Taxonomy Of Operational Risks in Fintech: A Systematic Literature Review

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Abstracts: Objective: The Fintech industry has been gaining importance among customers of the financial system, thanks to the agility, scope, and simplicity of the services offered through digital platforms. This article aims to describe, from the literature, the Fintech taxonomy to identify the Operational Risks by mapping current knowledge and finding gaps in the relevant literature. Design/Methodology/Approach: A systematic literature review is carried out based on a bibliometric analysis using the search equation “Fintech”, “Risk”, “Credit” in the SCOPUS index. Eighty scientific articles were obtained, and a .cvs database was downloaded to perform the cooccurrence study of keywords with the VOSviewer® software. Subsequently, a content analysis was performed by the ATLAS.ti® tool. Results/Discussion: The review proposes a taxonomy of five codes from the point of view of different authors: Cyber Risk, Model Risk, Business Practices Risk, Customer Knowledge Risk, and Data Protection Risk. They help to identify the classification of Fintech risks for analysis. Conclusions: The analysis is carried out by dispersion diagrams, which show the degree of relationship between the different risk variables in Fintech. Originality/Value: This document maps the information and scientific knowledge related to the classification of Operational Risks in Fintech, their degree of relationship, and consequences.

Keywords: Fintech; Financial Risks; Operational Risk; Systematic Literature Review; Taxonomy.

1. INTRODUCTION

The financial crisis of 2008 triggered a transformation process due to the emergence of technological innovation in the design and delivery of financial services [1]. Since then, there have been changes in traditional financial models by introducing new business models that incorporate advanced technologies [2]. It has led to innovative forms of operation of companies and organizations linked to the sector, which are currently focused on customer satisfaction using technology that allows process automation [3]. Fintech companies, a term coined from the contraction of the words “Finance and Technology” [4], are in this scenario. They are financial innovation companies with the technical capacity to produce new business models, applications, processes or products to provide services in financial markets and institutions [5]. It has driven the growth of the economy of the countries, based on new digital models proposed to benefit both companies and society [2]. Fintech companies lead to new products and financial infrastructure upgrades that are designed, tested, and introduced on an accelerated basis [6] compared to traditional banking.

In this context, applying technology to finance is used to attract customers from traditional banking by offering the optimization of commercial transactions, improvements in the offer, and agile granting of credits, thus creating platforms to achieve greater efficiency in banking operations [7]. To achieve this, technology promotes the automation of financial services, which progressively replace traditional systems [8] and drive an accelerated transformation focused on big data, blockchain, artificial intelligence, biometric recognition, and cryptocurrencies [9]. With this Fintech disruption, greater pressure was put on traditional banks, given the optimization of available services including digital savings and credit, crowdfunding, open banking, cryptocurrencies, among others [10]. This is how traditional banking faces customer preferences that require banking services to be an integral part of their "online" life [11] and expect them to be available anywhere and at any time, being as easy to use as social networks or email [12].

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Fintech companies have become a competitive business model compared to traditional banks given their value proposition [13], oriented to the speed and simplicity of the services offered through digital platforms, which makes them more accessible to all users [14]. In addition, by not requiring physical infrastructure and needing a reduced number of personnel to provide their services, they have lower operation costs [15], more agile responses and greater user reach [16], and offer an improved experience through innovative products, services and financial tools [17]. Despite the advantages, Fintechs bring new risks, so incorporating them as a digital tool represents a challenge [18]. According to the International Monetary Fund (IMF), the risks entailed by new technologies in the financial sector for Latin American countries are oriented to financial instability, lack of financial integrity, and failures in cybersecurity and protection of personal data [15]. However, despite these risks, there is a great demand for Fintech services, evidenced by the increase in their use [14].

In Colombia, the Fintech ecosystem has grown up to 36% according to the comparative figures from 2017 to 2020 published by the Colombia Fintech Organization [19], ranking as one of the three countries in Latin America with a strengthened Fintech sector. The three segments with the highest participation are Digital Credit, Digital Payments, and Business Finance [20]. From the point of view of regulatory bodies, although the rapid evolution of the technology industry applied to finance generates multiple opportunities and benefits for the actors of the Colombian Financial System, it also poses risks associated with the growth and consolidation of Fintechs [21]. This is due to the lack of knowledge on how financial services work with respect to new business models, as well as regulation and how to manage the costs involved in the process [22].

The new Fintech industry, as pointed out by the Financial Superintendence of Colombia, requires risk management according to the new market dynamics because some entities have been victims of cyber incidents, in general by receiving millions of attacks quarterly. It has generated a 67% increase in complaints for computer crimes, online impersonation crimes have increased by 602%, and non-consensual asset transfers by 99% [23]. Additionally, Fintechs are vulnerable to the operational risks of traditional banking [24]. The main problems are security and compliance [8]. The risk increases by not being monitored by the authorities and because there is no rule that controls them; hence, their practices, credit granting criteria, and financial risk prevention policies are unknown [22], and the risks related to fraud, money laundering, terrorist financing, business misconduct, and consumer protection are not considered [25]. Moreover, operational risk is related to the threat as an adverse effect to achieve the organizations’ objectives [26]. In this sense, in Colombia, organizations in the Fintech ecosystem reduce risk thanks to the ISO 31000 NTC Technical Standard, which provides guidelines for managing risk [27]. However, given the growing expansion of the Fintech ecosystem in the country, it is necessary to address them with more rigor and control.

This research responds to the need to classify the Operational Risks of Fintech in the Colombian Financial System through a systematic literature review using a mixed methodology [28]. It leads to the analysis of 80 articles indexed in Scopus and filtered by the keywords "Fintech", "Risk" and "Credit". To do so, the object of study and the problem are delimited, then the state of the art of the Fintech context is addressed, and an approach to the risk taxonomy is made by content analysis of the articles to draw conclusions.

2. METHODOLOGY

The literature review begins with the search equation defined according to the research interests [29]. It is composed of the following elements: "Fintech" and "Risk" and "Credit", with a filter by: Title, summary and keywords ("TITLE-ABS-KEY"). The articles of interest are taken and presented in the bibliometric analysis [30], and the relationship between the study variables and the main thematic areas of the Fintech ecosystem is established using the VOSViewer® software version 1.6.15. The methodology consisted of a co-occurrence analysis, applying statistical techniques of multivariate clustering analysis and data visualization in bibliometric networks, starting from a .csv database of scientific articles downloaded from Scopus. The search was carried out using the "Citation Pearl Growing" technique [31] and yielded 80 publications, which denotes gaps in the literature.

As a result, the bibliometric map (Figure 1) shows 6 main thematic groups: Financial institutions, Fintech, risk
management, big data, risk assessment, and p2p lending. They are related to the different business models of digital credit Fintechs, traditional financial models and institutions, new technologies adopted, and financial risks.

Additionally, it is observed that operational risk is closely related to the analysis, evaluation, and management of risk in Fintechs. Asymmetry in information, financial modeling, risk perception and the use of technologies such as blockchain and big data impact the financial system. It also has to do with the subsequent content analysis, in which the articles were coded by the ATLAS.ti software.

3. RESULTS

In recent years, technology has led to significant advances in economic sectors and was expected to reach the financial world [32]. The financial institutions that have achieved this transformation are known as Fintech, i.e., organizations that cover the needs of their customers by using technological innovations [33]. Therefore, Fintechs are companies that "offer financial products and services supported by technological innovation, characterized by their agility to build value. These allow people and businesses with financial needs to access tools that only traditional banking could use [34]."

The Fintech phenomenon has been consolidating worldwide for more than ten years, more concentrated on the United Kingdom, the United States, and China, and extends to Latin America and the Caribbean [14]. In this sense, researchers from all latitudes have studied this phenomenon and its impact on the financial field.

In Spain, Martín et al. [32] carried out a study on the financial risks of Fintechs with the aim of analysing those incurred by their activity, covering the factors and characteristics that have favoured their implementation in the financial sector. They analyzed the main companies in the sector, studied their business model and their characteristic aspects, and concluded that risk management is comparable between traditional banking and Fintechs. The most important financial risks in banks are credit and liquidity risk, which could be considered traditional financial risks; while in Fintech, the main risks are computer, reputational, and model security, known as new financial risks.
In Chile, Furche et al. [35] outlined the recent evolution of Fintech innovations by analyzing how they can influence the provision of financial services in developing economies and the role of central banks as regulatory agents. They considered that the population in low-income countries lacks access to formal services from financial institutions, but Fintech innovations can fill those gaps and have a positive impact. The authors conclude that financial innovation can affect the transmission of monetary policy, thus changing the role of monetary aggregates and the banking system and are able to compete with traditional financial providers in areas such as payment systems, trade, custody, asset management, and loan intermediation. Therefore, the regulation and formulation of public policies must adapt to the challenges posed by modern technologies and seek that these are not transformed into barriers to access. Chile has a solid base for Fintech, given the existence of secure identity records, massive access to the internet, a wide range of complementary network services, and almost universal bank accounts, which enable rapid progress in the incorporation of new technologies.

In Peru, Núñez Gonzáles & Sifuentes Barrientos [34] assessed whether Fintechs promoted financial inclusion in the country. Taking into account the rise of this industry, they identified the presence of 124 Fintechs that oriented their business model to people excluded from the traditional financial system, thus supporting financial inclusion in the country. To this end, they analyzed the role of Fintech internationally, particularly in the Peruvian context. They also examined how a strategic collaboration between Fintechs and traditional banking could benefit financial inclusion in Peru.

That research was developed under a qualitative approach, through a literature review, review of studies, review of international experiences, and structured interviews. The most relevant finding was recognizing that technology is making it possible to optimize financial services in Peru. It offers valuable services by covering needs that are not met by the traditional financial system, lowers costs, reduces transaction times, and improves the user experience. Finally, they conclude that, although the Fintech sector in Peru was incipient, these companies promote financial inclusion in the country and allow financial services to be brought closer to people and companies excluded by the traditional financial system.

In Colombia, Martínez [36] carried out an analysis of technological financial innovation and its relevance to the operational risk of Colombian banking entities. The analysis shows the evolution of the banking industry in the country and cybersecurity risks as operational risks. The author used a qualitative methodology by codifying articles and establishing categories, complemented by her practice and professional experience, which enriched the research with details of the commercial relationship dynamics of banks and their influence on technology. It was oriented from her practical point of view as to how to counteract risks, thus finding the need for greater controls of the risks derived from technological financial evolution. She invites the regulatory authorities to consider implementing more requirements, which in turn must be flexible, fit the new demand of financial consumers, and guarantee an environment of administration and good management to the banking sector, greater dynamism in its operations, and policies that help to maximize its functions and ensure its liquidity, solvency and good service, having agility and opportunity as a premise.

For its part, Atehortúa [37] evaluates and makes a diagnosis whether Fintechs are a threat or an opportunity for traditional banking in Colombia and the world, through examples of success in some countries, comparison of cost structures and contextualization of different initiatives executed by banks in response to this digital revolution. The methodology was qualitative, based on information from books, articles, and official websites. The author found that Colombia, despite being a developing banking country, has been well received by Fintech and both industries are reaching more and more customers and segments. It concludes that Fintech may represent a threat to traditional banking, as they have been able to take advantage of the gaps that banks have in terms of their services; they have gone to segments of customers that the financial sector has rejected due to their high risk or low profitability and have understood the new digital natives. In addition, with their innovative structure and low cost, they gain more users every day. But it has also become a great opportunity for traditional banks, as they turned out to be a complement in knowledge and efficiency for the robust banking operation, which led them to implement digitalization strategies. The study concludes by indicating that there are still many regulatory gaps for its proper functioning.
Vega & Mora [22] proposed to evaluate the possible risks generated when using Fintech in credit placement processes in Colombia. They conducted a documentary review with a qualitative approach by consulting files, news, articles, and research on innovative financial technology, identified the risks involved in its application, and how it can be strengthened considering that there is a law in Colombia that regulates and controls it. Finally, they concluded that the risks are imminent and surprising; therefore, every entity must create controls that improve its processes and operation if they seek to have optimal and efficient processes.

In turn, Chajin [38] identified the main growth factors in the Fintech industry, the main barriers to its development, and the implications of its consolidation in the economy. The author used a qualitative methodology with documents showing the growth of the Fintech industry in Colombia and the main countries of Latin America. The information on the number of Fintech ventures registered in each promoting and regulatory organization of the Fintech ecosystem was collected. Finally, statistics extracted from government publications such as the Ministries of Technology and Information and DANE were used to identify the socio-cultural barriers that prevent the consolidation of the industry, e.g., Internet connectivity, Smartphone access, and population distribution. The study concludes that Fintech is one of the most important segments for the financial services industry, since, with its disruptive business model, it has managed to consolidate and maintain significant growth in recent years. Additionally, there are high growth expectations due to factors like the age of the population, mobile coverage, and the regulation of the sector.

According to the literature review, research has contributed to understanding Fintech and the implementation of new technologies to optimize traditional financial services, as well as to create and implement new products based on disruptive and efficient business models. In turn, said innovation poses risks for the financial sector. This is how we set the bases to delimit the object of study to analyze the Fintech phenomenon.

4. DISCUSSION

Fintechs are known by their ability to build value through new business models, channels, processes or products, which seek to develop and transform financial markets and institutions and the provision of financial services [39]. This phenomenon has been consolidated worldwide for more than a decade, offering economic, innovative, efficient and inclusive services [40]. There is a trend towards its use from a comprehensive approach, where financial services are more convenient and affordable [41].

The Basel Committee on Banking Supervision (BCBS) describes Fintech as the "Technologically enabled financial innovation that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services" [42], this same definition has been adopted by authors such as Thakor [43], Bollaert et al. [44], Buchak et al. [45] and Zhou & Chen [46].

Globally, Fintech Ecosystems (FE) have similar characteristics, such as a disruptive action of emerging markets, and generate new models that integrate technology into finance [47]. It has altered the way in which traditional companies operated until now [49], thus making great contributions to the financial sector [24]. This diversity of models has posed a challenge for their categorization [49], however, despite the absence of a universal classification [50], different organizations have contributed to establishing classifications in the face of the rise of Fintech.

In this sense, the International Monetary Fund, the World Bank, and the Organization for Economic Cooperation and Development (OECD) point out that Fintech is the opportunity to boost economic growth by promoting financial inclusion in all countries [51]. For its part, the BCBS [42] categorized Fintech innovations based on the main products and services they offer, as presented in Table 1. It highlights the areas covered by financial technology in general: (a) credit, deposit, and capital raising services; (b) payment, clearing, and settlement services; and (c) investment management services.
Colombia has classifications by segment according to Colombia Fintech [52], namely Digital credit, Digital payments, Business finance, PFM & Wealthtech, Regtech, Crypto & Blockchain, Crowdfunding, Insurtech and Neobanks. The Fintech companies that have emerged and consolidated in the country in the last four years amount to a total of 322, out of which 92% are Colombian and 8% are foreign [20]. The segments with the highest participation are Digital Credit with 30.43% and Digital Payments with 26.40%, which offer payment gateways, among other digital products [52].

The Business Finance segment corresponds to platforms that provide electronic invoicing services, accounting administration, business performance statistics, and accounts receivable recovery [53]. Companies in the Personal Finance Manager segment, PFM & Wealthtech, are oriented to the management of personal finance, investment and savings based on artificial intelligence and big data [52].

Companies in the Regtech, cryptocurrency & blockchain, and crowdfunding sectors do not exceed 20% participation in total [20]. The startups in the Regtech segment provide machine learning, fraud verification and cybersecurity solutions. They are designed for the regulation of financial technology [54], necessary to provide security in the use of customer data and transactions [25]. Cryptocurrencies & blockchain are exchange platforms for crypto-assets, crypto-payments and Tokens [55]. This is the technology where cryptocurrencies underlie, it provides an ecosystem that in addition to autonomy, gives security and reliability as electronic money based on mining between the nodes of networks that support it [56].

Crowdfunding is the financing of people or groups of people through digital platforms, which reduces the difficulty associated with the distance between the parties [57, 58], it offers opportunities for participation and access to financing [59]. Crowdfunding is regulated in Colombia by Decree 1357 of 2018 [60]. Likewise, insurtechs are oriented to insurance and [61] associate the use of disruptive technology such as blockchain, big data, and artificial intelligence to create products and services within the insurance ecosystem [62]. They allow insurers to obtain consumer behavioral information to create services with personalized and on-demand risk coverage, in addition to having smart contracts through blockchain to protect consumer identity [63].

As the last Fintech classification segment, Neobanks make a friendly interface available to the customer so that they can make transactions quickly and easily from their mobile device [64], thus offering a simpler alternative to traditional banking [65].
Regarding economic activity, the Fintech sector in Colombia is not homogeneous, there are 46 activities according to the International Standard Industrial Classification (ISIC); 19% corresponds to companies developing computer systems, 13% to other financial services activities, and 13% to computer consulting and IT facilities management startups [20]. These figures show that Fintechs have impacted the financial sector with value propositions, which places them in a position of greater competition than traditional banks [47]. They also offer agile services through a digital interface that enables more accessibility [54] at lower costs [66], thus transferring optimization to customers [14].

In terms of security, Fintechs have tools to protect themselves from fraud, such as big data and artificial intelligence (AI) [67], so they can participate competitively and under similar conditions to traditional banking [68]. However, these are not exempt from internal and external fraud, or even other types of risks [69] inherent to the banking sector, such as customer service, financing, transfers, advice and operations [70].

For its part, digital credit is the loan accessed through a technological channel, being an outstanding service in the granting of loans by Fintech companies [71]. In Colombia, the digital credit operation corresponds to what is known as a commercial mutual [72], being an agreement of wills, where a party delivers a certain amount of fungible elements. It means that the party that receives them is obliged to return others of the same kind and quality [73]. In the country, the segment of loans through digital channels is the largest among the Fintech subsectors [20] with companies such as Afrlo, Lineru, RapiCredit, Prestarápido, Fintu, Kredictory, and Finaktiva [74].

Digital credit fintechs, compared to conventional credit, offer a quick process from application to approval, and the evaluation of applications is automated, thus leveraging historical user data to generate credit scores [71]. A comparison of the two is shown in Figure 2.

![Figure 2. P2P vs Bank Credits.](source)

**Source:** Own adaptation from Fintech and Banking: What do we know? [43]

Person-to-person (P2P) loans is a process that begins when the client makes the request to be granted a loan, the platform analyzes the request and rates it according to the risk associated with the applicant. Given this, a bid arises from investors in relation to the amount requested and the interest rate linked to the loan. Subsequently, the system makes a combination of proposals [75], with the investment provided by the lenders being the investment capital [71]. The P2P platform is compensated through percentages for late payments and refunds applicable as payment for platform service. Likewise, credit Fintechs can carry out their transactions as financial intermediaries, which are known as shadow banks. In this case, financial institutions use Fintech to place investments without going through P2P platforms or banking entities [43].
Emerging technology has boosted the speed and volume of financial transactions, which leads to increased volatility and instability in financial markets [16]. Cheng & Qu [76] argue that Fintechs bring with them technical and regulatory risks compared to traditional financial institutions that have experience and regulations [77], while Fintechs depend on platforms and algorithms based on big data, which increases the percentage of risk associated with design failures [24]. They are based on technological platforms that can be acquired and used by different Fintechs, which is an aggravating factor in such a way that if they present flaws, the system would be massively affected [47].

Fintechs face other risks caused by the speed of transactions on digital platforms due to the possible mismatch between investment and lending producing a lack of liquidity [70]. It is important for Central Banks to have information on digital credits from Fintechs to guarantee the stability of the financial system by knowing the debt scenario [24].

In Colombia, the ISO 31000:2018 standard establishes the principles of risk management that must be considered, as seen in Figure 3. It must be integrated, structured and exhaustive, adapted, inclusive, dynamic, and have available and updated information [27].

ISO 31000 aims to incorporate risk management into all activities and functions of the company, which implies integrating, designing, implementing, assessing, and improving risk management in the organization. It establishes that the risk management process involves the application of policies, procedures and practices to communication activities, consultation, evaluation, treatment, monitoring, review, registration, and reporting of risk [27]. This process is important because the Colombian Financial System is undergoing its greatest digital transformation in decades, based on the technological adoption of financial and non-financial solutions by new actors such as Fintech [78], with business models that use different technologies such as artificial intelligence [79], cloud computing [80], robotics [81], biometrics [82], blockchain [56], and the Internet of Things [83].

To define the taxonomy of operational risks in Fintechs, we used a sequential mixed methodology based on the collection of data and information through a systematic literature review. A quantitative analysis that includes a bibliometric analysis—based on the keywords “Fintech”, “Risk” and “Credit”—was conducted to select the documents to be analyzed in a qualitative way. A gap in the literature was identified, so other risk identification techniques such as brainstorming with experts, check-list, review of interviews and podcasts, and review in
regulatory entities were implemented.

According to the proposed taxonomy, 5 codes are created: Cyber Risk, Model Risk, Business Practices Risk, Customer Knowledge Risk, and Data Protection Risk. The relationship between the contents and the codes shows the high connection between Model Risk and Business Practices Risk, Model Risk and Customer Knowledge Risk. Additionally, a Sankey diagram is created to visualize the connections between codes, thus finding that the 5 proposed risks are closely related, as shown in Figure 4.

![Sankey Diagram](image)

**Figure 4. Sankey Diagram**

**Source:** Prepared by the authors. ATLAS.ti software

The thicknesses of the lines reflect the frequency of co-occurrence of the codes; Model Risk, Business Practices Risk and Customer Knowledge Risk have greater width in their flows. It indicates that, in research, the authors frequently link this type of risk as a starting point to carry out a risk analysis to Fintechs. Additionally, it is observed that the Cyber Risk and the Data Protection Risk are related to the other codes with lesser width. This indicates that, although they have weaker connections, the authors also link them when performing an operational risk analysis in Fintech, having a direct relationship with elements that feed the wider flows and participate in the negative effects and restrictions of the use of new technologies and their lack of regulation.

The analysis allows us to conclude that relationships between the classification of traditional operational risks, the impact they generate, and the proposed taxonomy, i.e., Model Risk, Business Practices Risk, Cyber Risk, Customer Knowledge Risk, and Data Protection Risk can be obtained. To establish the relationships that exist between the proposed taxonomy, the elements of risk classification and consequences, dispersion diagrams were constructed with Python programming language using the Pandas [84], Sklearn [85], Seaborn [86] and Pandasql [84] libraries.

The Pandas library was used to load and transform the data, Sklearn to encode the qualitative variables into quantitative ones, and Seaborn to visualize the results. Finally, the Pandasql library contributed the SQL language within the Python programming language environment.

The first step was to load the Excel file in .csv format with the operational risk information—which contains taxonomy, risk classification, and consequences data—to rename the columns, simplify the handling of the variables, and concatenate them to the risk and consequence classification to generate the query and build the first dispersion diagram. It was processed using the sqldf function of the Pandasql library. Subsequently, a new table was constructed using the OrdinalEncoder() function of the Sklearn library to graph the taxonomy variable using the relplot function of the Seaborn library, to finally construct the scatter plot presented in Figure 5.
The graph above shows how many different combinations of risk classification and consequences are within each taxonomy. It shows the correlation between each taxonomy and the combinations of risk classification and consequences, and therefore the ability of the proposed taxonomies to explain the different operational risks and consequences that a Fintech could have.

Figure 6 shows that all taxonomies have a degree of relationship with the classification of operational risks, internal fraud, external fraud, execution and management of processes, technological failures, legal and reputational consequences, economic and income lost to perception. Cyber Risk and Data Protection Risk taxonomies have the greatest explanatory power in the classification of Operational Risks and the consequences faced by Fintechs in case of their materialization. Moreover, the Customer Knowledge Risk taxonomy, although correlated, has less explanatory power.
The combination of execution risk and process management with reputational consequences relates to four of the proposed taxonomies. Moreover, both the classification of risks of external fraud and internal fraud—related to the economic, legal, and reputational consequences, respectively—are correlated with three of the proposed taxonomies, while the classification of customer risk and the economic consequences are only related to one taxonomy.

CONCLUSIONS

The research result reveals that there is a paucity of literature examining the impact of operational risks on Fintechs. Thus, eighty articles that address the risks to which Fintechs are exposed are analyzed, and it was possible to determine that operational risk has a strong relationship with the analysis, evaluation, and management of risk in Fintechs. As a result, five codes are created: Model Risk, Business Practices Risk, Cyber Risk, Customer Knowledge Risk, and Data Protection Risk. They are aligned with the proposed taxonomy and related to each other to a greater or lesser strength.

In relation to the above, cyber risk is linked to the operational scheme of Fintechs, which can lead to losses not only due to liability to third parties, but also to events inherent to the operation itself. Likewise, security measures are a key factor to ensure the protection of customer data, which is why Fintechs need to maintain efficient data protection management to minimize risks. Likewise, identify the risks associated with the business model, business practices and knowledge of customers, consider the materialization of these risks as a threat and loss of customer confidence.

We conclude that the proposed taxonomy of five codes (Model Risk, Business Practice Risk, Cyber Risk, Customer Knowledge Risk and Data Protection Risk) is the best option to address Fintech operational risks compared to the traditional operational risk classification. The latter considers internal and external fraud, execution and administration of processes, clients, technological failures; legal, reputational, economic consequences; and income loss.

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