



# Collaborative Innovation and Its Actors at the Time of Banking Digitalization: Comparative Analysis Between National and International Practice

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**SUBJECT:**

**COLLABORATIVE INNOVATION AND ITS ACTORS AT THE TIME OF BANKING  
DIGITALIZATION: COMPARATIVE ANALYSIS BETWEEN NATIONAL AND INTERNATIONAL  
PRACTICE.**

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## Summary:

In recent years, banks face continuous changes in their business model, including the digitalization of their services, which has given rise to another digital opportunity, collaborative innovation, which is defined as the participation of several internal and external players, to create a common innovative project. Banks are increasingly using collaborative innovation to create an innovative business model based on external-internal partnership approaches to better understand and meet customer needs. This collaborative innovation contains several participatory platforms; we will have detailed them during the treatment of our article, also dealing with their relationship in the development of the banking sector.

Our study aims to address the concept of collaborative innovation, based on a review of the literature to understand the opportunities for collaborative innovation and compare the points of view of each author, which leads us to identify the participatory innovation platforms and the contribution of internal and external collaborators to innovation.

Our analysis method will be based on a benchmarking between national and international practices in order to know the most adoptable market for collaborative innovation.

**Keywords:** collaborative innovation, internal actors, external actors, participative platforms.

## I. Introduction

Collaborative innovation is one of the fruits brought by the new technology, despite its presence as an innovation that is based on the internal environment, so that members of the company share their ideas, develop a strategy or propose a new innovative idea, or even for the resolution of a problem, which made it a limited innovation, because it is just adopted by the internal parties. However, this participatory innovation allows companies to benefit from several opportunities to innovate, but they can no longer innovate based on their internal environment, 1) to meet the requirements of customers, 2) the market and 3) the new trends offered from time to time by the digital transformation within the global market. For this reason, all sectors have been forced to implement a strategy based on collaborative participation, including the banking sector, which was the first to be impacted by these technological changes and was forced to involve many individuals outside of its ecosystem, for the creation of innovative ideas and in order to take advantage of their intelligence to arrive at an innovation that will meet the requirements already mentioned. Collaborative participation, participatory innovation, collaborative innovation or open innovation have the same meaning and can be defined as (Chakib, 2019) the commercialization of innovative ideas to produce, create or develop a product, a service or a business model through several actors, while being based on new technological trends. On the other hand, the importance of collaboration with different actors is due to the requirements of the bank that aims at national and international competitiveness, organizational performance, and a highly developed level of growth, in order to better satisfy its customers and to maintain its profile of the intelligent bank. To achieve this, banks have decided to take into consideration the importance of involving various internal and external actors in the innovation process, especially with the arrival of new players, which poses another mode of competition out of the ordinary, as banks are competing with themselves, but with the technological transformation, new entrants or new players have appeared with new ideas, speaking of Fintechs, each Fintech has a specific specialty that perfectly meets the expectations of customers, better than banks that have a very deep level of experience, rich in data on each target, but the problem lies in the variety of fields of application that the new technology poses, which forces the bank to have several external ideas. However, banks have seized the opportunity of collaborative innovation differently and decided to include new actors as external collaborators helping to co-create ideas to fight competition among themselves and to benefit from their intelligence levels in certain technological areas. Similarly, the integration of external actors does not only contain Fintechs, on the contrary, it also includes several important sources including the customer or prospect, which is the most important point due to the failure rates when launching products and services (Hanine, 2017), therefore, involving customers or other stakeholders in the development phase of a product or service to anticipate the needs of the market is a crucial step.

Therefore, this collaborative participation, including different actors, is due to the new technology that offers digital solutions including Crowdsourcing platforms, this solution allows the possibility to participate at low cost and in real-time not only with customers or prospects but with all those who want to exercise their know-how or share their innovative ideas. Crowdsourcing platforms are different, depending on the objective of the Crowdsourcer who is going to launch a call for contributions on a problem to be solved, or for the collection of new ideas that bring benefits to the bank.

Beyond this analysis, we will question the issue of collaborative innovation and its influence on bank performance, while interpreting its relationship with all stakeholders by setting the following formulation: "What effect does collaborative innovation have on bank performance, and what is the role of stakeholders in the innovation process?" From this central question, the following questions are deduced:

- 1- What is the impact of collaborative innovation on the bank's performance?
- 2- What is the role of collaborators in the banking innovation process?
- 3- And to what extent can external collaborators impact bank innovation?

## **II. Literature review**

This literature review will include the concept of collaborative innovation with its different terminologies, while building on previous studies that have addressed this key concept. This collaborative innovation has facilitated the bank's journey to have organizational performance, and is based on the new technological trends that have provided several open participation platforms that will be defined throughout this study. These platforms have fostered this new technological phenomenon and have made access to participation of all stakeholders an absolute truth. Stakeholders are composed of two types of internal and external actors, their participations for the purpose of leveraging their innovative ideas that will be used to build a new innovative business model (H. W. Chesbrough, 2003).

### **II.1. The foundations of collaborative innovation**

Concepts such as collaborative innovation (Hipp, s. d.), open innovation (H. W. Chesbrough, 2003), co-creation (Bell & Loane, 2010), (Martovoy & Santos, 2012), co-production (Schueffel & Vadana, 2015), co-construction (Meixner, 2010), and user-centered innovation (Baldwin & von Hippel, 2011), share the same meaning and a single goal of collaborating in order to find a consensus solution to a problem or blockage situation. (H. W. Chesbrough, 2003) highlights the following definition of open innovation: "the use of knowledge inputs and outputs for targeted purposes to accelerate internal innovation, and to expand markets for external use of innovation, respectively". On the other hand, the main factor that has pushed all industries, especially the banking sector, to integrate the concept of collaborative innovation as a strategy for innovative ideas is the factor of Internet technology that has led to Web 2.0. This technological change has brought several benefits and few banks internationally have exploited and found results from the share of this beneficial change, this is based on different factors including the technological and economic architecture of the country, but regardless of these factors, all banks have customer requirements that are refined and developed from time to time, and the level of competition is changing, in this case, banks need to invest and take advantage of this innovation deeply. Indeed, the concept of collaborative innovation is not new, it was under the name of the toolbox (Teglborg et al., 2013), receiving improvement proposals from employees (Denervaud et al., 2010). This toolbox was the first collaboration that connected the company to its employees and was the first sense of belonging that strengthened the bond and took advantage of the ideas of internal collaborators, but in recent years, the term toolbox has given way to participatory platforms, has changed the game and made the chain of production of ideas be divided under different internal and external actors, from different regions and nations at the international level. This great union is due to the opportunities brought by the new technology, which reduces the distances, but widens the process of technological innovation.

This new technological transformation has made the banking sector surprised by these new trends, such as the addition of external actors to the open participation because after the initiation of the

open innovation approach by (H. W. Chesbrough, 2003), academic research has renewed this approach. (Hippel, 1988) was one of the first to theorize the importance of external actors in the innovation process of the organization. (Isckia & Lescop, 2011) indicate that innovation within the organization must adopt inter-firm relationships. Moreover, the inclusion of actors or collaborators from inside and outside the company in the process of creating new services or products will be able to bring new ways of performance and development. Yet, it is for this reason that organizations want to foster the collaborative link and strengthen their relationships with universities, non-bank institutions, individuals, consultants, staff, and business professionals in order to co-construct innovative services, with an organizational goal of reducing failures and extending services while meeting customer needs by customers, and a personal goal for external collaborators who will benefit in tangible (rewards and gains) and intangible (fun, belonging, knowledge, needs satisfaction) ways (Rochette et al., 2016).

## II. 2. Collaborative organizational performance: towards a broad approach to innovation

Digital has enveloped the finance sector and in particular, the banking sector, banks will have to take steps to evolve, accompanying digital with all the innovations brought by the latter. Similarly, banks today innovate to meet customer demands, and to have a smart positioning at the international level, but consumer demands will have no limits and the degree of competition in this sector does not allow a bank to keep its current positioning. For this reason, innovation remains the only strategy to fight against the competition; and to gratify the customer's feeling of satisfaction and to go beyond its organizational performance. But the bank can no longer innovate based only on its research center (H. W. Chesbrough, 2003), (Isckia & Lescop, 2011), or on its expertise, because everyone has a specific need and innovation in other words, requires several ideas from several entities to arrive at an innovative idea.

However, banking institutions use the collaborative innovation model favored by virtual participation platforms, having as objective the co-construction of creative ideas with the help of all collaborators. These collaborators do not change, and there are two types: internal and external, for the first fall within the framework of a closed innovation (Akamavi, 2005), (Gerstlberger, 2010), (Chaston, 2013) and for the second are called as an open innovation. For (Fasnacht, 2018), open innovation is more than a new business model for acquiring intellectual property. However, the participation of employees allows the regulatory change of the process of building the business model of the bank (H. W. Chesbrough, 2011), (Bell & Loane, 2010), each of them adds value and performance gain for the bank. Considering that, the choice of the bank to involve these different actors is due to its need in terms of organizational performance.

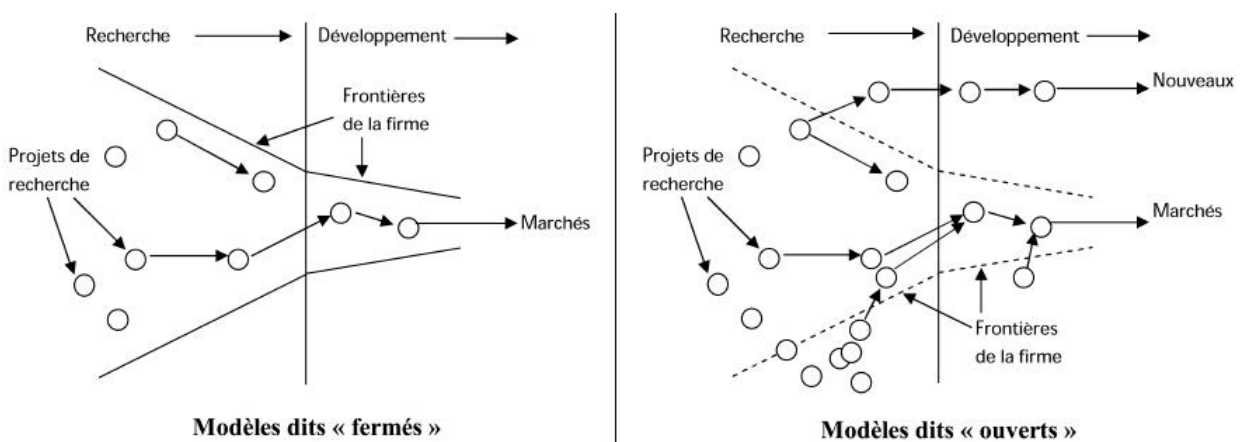


Figure 1. Closed and open model (after Chesbrough 2004)

This model presented the two types of open and closed innovation according to (H. Chesbrough, 2004), because both actors have an important place in the operational process of the bank, and both contribute to the improvement and changes in the performance trajectory, thanks to the new

opportunities and new markets brought by the collaborative innovation. And in order for the bank to be more efficient by benefiting from the results of the latter, it has thought of exploiting this radiant opportunity while reducing the costs of service production, based on the intervention of employees in the provision of services, also evolving the needs of customers and reconstituting new ways of pricing the risk, as potential and current users were involved in the creation of innovation, this shows that collaborative innovation is useful to ensure the acceptance of the proposed service by users (Bell & Loane, 2010), (H. W. Chesbrough, 2011).

This process, which encompasses creative, academic, and expert input, requires bank executives to make much-needed investments to modernize infrastructure, provide innovative products and services, and improve operational efficiency (Batiz-Lazo & Woldesenbet, 2006). Nevertheless, all contributors aim to co-produce a valuable service, that is, they are designated to create value for the bank, a service that will be transformed into a benefit by the other actors in the ecosystem (Frow et al., 2016). This innovation is one of the first strategies that have transformed the banking system and will reinvent the bank of tomorrow, making it more competitive, more positioned in relation to their competitors who confirm having a competitive advantage (Batiz-Lazo & Woldesenbet, 2006), (Martovoy et al., 2013), expand the range of products or services, plurality and creativity in terms of availability of many distribution channels, therefore, it will benefit from the economy of scale plus the conquest of new markets.

### **II. 3. Participative platforms: As a mutation of innovation in the banking sector**

The participatory platforms have repaired the collaborative innovation strategy renewed by the open innovation, which was elaborated by competitions carried out in forums organized by the organization trying to create something new, the organization was supposed to prepare a competition in which new ideas are born and problems are solved. Today, these forums have made the transition to virtual Crowdsourcing platforms, in which a large percentage of external actors are invited to a competition to co-construct a need requested by the bank. This movement is often called hackathon, ideathon, design challenge, or innovation day (Flores et al., 2020). However, Crowdsourcing platforms include different forms, and each banking institution makes the choice according to its organizational goal.

#### **A) Definition of the Crowdsourcing concept**

The term Crowdsourcing was popularized by (Howe & Jeff, 2006) who, in a publication of Wired Magazine, defined it as follows "Crowdsourcing represents the act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call. This can take the form of peer-production (when the job is performed collaboratively), but is also often undertaken by sole individuals. The crucial prerequisite is the use of the open call format and the large network of potential laborers". For (Brabham, 2008) crowdsourcing is a "model of online distributed problem solving and production", but (Schenk & Guittard, 2011) emphasize that the objective of crowdsourcing is not problem solving but rather to bring novelty.

The concept of Crowdsourcing is a so-called collaborative innovation, which is to be implemented to take advantage of ideas from the environment external to the company when planning or even organizing competition days, through a channel or platform, which aims to accommodate a large number of participants, and take advantage of their intellectual property. This participation aims to generate innovative ideas by benefiting from the collective intelligence, engaging individuals in the creative process, and benefiting from the academic science of the citizen laureates of the universities. Noting that, the French translation of the concept is "approvisionnement par la foule" or "outsourcing to the crowd" ( Jean-Fabrice Lebraty & Lobre, 2013). Otherwise, Crowdsourcing is a strategy of collecting innovative ideas from staff during a call for contributions issued by the organization (Howe & Jeff, 2006)

Crowdsourcing innovation is a phenomenon that has facilitated the operational, decision-making, and strategic process of each entity in the banking ecosystem, especially since the right time to collaborate is when the degree of competition is very strong, and especially with the advent of innovative Fintechs, which contain innovation as a basic strategy. This forces the bank to take a step forward and think about renewing its closed innovation system towards more open

innovation, and thus take advantage of Crowdsourcing platforms in all their forms and especially that of crowdsourcing and innovation, because banks do not have internal resources that can innovate and co-produce a service or a creative product. To summarize, Crowdsourcing is a collaborative innovation that takes place in the presence of a crowd, in order to absorb the expertise of internal actors and the intelligence of external members during an innovation contest launched by the Crowdsourcer, which leads to an innovation project.

### **B) The forms of innovation crowdsourcing**

The crowdsourcing of innovation is developing rapidly through the transformation of technology and often provides opportunities to innovate from time to time, and also makes the banking industry more creative than before. However, innovation with this change has no end and it will be renewed in every era. Indeed, Crowdsourcing has two forms of use, each Crowdsourcer can choose the form that will meet his objective when creating value within his organization. The forms of Crowdsourcing according to (Schenk & Guittard, 2011) are the following: selective and integrative.

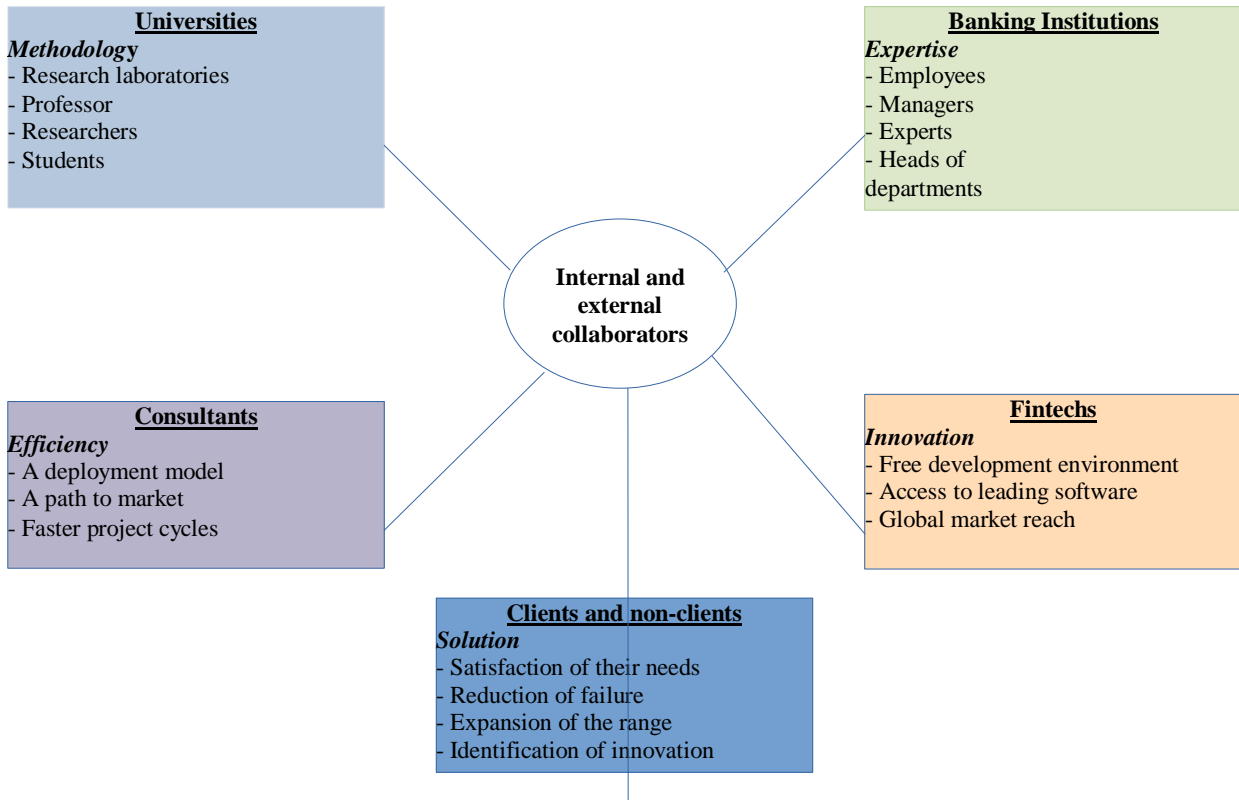
- **Integrative Crowdsourcing:** Crowdsourcing allows the bank to gather a variety of content since the individuals within the crowd are heterogeneous. The bank that seeks to implement integrative crowdsourcing, however, must be aware of integration issues. Data or information from different sources can be incompatible or redundant if no precautions are taken. These precautions include defining a data format and carefully selecting data sources.
- **Selective Crowdsourcing:** When the bank has a problem for example the problem of security of transactions, and there is no intervention or solution of the internal part, it has recourse to the crowd and throws the problem to be solved, and each actor works according to its degree of intelligence and innovation, to make an innovative resolution, and the bank chooses at the end the project that best suits its needs, and the reward is given to the winning person (Schenk & Guittard, 2011). This second form contains about ten applications of Crowdsourcing, citing those in the banking sector including Crowdjobbing or Crowdsourcing of routine activities: which requires no skills but a routine task that requires many external sources to handle; Crowdwisdom: the collection of data, opinions and views on a question posed to the external community in order to get basic ideas helping to create the innovation; Crowdfunding: requesting fundraising for the purpose of organizing a call for contributions for the creation of the innovation; Crowdsourcing and forecasting: Allows the use of the crowd to predict or even take a poll to elect a product or service (Chakib, 2019); Crowdsourcing and innovation: the dissemination of a competition in which the bank will choose the innovative ideas made by stakeholders, Crowdsourcing and authenticity : Creating a convergence link with external stakeholders to get ideas about their desires for a product or service; Crowdttesting: the testability of a product or service by the internal and external crowd (Knop & Blohm, 2018) along with other types like Crowdauditing, Crowd control and more (J.-F. Lebraty & Lobre-Lebraty, 2013).

### **II. 4. Crowdsourcing innovation: A desire to improve the bank's image**

The shift from outsourcing to crowdsourcing is becoming fundamental programming, which allows banks to engage a group of collaborators to achieve a creative strategic solution or new innovative ideas with mutual benefit. However, this old opportunity has only seen strong adoption by institutions after its evolution to digital, and is considered a new trend for all banks that covet performance through innovative strategies. This enormous demand is due to the change of the old traditional forms that the organization wants to develop in order to differentiate itself from the competitors, but with this innovation, the organizations have become very flexible and know how to adapt to the changes. In addition, the Crowdsourcing solution has come to answer a problem that the banking sector has been asking for a long time, and has facilitated the response to the demands of consumers by including them in the process of creating a product or service, but this does not only include customers, on the contrary, also calls on other external sources such as

universities, consultants, competitors, and internal sources in order to co-construct a social link between the bank and its internal environment such as managers, employees, professionals in general

This diagram refers to the contribution of internal and external collaborators to collaborative innovation, which can be divided into 4 external sources and one internal source:



Source: Authors

### A) Crowdsourcing: The contribution of external collaborators to innovation

All external collaborators have a specific mission, noting that the result of achieving a winning collaborative innovation is due to the presence of each stakeholder. The diagram above has identified each entity separately, and each has a specific role in the collaborative process. In other words, banking institutions cannot focus on the customer as an external stakeholder if there is a simple enough proposal that can satisfy his need, but the co-creation of new innovative ideas and the co-production of new projects for the bank requires the intervention of other actors that will facilitate the path to innovation.

For this reason, during the preparation of an innovative project, the bank must sign an agreement (Rochette et al., 2016) with one or more universities to take advantage of the ideas that will be built in the research laboratories, helping to define strategies of a methodological nature and guiding all actors to the final result.

The 2nd external source is the expertise of consultants within the innovation process, who can participate through their high level of experience, due to the nature of their expert work in their studies having carried out in favor of companies, and for the 3rd which presents the Fintechs or Startups, competitors, naming this source "the ethical competition", which in turn can contribute through a partnership and this has been done by many banks internationally, which have concluded striking results, in this case, the presence of the win-win formula will be present, the banks will benefit from their innovative ideas and Fintechs will benefit from the trust of customers towards the bank.

For the last source, which is the type of most important collaborators for the bank, in particular customers and prospects, who participate in the call for contributions to propose their ideas, or their current and future needs, which will help the bank to reduce the rate of competition while meeting the requirements of their customers in complete autonomy and plasticity. (Gatto, 2015), indicates that banks are characterized by changing behaviors and involving consumers in



innovation, as this helps maintain the relationship between the bank and the customer. Other authors conclude that marketing is important in the way companies integrate the notion of collaboration, particularly that of customers, into their economic model (Plé et Lecocq, 2012). However, all stakeholders have two forms of participation which are as follows: "directed self-producer" or "participatory co-producer", for the former is considered a partial employer of the organization, and for the latter, it is considered a market partner or co-creator of value (Bonnemaizon et al., 2013). Each co-producer or co-creator has motivations for participation that would be either intrinsic or extrinsic (Deci et Ryan, 1985), for the case of the first the collaborator acts with an intention of curiosity, recognition, pleasure, evacuation of his know-how in the field (Deci et Ryan, 1985) or publicity. For the second, the benefit will be the only motivation for participation.

In summary, stakeholder participation will have a strong impact on the creation of innovation, it can totally transform the image of the bank, and it is enough for the latter to go outside its borders and seek useful knowledge (Ahuja, 2000).

### **B) Crowdsourcing: The contribution of internal collaborators to innovation**

The adoption of internal Crowdsourcing is based on a single source, but contains different sub-sources that participate in collaborative innovation, their role is to support the bank in the creation, and reflection of new content helping to develop the configuration of the bank. On the other hand, the participation of the latter has two meanings, either a co-production of an external innovative service helping the consumer to satisfy his need, or an internal innovative service including ideas related to the improvement of the social climate, working conditions, or ideas having an impact on employee satisfaction (Denervaud et al., 2010), which will restructure the internal system, and reorganize the management of the Workflow, as well as make the bank benefit from a sovereign governance.

As a comparison with external sources having two types of motivation, while this is not the case for internal actors according to (Blohm et al., 2018), who found a series of intrinsic motivations that would help motivate the internal crowd such as curiosity, social exchange, framing, and reputation to stand out from other workers in the crowd, as in a challenge (Blohm et al., 2018).

## **III. Research Methodology**

A preliminary search of the literature was carried out before the decision to approach this article, whose methodological objective is to define through an analysis based on a theoretical review of the concept of collaborative innovation in all its forms and collaborative platforms, as well as the impact of Crowdsourcing technology on banking innovation, while based on the model of (H. Chesbrough, 2004), which has well defined the open and closed model of participation in innovation. We used as bibliographic databases Scopus, Google Scholar, Sciencedirect, Research Gate, and Cairn to generate the necessary documentation to help us to realize our article.

Subsequently, we chose as research method a Benchmarking study with certified sources including banks' websites, press, white papers, and interviews, to identify and analyze the different collaborations that have been made by different banks at the national and international levels, to know what is the level of collaborative innovation within the global banking sector, and focusing mainly on the national level to know the degree of growth of the Moroccan bank, as a bank that encourages collaborative innovation, while adopting the different stakeholders or it focuses on a single source.

## **V. A Benchmark study: comparative analysis between national and international practice**

Nowadays, and with the digital transformation, resulting from the collaborative innovation as an opportunity to develop the banking system in its different tabs, including the participation of internal and external collaborators (Fintechs, research labs, customers, partners, consultants,...), except that there are 88% of the banks afraid of the external source "Fintechs" and new entrants, and think that the risk of losing revenue to autonomous Fintechs is a real threat (Global FinTech Report 2017). Gaggemini states in its report conducted in 2017, that 91.3% of banks plan to

partner with Fintechs in the future, which means that benefiting from non-bank competitors will be inevitable in the future.

Similarly, the European consulting firm BearingPoint, in its report in 2021, which was around "The digital bank in Morocco and the new role of the bank branch" results that, the bank promotes innovation and collaborates with the ecosystem of Fintechs, to add solutions and digital ideas to improve the relationship with the customer. From the same source, the firm has tested the idea of open innovation by bringing together innovative start-ups with banks, to enrich the customer experience, as some do not hesitate to organize regular hackathons. Bank Almaghrib has also encouraged banks to have innovation labs, so that banks have the intelligence of Fintechs, and will put in place a support system to avoid any risk, respecting the fears of customers. On the other hand, SALAH BAINA, consultant in disruptive technology intervenes with the idea that the university is the place of the construction of innovation par excellence, mentioning that in Morocco, the convention with the research centers and the banks remains a little developed. HASSAN DEBAGH, deputy general manager in charge of retail and professional banking at Banque Centrale Populaire, asserts in turn that the principle of the open innovation program including external actors such as Fintechs that become partners of BCP Group.

The BNP Paribas Group allows employees to participate in the innovation contest, to propose innovative ideas that bring value to the bank. Indeed, 11,000 employees registered and 700 ideas were processed with a participation rate of 45%. Some French banks also seem to choose the solution of fintech incubators as external collaborators, while taking advantage of their key innovations to reintroduce them internally.

(LORENZI and DURIEUX, 2016) in their work, note that almost all banks put in place all the mechanisms for collaboration with Fintechs including hackathons, innovation laboratories, incubators, and investment funds. In addition, the International Union of Banks in Tunisia, a subsidiary of the Societe Generale group, launched an internal center in 2017 to promote the innovations of its employees. The French group Crédit Agricole launched in 2016 with the Fanvoice platform to involve customers in its innovation process, and set up a library of mobile applications, offering innovative services for customers, using secure bank data in order to co-construct innovation. Saxobank, a Danish bank, includes in its strategies the inclusion of Fintechs as internal collaborators, helping to drive the decision-making process. Société Générale, Boursorama Bank, and Crédit du Nord do not just include Fintechs, they also need internal players to build innovation teams. The ING group has launched its collaboration with Fintechs in recent years, creating "ING Fintech Lab" in Brussels, Amsterdam, and Singapore, and that of Amsterdam has the particularity of also taking into consideration the projects brought by the employees of the group. Arkéa is a French group, its mode of collaboration conforms to the purchase of Fintechs, such as the acquisition of Monext in order to have their own Fintech. Deutsche Bank promotes cooperation with Fintechs which is part of the process of creating value for the customer. Returning to Morocco, the Director of Information Systems of the Group Attijariwafa bank Hicham Ziadi, said that his Group is gaining maturity by relying on the strategy of collaboration with internal and external actors, moreover, in 2017, the Group launched its open innovation program "Smart Up" with the start-up ScreenDy, and is the 1st international Fintech hackathon within different cities Abidjan, Casablanca, Dakar, Paris, and Tunis. The objective was to identify projects that could meet the needs of customers and disrupt the internal system to reinvent the bank of tomorrow. However, the tables below summarize and present several banks at the national and international levels that have promoted collaborative innovation with its different sources of actors to participate and finalize a co-creation.

Table (1): Collaborative innovation at several international banks

Banks	Countries	Internal Actors	External Actors	Innovation
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BBVA	France		Fintechs	
Crédit agricole	France		Clients, startups, researchers, designers	Innovation program
Banque populaire	France		Fintechs	Oney+, Dalenys, Playplug, Meniga.
Crédit Mutuel Arkéa	France		Fintechs	Monext, Fortunéo, Yomoni, Grisbee.
ING Group	Netherlands	employees	Fintechs	InnovationLab
Deutsche Bank	germany		Clients, Fintechs	InnovationLab
Société générale	France	Partner startups	Fintechs, computer scientists	Plateforme opening innovation
BNP Paribas	France		Fintechs, deep techs and Insurtechs	Startupbootcamp, cashforce, Kantox, Sis ID, Token et Paytweak
Saxobank	Denmark		Fintechs	Réseaux sociaux
Boursorama Bank	France		Fintechs	Fiduceo
Crédit du Nord	France		Investors, research laboratories, large companies and startups	
Société Générale	tunisia	Internal collaborators		InnoLAB by UIB
CDC	United Kingdom		Fintech, startup, banks, insurers, industrialists and associations	LaBChain
Amen Bank	Tunisia		Consultants, Fintechs and startups	Laboratoires, partenariats
Bank ABC	Bahrain		Fintechs	Bank ABC's innovation lab
Banque centrale de la tunisie	Tunisia		Fintechs	BCT Fintech

Source: Authors

Table number 1 shows that there are several banks at the international level that have successfully integrated collaborative innovation into their banking systems, interfering with many actors, but the external actors are much more focused than the internal ones, such as the Dutch group ING, the general company of France and Tunisia, which have included employees and their partners in the co-creation of innovation, and have built a laboratory called InnovationLab where several ideas are born, aiming at the development of the internal process or the creation of the innovation for the external environment.

Similarly, most banks in France, Germany, Tunis, Bahrain, UK and Denmark have chosen to work with new Fintechs and Insurtechs players, as well as to leverage the expertise of consulting agencies, startups, IT specialists and research labs, all according to the bank's need.

However, this co-collaboration allows banks to avoid any risk that may come from new entrants through collaborative innovation, as shown in the table above, banks are not only partnering with Fintechs, but they are buying Fintechs, such as BCP group in France, Crédit Mutuel Arkéa and boursorama banque, Each Fintech offers innovative services that are different from each other, such as the Banque Populaire subsidiaries Oney+, which offers payment solutions, Dalenys, which specializes in digital payments, Playplug, which offers omnichannel payment solutions, and Meniga, which offers digital banking solutions. Another example of collaborative innovation is Crédit Mutuel Arkéa which encompasses a very large number of Fintechs such as Monext which aims to provide innovative payment solutions to customers, and Fortunéo a Fintech which presents unlimited mobile payment solutions, Yomoni an online broker and Grisbee which offers a digital financial coach. Furthermore, BNP Paribas is among the first to discover the value of collaborating with Fintechs, they have signed partnerships with several Fintechs with different services including Cashforce a cash forecasting and working capital analysis platform, there is Kantox which specializes in currency management automation technology, Sis ID is a security

innovation to fight fraud and Token an open banking platform that provides several services such as access to aggregated bank account and transaction data, and finally PaytWeak which offers remote payment solutions via email and SMS. Due to the importance of new players, the Central Bank of Tunisia has set up a platform specifically dedicated to Fintechs, in order to foster their emergence on the national, regional and international scene. On the other hand, other banks have set up laboratories to innovate with other players in order to co-produce an innovative product or service or to find solutions to puzzling problems.

Table 2: Collaborative innovation at several national banks

<b>Banks</b>	<b>Countries</b>	<b>Internal Actors</b>	<b>External Actors</b>	<b>Innovation</b>
Attijariwafa bank	Morocco	Managers and employees	Fintechs, developers, startups and citizens	LabInnovation (smart start, yellow challenge, smart up)
Banque Populaire	Morocco		Fintechs	Fintech challenge
Crédit agricole	Morocco		AgriTech, FinTechu et University (UM6P)	CAM Innov P curiosity Lab Hackathon Fintech
CIH	Morocco	Internal collaborators and their children	startups, developers, designers, data scientists, children, communication agencies	Hackathon, Devoxx4Kids, Fikr@
Bank almaghrib	Morocco		Fintechs	InnovationLab
BMCE	Morocco	Partners	African startups, Cadi Ayad University	cap'tech by bmce capital

Source: Authors

The 2nd table presents the Moroccan banks that took the initiative to integrate stakeholders in co-creating new business models, which shows that they involved different internal and external actors, so that the banks are on the path of innovation. However, each participatory innovation has concluded a profitable result, helping the banks to fight against new competitors and giving a chance to young people to participate in hackathons to practice their skills, as well as taking into consideration the internal actors who have a very important role during the research or creation of the innovation. In addition, Attijariwafa bank has been able to reconcile internal and external actors, which has resulted in an innovation laboratory that contains several departments, resulting from collaborations with Fintechs and Startups at the international level as Screendy, Home bank, Namla, Tawassol and, E-check. Otherwise, BCP in turn challenges Fintechs, and has concluded partnerships with three Fintechs which are: Konta a supplier expense management platform, Omniup has the vision to offer free connections to the maximum number of Moroccan citizens and Onloutou which is a solution for automating debt collection and remote fleet management via IoT technology.

Crédit Agricole also plans to offer agritech solutions in collaboration with Sonacos, a digital payment service via the cell phone application "Imtiazat-e" by simply scanning the QR code, to allow farmers to make their transactions easily. Collaborative innovation at Crédit Agricole has taken a very important step and aims at a partnership agreement with UM6P. This agreement aims to deploy an open innovation program to find innovative solutions, to help changes in the financial services of CAM, above that, CAM organized the Agritechs hackathon at SIAM, it is a call for contributions for new entrepreneurs who aim to create their own startups, and are brought to collaborate with people with the same aspiration of participation with coaching by experts and specialists in the field, to help them realize innovative projects. Another participatory innovation concept "Devoxx4Kids" organized by CIH, aims to leverage the intelligence of digitally minded children to discover the rudiments of robotics within playful labs, similarly, CIH bank launched the second edition of Fikr@ to vote for the best innovative ideas built internally, the bank does not escape from maintaining partnerships with the ecosystem of startups and Fintechs. However, a piece of good news recently launched by Bank Almaghrib which has signed a partnership with CDG to accompany in a technical, strategic, financial and operational way the new startups to

deploy their innovative projects on the field.

BMCE has successfully concluded its open innovation program with the co-creation of a conversational agent named "BK financial Bot" which aims to inform customers via their cell phones of news concerning their banking operations.

By way of summary, banks at the national and international level have chosen to take up the challenge of participatory innovation, and note that the participation of stakeholders will be a competitive advantage, especially the strategy of inclusion of new entrants which was an obstacle to the development of the bank and will be an opportunity that has transformed the banking environment internally and externally. Noting that the most used type of player are Fintechs because of their significant effects on banking performance (Frederica, Diana & al, 2021), and because of their strengths in innovation, something that makes banks more attached to their ideas and also by the fear of losing their places in an increasingly competitive and changing world, moreover, the technological reason that produces overnight a tendency to evolve, knowing that banks can no longer adapt alone, they must integrate the new generation and new players, because each new trend has its specialists in innovations.

However, all banks understand that collaborative innovation is the only thing that will meet the needs of customers, few banks at the international level have given access to customers to participate and give their needs in the form of innovative ideas, in order to satisfy them, because the only thing that will put the bank in the obligation to innovate is the customer, but at the national level, no bank has been able to involve the customer in its co-creation system, only the Hackatons accept young graduates or young people with innovative projects to choose the best of them to transform them into reality on the ground. On the other hand, the approach of opening up to the institutional world and in particular to research laboratories, is a change that will bring about a change and even generate ideas and projects of a methodological nature on the part of student researchers. Overall, the internal and external parties have a very important role, and each complements the other, which concludes that the co-collaboration that will integrate all parties will produce extreme innovations.

In comparison with banks internationally, we can see that the ideas of Fintechs have brought a touch of change with a variety of services, and aiming to meet all the needs without any intervention of the customer in the process of innovation by the bank, because the bank already has a vision on the problems of customers, so, its objective is to solve them first, then it will opt for new ideas to improve the degree of customer experience, the same illation for national banks, but, the ideas of Fintechs at the international level have much more innovation than the ideas of Fintechs at the national level, given their rather limited number.

#### **IV. Conclusion and managerial involvement**

Collaborative innovation has become a criterion to measure the level of innovation of the bank, as all banks are facing the challenge of collaborative innovation, especially with Crowdsourcing platforms having played the role of an intermediary, which has reduced the distance between the bank and its customers, which allows satisfying their needs through collaborative participation helping to seek innovative ideas that were in the form of needs, but also helps to retarget the bank's former customers, on the other hand, this collaborative innovation allows the bank to benefit from the innovative ideas of Fintechs, which makes the bank more innovative in different areas, citing the field of AI, Cloud, blockchain, IoT, Saas, cybersecurity, Chatbots, account aggregation and much more. In Morocco or elsewhere, Fintechs are more chosen as external players than others whose customers represent the most important factor for the bank, this is due to their expertise and intelligence in targeting customer needs, but also to their high level of expertise and creation of value and innovative services that customers can no longer imagine. On the other hand, collaborative innovation can create regulatory and managerial obstacles for banks, talking about Fintechs that create services in relation to decentralized money for example, which allows banks to comply with government standards, another example explaining the concept of intellectual property protection as another source of the problem, and which must be taken into account by banks, and managerial for collaborating customers who did not have expertise in the field, in this

case, the bank must specify the category of customers providing solutions. From this article, we call for other proposals analyzing, the value of customer participation even if they do not have expertise in the field, and if not, the return of customers to innovative services co-created in collaborative innovation, which excludes the consumer working with the technology acceptance model.

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