Innovative Approach to Financing Development in Africa: Crowdfunding

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***Abstract*— This paper has explored fundraising Africa's development through crowdfunding. The study is based on the experience of a few platforms and on information from surveys and interviews with administrators of these platforms. It should be noted that crowdfunding is an alternative system to mobilize the financial resources for Small and Middle Enterprise, start-ups, associations and other organizations for the realization of any aimed goal. However, the main advantage of crowdfunding is the distribution of the project's risks among different contributors. This system of mobilizing resources could attract the diaspora and donors in financing Africa's development, if asymmetric information and moral risk linked to projects are controlled. In this article, it was found out that it is economically beneficial to finance development projects in African countries through crowdfunding, because it is less expensive than the capital market. Crowdfunding allows wide financing and could be allowed to raise donations, which is not possible on the capital market. It is also worth noting that this paper highlights the crucial role of crowd in monitoring funded development projects across the continent for efficiency.. Indeed, it has been proposed to set up a transaction management and monitoring committee to ensure their transparency.**

***Keywords*—** *crowdfunding, hazard risk, asymmetric information, Africa, financial resources.*

1. Introduction

The development of Africa is an ultimate objective pursued by political, economic and social leaders since decades. The strategies developed to achieve this objective have appeared several documents and conferences (for example the Monterrey Conference in 2002 under the leadership of the United Nations), whose report suggested the strengthening of national financial sectors through a good system of financial intermediation, transparent regulatory frameworks and monitoring mechanisms supported by a stable and solid central bank. This conference recommended to States the guarantee schemes and business development services, which facilitates access of SMEs to local finance ; which integrates the informal sector; develops internal savings, which eliminates corruption and attracts foreign direct investment (FDI) through tax relief measures. High-level dialogues on the financing of the development followed this initiative before the Doha Conference in 2008 which assessed the results of the Monterrey Consensus. It resulted from the evaluation that the development of Africa is largely financed by external resources through official development assistance (ODA), foreign direct investment (FDI), lending, and financial transfers from migrants. The pandemic of COVID-19 has generated economic recession, which was a shock to this policy. Ceteris paribus, The slowdown in global economic growth has caused a decline in external financial flows to Africa, and has imposed on the world the restructuring of the financial system in order to facilitate the mobilization of the financial resources necessary for the financing of development. Thus we think that crowdfunding may be the credible system of fundraising to financing development projects. It is the relevance of this subject, which the objective is to explore crowdfunding as alternative system fundraising for the development projects in Africa countries.

Crowdfunding is an innovative method for financing sustainable development and boosting the economy [12]- [16]-[25]. The works of several researchers are based on crowdfunding. Following them, this article aims to explore the participatory financing of development projects via the Internet, with the fact the asymmetric information. Indeed, the paper will approach respectively in 2, the

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literature review, in 3 the research methodology, in 4 the results, then in 5 the conclusion.

2. Literature review

The economic literature identifies domestic and external sources of financing for development projects. Domestic resources come from national private and public savings. Public saving is the difference between government revenue and expenditure over a given period. For a long time, public revenue in African countries was essentially tax-based, with a predominance of the informal sector, revenue mobilization is low. Public revenue per capita in Africa is \$384 against \$1314 for Asia ; \$2,226 for Latin America and the Caribbean and more than \$15,000 for European and other high-income countries [21] – [22]. Indeed, national public savings must be supplemented by private savings, which is only the disposable income not consumed by private sector actors. Banking institutions and savings banks have a very important role in mobilizing this resource. The low banking rate in African countries does not encourage the mobilization of these resources for development. Between 2010 – 2018, the domestic revenue of African countries fell by 18% due to the dependence of the economies on the global commodity market. Regarding to the external sources of financing arise from migrants transfer, foreign direct investment (FDI), official development assistance (ODA), indebtedness from institutional investors. The transfer of migrants to Africa is the main external source of financing for development, followed by official development aid (Figure 1).

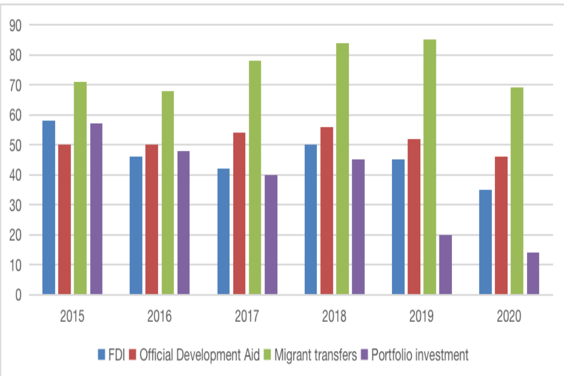

Figure 1 : Variation of externals contributions for Africa's countries (2015 – 2020 ; Billion \$)

It should be noted that the 2020 year recorded the lowest contributions of external financial for the period under review.

The part of external capital, private and public savings for development financing is presented in Figure 2.

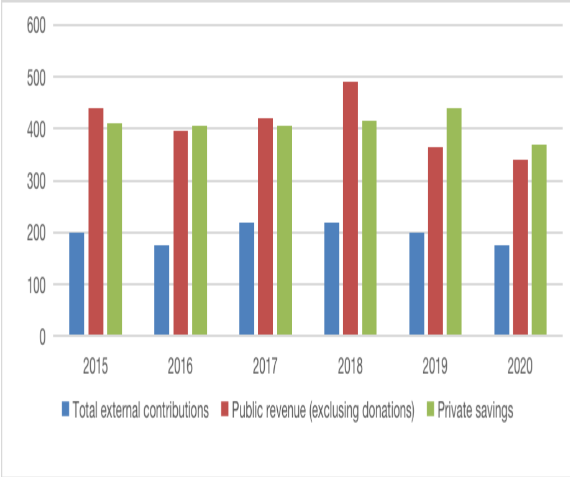

Figure 2 : Part of the various sources of development financing in Africa (2015 – 2020 ; billion \$)

Encouraged by the development of the internet and the rise of start-ups, angel financing, venture capital, crowdfunding and crypto financing have shown their effectiveness in this period of health crisis. These new means of financing qualified as alternatives require management strategies to cover investors against project risks [4]**.** Crowdfunding is experiencing rapid growth in many parts of the world (Austria, Belgium, Croatia, Czech, Denmark, Estonia, France, Germany, Greece, Hungary, Ireland, …). This type of financing allows the realization of investment projects that are too small or too risky for traditional banks [17]. Crowdfunding is used as a complement to traditional means of mobilizing resources for financing development [19]. Fundraising is done via an internet platform, allowing a set of contributors or investors to collectively choose to finance a development project directly and in a traceable manner [5]. Crowdfunding system allowed to mobilize more than 1 billion \$ USD for the development of SMEs through the realization of 58,000 projects in the USA in 2012, 1,020 million dollars in France in 2020 for approximately 67,000 projects. In Canada, through crowdfunding platforms, 780 billion USD were mobilized in 2018 for the realization of several social, artistic and health projects. Crowdfunding is an excellent alternative financing tool, which makes it possible to collect donations, to collect lending with interest or lending without interest, or equity investments from the public via platforms for financing development [17]. Agree this thesis, Cuby Claims that crowdfunding offers interesting prospects to finance sustainable development projects **[9]**. In short, crowdfunding can be understood as a means of mobilizing resources via an online platform, facilitating the mobilization of investors around a development project or an innovative idea. This system of mobilizing resources most often used for the financing of start-ups has several economic advantages for applicants and suppliers of credit **[23]**. Its first advantage is related to the lack of collateral in the financing process. The quality of the projects to be financed guaranteed the credit crowdfunding platforms. Project managers share to the crowd the ability of projects to generate profit and to guarantee repayment. In addition, capital providers are not interest rate makers like banks. The rate is determined by the platform. This rate is relatively acceptable for the project manager, who generally knows his project. The project manager can even be called the interest rate maker. In addition, on crowdfunding platforms, capital providers freely choose the project in which they invest. Crowdfunding is also a better technique to diversify project risk. The risk is spread in the crowd in a non-significant way. Because contributors are most passionate about the projects in which they invest, they help improve the final product. They are both consumers and product prescribers. In addition, because their repayment depends on the success of the project, investors make communication around the product. Investors whose contributions are convertible into equity investment take the same risks as project holders. As such, they participate in the sharing of dividends.

For the financing of Africa's development projects, crowdfunding would facilitate the mobilization of resources from the diaspora, while allowing them to contribute freely to the realization of social project of their choice. In addition, crowdfunding can be a better way to fight against the diversion of project credits and to fight against corruption through the constant monitoring of the project's evolution by the crowd. The impact is the same for providers of official development aid, who can directly contribute and monitor the management of aid through information published on the platform. Therefore, crowdfunding helps to strengthen monitoring and control in the executive of development projects. For the mobilization of national private savings, the crowdfunding platform is a solution to the hoarding of money. It appears as an investment opportunity to the crowd, and gives the possibility to public authorities to collect taxes on earnings. For this purpose, it constitutes a means of mobilizing domestic resources for the financing of development projects, and helps to collect information at a lower cost on economic agents. From 2015 to 2020, the total amounts mobilized by crowdfunding platforms in France and Africa are shown in Figure 3. In France for example, the amounts are increasing and more significant in 2019 and 2020 despite the health crisis. In Africa, the amounts mobilized by crowdfunding platforms have increased over the period, but are relatively low compared to the situation in France. In view of the amounts mobilized per year, these platforms could supplement the traditional sources of financing if they are institutionalized.

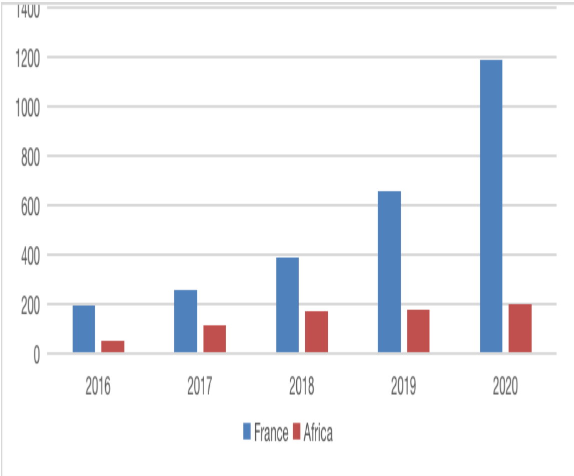

Figure 3 : Amounts mobilized by the crowdfunding platforms in France and Africa (2015-2020 ; in million $)

3. Methodology approach

The article explores the financing of Africa's development through crowdfunding. Observation and interview were used as method for data collection. 20 crowdfunding platforms belonging to the "global top 100" were visited. The availability and reliability of administrators for the interview is a main criterion for the choice of the 20 in 100. The platforms visited are from Belgium, France, Russia, Canada and South Africa. After the observation, an interview is done with one of the administrators of each platform by the chat to better understand the functioning of crowdfunding and the platform. The information collected was used for the mathematical formulation of a theoretical model of crowdfunding operation taking into account the management of asymmetric information and the cost of monitoring. The constructive epistemological position is therefore the one adopted. Mathematical, financial and statistical analysis tools are used.

4. Results

4.1. Description of investigations results

Generally, 4 types of crowdfunding have been identified: donations; lending with interest; lending without interest; equity based crowdfunding. The results of the observation and the interview are consistent with the literature review. Regarding donations, the administrators of these types of crowdfunding platforms maintain relations with donors. This type of financing can be assimilated to public development aid. For lending with interest or lending without interest, the contributors most often become consumers of the products or services. This layer is more important in the crowd. This type of financing is sometimes confused with pre-ordering of products by investors and pre-sale for project managers. The most common form of crowdfunding is lending with interest. Analogycally, it can be the bond lending at fixed or variable rates. The third type of crowdfunding is equity based crowdfunding. This type of financing is more suitable for financing private projects. However, it can be adapted to state-owned companies. Crowdfunding is considered to be a “meaningful complement to traditional credit financing” and aims to strengthen the entrepreneurial spirit in Austria[18]. In the context of an economic crisis, equity based crowdfunding may also be a viable alternative to raising capital for start-ups and small businesses, for public development projects and especially to combine these investments with traditional financing instruments. In practice, Crowdfunding appear as the market or online interface between supply and demand financial resources. The general architectural of platform of crowdfunding is presented in figure 4.

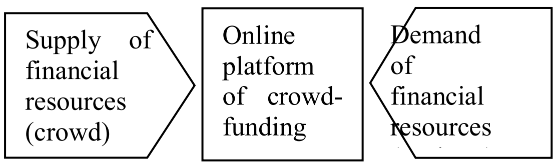

Figure 4: Theoretical architectural of platform of crowdfunding

Table 1 : Distribution of platforms visited by country and type of crowdfunding

4.2. Formulation of the business model of crowdfunding platforms for development financing

Through the crowdfunding platform, migrants, donors and other actors can participate in the financing of development projects of their choice regardless of their geographical position. Each contributor participates freely in the development of his continent by directing his savings towards the projects of his choice. To take into account the management of asymmetric information, it has been suggested to create a management committee of the platform. The main role of this committee would be to manage the crowdfunding platform, to study and recommend the various projects to contributors, to participate in the management of the funds collected for each project, to monitor the implementation of the projects and to carry out regular assessments. Platform management committee can suggest the liquidation of the assets of a project and reimburse the contributors in proportion to their contributions. The crowd made up of all the different categories of contributors participate in improving and monitoring projects. Indeed, the proposed crowdfunding model has three categories of actors: project promoters, investors (the crowd) and the management committee. The project promoters can be legal persons or States and other institutions. Their mission boils down to the development project proposal, their registration on the crowdfunding platform, the collection and publication of the information necessary for the evaluation of their project. They will then submit the projects to the management committee for evaluation. If the project is recommended, the project managers ensure the campaign on the platform and manage their projects if they are funded. The management committee makes a technical and detailed study of the projects, which can enlighten the crowd in decision-making. It then recommends published projects on the platform. This pre-selection would minimize project risks and rationalize resources. The committee monitors the projects funded through these focal managers. The committee's monitoring and operating costs are pre-financed by contributors. The committee ensures risk prevention by collecting and analyzing information from the project on the ground. As such, it can anticipate the liquidation of projects if necessary for the reimbursement of investors. He participates jointly with the project managers in the management of project accounts.

The crowds are registered in the crowdfunding platform, contribute to the reformatting of the projects pre-selected by the monitoring committee.

	France	Russia	Belgium	Canada	South Africa	SUM
Donations	02	01	00	00	00	03
Lending without interest	00	01	00	00	00	01
Lending with interest	06	04	03	01	01	15
Equity based crowdfunding	00	00	00	01	00	01
Sum	08	06	03	02	01	20

Lenders and equity providers must have a minimum amount needed to invest in the platform. They choose from among the published projects and make the online deposit to the corresponding project account against a receipt. At the end of their contract, they receive, as the case may be, rewards, interest or dividends. Using “smart contracts”, transactions can take place online and automatically. Contributors can be legal persons, public or private, who participate in the financing via the platform.

The funding process can be summarized in 7 steps after setting up of the platform and installation of the management committee :

***1st step :** proposal and submission of projects for the financing*

The promoters of project submit the development project to the management committee in the required format.

***2nd step :** the evaluation and recommendation phase for publication on the platform*

Based on the quality, relevance or profitability of the projects, the management committee should recommends whether or not the projects after its evaluation.

***3rd step :** the campaign and popularization phase of the project*

If the project is validated, the project campaign starts on the crowdfunding platform. The rules of the campaign are set by the management committee of the platform. This stage is the role of project managers who publish the necessary project information to convince investors. During this step, the crowd can have the right to add some remarks and suggestions to the project. The project promoters answer questions from the crowd by providing convincing arguments on the shadow points in order to convince investors to invest in the project. If the project is social, the initiator must emphasize the relevance and usefulness of the project in order to attract more attention from donors and the diaspora in particular. For for-profit projects, the necessary information on profitability and repayment capacity must be communicated to motivate investors.

***4th step :** the funding phase*

This phase is the expression of the final decision of the crowd to support the project by sending the amount of the financement, to lend, or the shareholding. This sum is sent to the project account created jointly by the project leader and the platform's management committee. When sent by the platform, a financing smart contract is created online. Indeed, if the necessary funds are mobilized, the project starts. If not, the funds are returned. Contributors subscribe to the cost of monitoring, which represents **t**% a share of the total amount of the contribution. Indeed, the amount **S** to be sent is made up of the capital to be invested **C** and the subscription for the monitoring :

$$S = C(1 + t) \qquad (1)$$

***5th step** : project implementation*

It is the phase of project execution. In accordance to the business plan and disbursement schedule, the project is proceeding. Disbursements must be justified successively.

***6th step** : monitoring of projects by the platform's management committee*

The monitoring committee collects data and periodically evaluates the projects. The cost of these operations is pre-financed by the investors but in fact borne by the projects. In case a project is not successful, the committee can suggest its liquidation or its reconversion to the crowd, which then votes on the decision. In the event of liquidation, reimbursement is jointly organized by the project manager and the management committee.

7th step : repayment of contributions and interest

Investor payment must be made according to the terms of the contract at maturity. Through "smart contracts", this could be managed automatically. It should be remembered that the project accounts are jointly managed by the project managers and the platform management committee, which is also responsible for managing disputes if they arise.

In accordance with the type of contract, the following cases can be identified.

***1st case :** donors*

The success of the project is a satisfaction for the donors. However, the project managers can decide to honor them by offering gifts (a prototype of the company's product, a T-shirt, ...). For social projects, donors can be decorated, the project can bear their name or the denomination of their foundation. It should simply be noted that the expenditure is autonomous in this case. The project manager rewards capital providers without constraint. It determines the type and value of the gift to give.

2nd case : Lending

In the case of lending with interest, at maturity the holder of a project **i** will have to pay the total amount collected ($\mathbf{M_i}$) and the interest ($\mathbf{I_i}$). Interest is a percentage of the capital contributed. For each contributor of capital of an amount ($\mathbf{C_i}$), at maturity, the project will pay him an amount $\mathbf{C_i} + \mathbf{I_i}$. Interest $\mathbf{I_i}$ is determined as follows:

$$I_i = C_i.r \quad (2)$$

Let $\mathbf{W_i}$ be the amount to be paid if the project succeeded.

$$W_i = C_i(1+r) \quad (3)$$

r the interest rate.

Let **t** be the monitoring cost, the investor's return $\mathbf{R_i}$ is determined by:

$$R_i = C_i(1+r) - C_i(1+t) = C_i(1+r-t-1)$$

$$R_i = C_i\,(r-t) \quad (4)$$

with (**r > t).**

The rates must be set such that the interest rate is higher than the percentage intended for monitoring.

If the project does not succeed, the monitoring committee evaluates the project, liquidates it and proceeds to the reimbursement in proportion to the initial capital contributed. Let $\mathbf{Z_i}$ be the value to be cashed in by a contributor who has provided capital of the amount $\mathbf{C_i}$:

$$Z_i = L_i.C_i/M_i \quad (5)$$

where $\mathbf{L_i}$ is the net asset value of project i on the date of liquidation.

It is the same analysis for the case of the lending without interest (r = 0). The contributor receives $\mathbf{S_i} = C_i(1+t)$ at maturity as reimbursement if the project is successful. In case the project is not successful, he will receive the amount $Z_i = L_i.C_i/M_i$.

***3^rd^ case** : equity investment or lending convertible into shareholding*

Let $\mathbf{M_i}$ be the total amount of resources needed to carry out a project **i**, $\mathbf{X_i}$ the unit price of a share, $\mathbf{N_i}$ the total number of social shares, $\mathbf{n_i}$ the number of shares per contributor.

$$N_i = M_i/X_i = \sum n_i \quad (6)$$

$\mathbf{n_i}$ can vary from investor to investor.

For monitoring, a proportion **t** of the project is affected. During the financing phase, he send:

$$n_iX_i(1+t) \quad (7).$$

At the end of each financial year, the contributors are entitled to the dividend in proportion to the number of their shares. Let $\mathbf{R_{ii}}$ be the result of the exercise; an investor with **n** shareholding will receive :

$$D_i = R_{ii} * n_i/N_i \quad (8).$$

If the project is not successful, the monitoring committee liquidates the project, and reimburses the investors in proportion to the contribution.

$$Z_i = L_i * n_i/N_i. \quad (9)$$

In order to simplify the model, the effect of inflation has not been taken into account although it is a very significant external factor.

5. Conclusion

Development financing remains a very important question on the African continent before the COVID-19 pandemic. With the global health crisis affecting partner developed countries, the situation has worsened. The economic recession has reduced the financing capacity of the countries, increased the risk of default for the funding requesting countries and has considerably reduced the inflows of external capital. Admittedly, institutional investors have become more reluctant to credit, public development aid (ODA) has become rare, so we are witnessing a general decline in financial resources for financing development. Crowdfunding has proven itself in the mobilization of national and external resources in other countries and continents, it has been suggested in this article, its implementation via the internet in an attempt to mobilize the transfer of migrants, the resources of investors institutions and donors. Crowdfunding is an economically beneficial system to finance development projects in African countries, because it is less expensive than the capital market. It allows wide financing and also allows to raise donations, which is not possible on the capital market. Besides economic advantage, crowdfunding would facilitate the monitoring of funded development projects by the crowd. For the management of hazard risk, asymmetric information and to guarantee the sustainability of the platform of crowdfunding, it is suggested to create a management committee, in charge of monitoring and evaluation whose operating resources are subscribed by the participants. The theoretical business models of this platform have been developed in the article. Although proposals are made on the organizational level, questions related to the composition of the management committee of the platform, its operating rules, and the role of the crowd are not solved. Thus, the next research could resolve the following questions in order to make operational, credible and sustainable the financing of development through crowdfunding on the African continent.

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