use of funds for energy and environmental projects, as well as the construction of renewable energy and environmental infrastructure, “leading to environmental and ecological development by providing cheap and adequate financing” [22].

To summarize, Fintech offers new ways of doing business in financial markets through the implementation of platforms, thanks to “technological implementation, related digital economy business models, and integrated services from different

areas", providing "offerings beyond the traditional banking boundaries" [17]. Moreover, technology is creating value in financial services, as costs are being dramatically cut (for instance, branchless customers do not need to spend time or energy going to the bank), revenues are increasing, because banking is available anytime and anywhere, and transactions are faster [14].

The main purpose of this paper is to research the relationship between Fintech and sustainability, analyzing the particular case of two different Fintech initiatives: "Clarity AI" [23], a technological platform aimed at aligning financial portfolios with ESG criteria, and "Pensumo" [24], which is linked to consumption and savings for pension plans. Specifically, the effect of greenwashing in Fintech companies and the possibility of using Fintech to promote sustainability will be analyzed, and how "Clarity AI" and "Pensumo" can contribute to this goal will be discussed. A set of recommendations and improvement measures will be proposed for apps related to sustainability, corporate social responsibility (CSR), and greenwashing, all via a literature review and case study approach.

2. Fintech and Sustainability: Do They Affect Each Other?

Having examined the relationship between Fintech, sustainability, and environmental development and after analyzing two important examples of sustainable Fintech platforms, both general and specific proposals for improvement to make these Fintech initiatives even greener and more environmentally friendly will be discussed. These proposals must consider consumers, as it is essential for them to be informed and aware of the behavior of the businesses they deal with regularly, as well as for the bonds and stocks they invest in.

2.1. Proposals for Commercial Solutions

On the one hand, although Clarity AI already uses big data and machine learning to assess the sustainability and environmental impact of companies and investments, we believe it would be advisable to offer investors complete information on the behavior and impact of different companies. This is because it is important to show investors the social and environmental impact of their portfolios and recommend how they should optimize this impact and performance; it is also essential to explain the reasons why they should or should not invest in a specific fund or company.

This could be achieved by including a descriptive section in the platform on the behavior, relevant data, and analysis of the sustainability reports, and even news on the most important companies and funds. Considering this kind of information, users would be able to understand the reasons why they are being advised to invest, or not, in a certain firm, stock, or fund. In addition, it would be essential to keep investors informed of recent environmental and social scandals, perhaps by creating an "alarm" or notifications system that would provide them with more timely and accurate news.

On the other hand, even though Pensumo already takes into account issues such as sustainability, the environment, and recycling, and despite the fact that CSR is a basic and essential requirement for all companies wishing to be part of its network of collaborators, we believe it is difficult to verify whether company behavior is actually sustainable or whether the company is merely greenwashing.

Thus, we believe several improvements could be made to the app, so that it directs consumers towards even more responsible behavior, by taking a step further in respecting the environment and achieving a more sustainable society.

In addition to the behavior and values Pensumo rewards, such as local commerce, volunteering, recycling, and/or maintaining an active and healthy life, we believe this Fintech company could promote better information for users about the goods and services they purchase and the activities of the brands they normally consume. Thus, an aware, well-informed consumer who chooses companies and brands that respect society and the environment should be rewarded and not only in the field of local commerce but in all the areas of a consumer's life.

We believe that an improvement to the app would be to encourage the consumption of goods and services from brands and companies that are truly respectful towards the environment, and with each purchase made in these companies, the consumer using Pensumo would accumulate new savings in their pension plan. Thus, fully responsible and informed consumption would be promoted not only in local establishments or businesses but also in all companies with which the consumer interacts.

For example, consumers could try to inform themselves about the social and environmental behavior of their electricity supply company, their bank, their telephone company, their internet service provider, their home furniture manufacturers, the hotel chains where they spend their holidays, and the restaurants where they go for lunch or dinner.

However, it is difficult to know if a company is behaving responsibly and if its products and services are truly ecological or environmentally friendly. As explained in the Introduction, there are currently many companies involved in deceptive practices to make potential customers believe they respect the environment, when in fact this is not the case. Thus, corporate social responsibility (CSR) reports should include information about known greenwashing practices.

One possible improvement for Pensumo could be the introduction of a QR code reader in the current app. This could scan the company codes with which consumers interact, codes that would link to CSR or Sustainability Reports of specific companies. Then, after analyzing these reports, consumers will be able to determine whether the company they are about to carry out a transaction with is truly a responsible company. Reading the QR code could allow for company press releases to be traced, to ascertain whether they have been involved in any type of scandal. This would allow greenwashing factors to be known, and the potential investor would find out how sustainable the company actually is and how it meets CSR criteria. It might also be interesting for the app itself to suggest more ecological or sustainable alternatives to particular companies and products.

2.2. General Proposals for Sustainability in the Fintech Sector

In general, to promote a more environmentally informed society, more standardization would be required in both the format and metrics of ESG reporting and sustainability reports. Thus, ESG reporting, benchmarking, and rating could be improved with new technologies such as AI, big data analytics, and DLT. These tools could compile information from disparate sources (including articles), “processing of large amounts of data (even non-standardized and unstructured) about companies’ social and environmental impacts, as well as translation in more standardized and comparable data, with positive effects on pricing accuracy and the level of reliability of ESG data” [25]. In fact, a large amount of data from “NGOs, specialized websites, and satellites (publicly available through the European Union’s Copernicus network and the US Landsat network) might be combined and processed by AI to track air pollution and emissions by single power plants and, more generally, double-check information provided by companies” [25].

Another important point to consider is Fintech regulation, since, according to Moro-Visconti, Cruz Rambaud, and López Pascual, this will be the key to determining the kinds and number of Fintech companies entering the industry and who the dominant players are [14].

In 2018, the European Commission adopted the “Financing Sustainable Growth” Action Plan to redirect private capital towards more sustainable investments and the Fintech Action Plan, with the aim of creating a harmonized and dynamic European framework for Fintech. The Commission released a package of proposals to implement ESG considerations in the decision-making process of investors, including “a Regulation with criteria to determine the environmental sustainability of economic activities (Taxonomy Regulation) and therefore clarify for investors what activities can be considered to be “green” and used as a basis for standards and labels for sustainable financial products” [25]. The final text of this regulation was signed by the Parliament and Council on June 18, 2020, with the aim of reducing greenwashing and market and regulatory fragmentation among the Member States. “The Commission is also evaluating the opportunity of introducing, also for non-financial information, a European Single Electronic Format (ESEF), as for financial reporting, of issuers in regulated markets” [25].

In addition to all these measures and regulations, we believe it would be appropriate to continue improving European and Global regulation of Fintech companies and sustainability criteria to enable investors and consumers, in general, to “access adequate non-financial information from companies (limiting companies’ discretion and wide variations in standards) while at the same time reducing the unnecessary burden on companies” [25] and aligning those legal documents with EU taxonomy.

It will be important in the near future to adapt company reporting and transparency, accounting standards and rules, sustainability research and ratings, labeling tools for financial assets and products, and corporate governance. Moreover, it will be necessary to increase “opportunities for citizens, financial institutions, and corporates to actively engage in the sustainable finance debate regarding green investments and investor protection, through varied actions such as the development of guidelines for financial advisers, programs to raise awareness and financial literacy about sustainability, green securitization, and the deployment of digital technologies in the sector” [25].

To conclude, there are still many regulatory issues related to customer and consumer protection to be resolved. More specifically, consumers need regulation regarding data protection, accessibility, portability and interoperability, wrongful assessments, opacity and discrimination, and financial exclusion [25]. Therefore, institutions all over the world must go ahead with their regulatory processes and frameworks to improve consumer protection and information. The challenge for

regulators will be, ultimately, to “keep a level playing field that strikes the right balance between fostering innovation and preserving financial stability, and consumer protection” [14].

3. Conclusions

3.1. Theoretical Contributions and Implications

As has been discussed in this paper, the current concerns over global warming and environmental issues, as well as the importance of corporate social responsibility (CSR) and environmental, social, and governance (ESG) factors have led to the emergence of different kinds of behavior (e.g., greenwashing) and finance trends and tools (such as socially responsible investment and the use of sustainable Fintech initiatives) due to a willingness by investors to incorporate not only financial criteria but also non-financial attributes into their investment decisions.

In the current environment, the financial sector plays a key role in fighting climate change, as it has the task of financing the investments needed to transform our economy into a more sustainable one. The new financial services relating to sustainability are provided by both traditional suppliers and, above all, Fintech companies, aimed at improving, developing, and automating financial services.

Fintech companies are becoming increasingly popular, with great expectations for growth, and they are used to assist and support firms, investors, and customers in managing their financial activities, using specialized applications and software. Furthermore, the Fintech industry is a driving force for sustainable economic growth with several effects on social, environmental, and ecological benefits. As far as environmental and ecological development is concerned, Fintech can promote the use of funds for energy and environmental projects, as well as the construction of renewable energy and environmental infrastructure.

Fintech shows consistency and continuity with ESG criteria through the use of tools such as crowdfunding, big data analytics, blockchain technology, and artificial intelligence. As indicated above, sustainable finance and Fintech have many shared aspects, and Fintech can make financial business overall more sustainable, as it promotes green finance.

Throughout this paper, the strategic perspective of Fintech has been described, and it has been possible to study the relationship between Fintech and sustainability by providing an extensive review of the literature. Furthermore, the theoretical scope has been applied to some examples of real, sustainable Fintech, which show ways to implement sustainable behaviors and to promote green investment.

The paper emphasizes the need for greater standardization in both the format and the metrics of ESG reporting and sustainability reports, as well as the implementation of different systems and technologies to detect and prevent greenwashing practices. This would direct consumers towards even more responsible behavior by taking a step further in respecting the environment and towards a more sustainable society.

3.2. Implications for Practice

Theoretical implications have been put into practice by analyzing and describing two cutting-edge Fintech companies: Clarity AI and Pensumo.

The analysis of these two important Fintech platforms leads to the conclusion that this kind of app and platform still needs improvements to keep consumers, users, and investors informed and aware of the behavior of the businesses they usually deal with, as well as of the bonds and stocks in which they invest. In this context, this paper gives some practical advice and recommends improvement measures in order to optimize the platforms’ performance from the perspective of consumer information and protection.

3.3. Future Research Direction

Future research will focus on European and global regulation frameworks. They play an essential role, but it is still necessary to resolve many problems related primarily to customer and consumer protection. Thus, future research into the impact of user information and protection on sustainable Fintech companies is needed.

It will be necessary to study different examples of sustainable Fintech and seek out their weaknesses in order to propose new improvement measures. What is more, it will be essential to design a plan for each platform so as to put all these measures into practice and to modify their apps by taking into account all the considerations discussed throughout the paper.

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