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How to Settle the Russian Far East: Fate the Idea of the “Far Eastern Hectare”

By Yu. N. Gladkiy & V. D. Sukhorukov

Herzen University Saint-Petersburg

Abstract- The Far Eastern Federal District of Russia is the largest by area (40.6% of its territory), but the most sparsely populated (5.57% of the population) and economically inactive. At the same time, the number of residents of the District continues to decline. The main reason for the observed quantitative losses is the outflow of the population in the form of the so-called "Western migration drift." The resulting demographic "vacuum" of the Far Eastern Federal district looks increasingly alarming against the background of very high demographic pressure on the adjacent territories of Russia's Asian neighbors. The development of problematic territories always requires significant investments in human capital. For sustainable development of the region and adequate realization of human capital, it is necessary to create appropriate institutional conditions. According to the decision of the Russian Government, one of them is a mechanism for attracting labor resources to the Far East through the free provision of land plots called "Far Eastern Hectare" (FE-hectare). The article critically analyzes the implementation of this law.

Keywords: *the far east of russia, "far eastern hectare," natural conditions, human capital, region, territory.*

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How to Settle the Russian Far East: Fate the Idea of the “Far Eastern Hectare”

Yu. N. Gladkiy ^α & V. D. Sukhorukov ^σ

Abstract- The Far Eastern Federal District of Russia is the largest by area (40.6% of its territory), but the most sparsely populated (5.57% of the population) and economically inactive. At the same time, the number of residents of the District continues to decline. The main reason for the observed quantitative losses is the outflow of the population in the form of the so-called "Western migration drift." The resulting demographic "vacuum" of the Far Eastern Federal district looks increasingly alarming against the background of very high demographic pressure on the adjacent territories of Russia's Asian neighbors. The development of problematic territories always requires significant investments in human capital. For sustainable development of the region and adequate realization of human capital, it is necessary to create appropriate institutional conditions. According to the decision of the Russian Government, one of them is a mechanism for attracting labor resources to the Far East through the free provision of land plots called "Far Eastern Hectare" (FE-hectare). The article critically analyzes the implementation of this law. The authors believe that high expectations from the project are associated not only with the unfavorable climate environment but also with the underdevelopment of transport infrastructure, the lack of jobs, low investment in human capital, etc.

Keywords: *the far east of russia, "far eastern hectare," natural conditions, human capital, region, territory.*

I. INTRODUCTION

In the middle of the XIX century, after the final annexation of the lands along the Amur and in Primorye (*the Southern maritime territory*), Russia received a vast and almost deserted region. It was fenced off from the places of residence of the bulk of the Russian population by the powerful thousand-kilometer expanses of the Siberian taiga and off-road areas. However, in just half a century, the authorities of the Russian Empire managed to resolve the issue of the initial consolidation of the Far East by providing land, assistance, and benefits to migrants.

Nevertheless, uncomfortable (severe and extreme) climatic conditions have always had a strong impact on the development and settlement of the European North, Siberia, and the Russian Far East. Under the totalitarian regime of the Soviet Union, the

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large-scale use of the labor of prisoners and military personnel, as well as the relatively cheap labor of freelance workers, contributed to a serious lack of consideration of this objective reality in the policy of socio-economic development, settlement, and formation of a network of settlements in these vast territories.

Today, this problem has escalated again. We can hardly expect Russia to strengthen its strategic role in the *Pacific region* without increasing the number of the Far Eastern population, boosting economic activity, and attracting huge investments, especially in human capital. At the same time, a large number of Chinese migrants in this part of Russia makes this problem even more relevant.

This article is about an attempt by the authorities not only to stabilize the population of the Far East but also to increase it with the help of a special decree on the "*Far Eastern hectare*." The authors argue that the expectations of this document are too high, and not only because of the harsh and extreme natural conditions. In addition to the shortcomings of the law itself, there is such an "Achilles' heel" as the underdevelopment of transport and energy infrastructure, a shortage of jobs, which encourages young people "to drift to the West" of Russia, etc.

II. PROBLEM STATEMENT AND RESEARCH METHODS

Almost all studies of the climatic conditions of the North and East of Russia on human survival conducted by scientists in the USSR, for all their depth and thoroughness, were under strict ideological pressure. Their profound results on the degree of territorial differentiation of the aggressive climate environment were combined with a too "soft" and optimistic assessment of these conditions for human habitation. Today, such estimates are gradually becoming more realistic.

The reorientation of the Russian economy to the market path of development, its more active inclusion in world economic relations, the rapid growth of fuel, energy, and transport prices have significantly increased the impact of the rise in the cost of human habitation and all types of economic activities on the system of settlement of the population of the Far East. It is not surprising that according to demographic forecasts, the decline of the population from the far Eastern region with

a pronounced negative balance of the migration balance is a very long-term trend.

Under these conditions, the problem can be mitigated by additional investments in human capital, if not completely solved. Investments in people affect the nature of work, leisure, consumption, settlement, culture, life, worldview, and behavior of the individual [1]. However, the authors are not inclined to believe that the content of human capital is determined only by the socio-economic conditions in which society operates. Indeed, they will be different in industrial and post-industrial countries than in agricultural and peripheral states. But to reduce this question only to material well being is to consider a person as a passive object of external causes.

The essence of value representations in the modern sense is that any social problem is being refracted through the cultural and psycho-informational sensorics of a person. Thus, the solution to important government objectives, in the end, should be reduced to solidarity (close dialogue) of the surrounding world with the life preferences and goal settings of the individual. By the way, the research of Russian scientists found that local patriotism is most inherent in the residents of the European part and the Far East of Russia. This fact can also play a specific role in strengthening the demographic potential of the region.

A necessary method of cognition of this unity should be a *system-composition analysis* that answers the questions posed.

III. RESEARCH RESULT

a) *Far Eastern hectare: rules and regulations*

According to the Federal law of the Russian Federation - "The law on the Far Eastern hectare" (entered into force from 01.06. 2016), every citizen of the Russian Federation can get land in the far East for free for 5 years, after which, subject to the development of land, a citizen has the right to issue a plot as property [2]. The right to choose a land plot in the pilot municipality of its FED subject was initially granted only to residents of the Far East, but later it was given to all citizens of the country, regardless of residence.

The common place of numerous publications devoted to the law on "FE-hectare" has become a mixture of the concepts of "*development of the territory*" and "*improvement of the demographic situation*." Not only in journalistic but also in scientific literature, the expression "development of Siberia" has long acquired a purely figurative, metaphorical meaning. To develop means to "equip" vast Siberia, to create new settlements, to use for economic purposes previously unused areas with parallel construction of an extensive road network, etc. But is it possible at all in the foreseeable future, and, most importantly, what dictates the need for such "development"?

Ignoring the issue of the "cost of cold" in the Soviet past (including permafrost), dictated by the desire for "uniform distribution of production forces across the country," seems to current businessmen an absurd idea in market conditions. They are no longer inclined to invest ideological content in the concepts of "economic efficiency," "cost," "profitability of the economy" and are unlikely to agree that the lion's share of profits "burned in the fire" of cold winters.

Therefore, the main goal of this law is first to stabilize, and then to accelerate the growth of the demographic potential of the Far East, and to promote the state's balanced demographic development and the consolidation of the Russian population in the East of Russia. The authors of the law proceed from the fact that the continued lag of the small-populated region threatens to increase economic and political pressure on the Russian Federation with unpredictable consequences. In this connection, in parallel with the solution of the demographic problem, the goal is to accelerate the economic development of the territory with an increase in its spatial efficiency. Even before the adoption of the law, the government of the country had taken some measures: appropriate strategies and programs had been developed, and special institutional bodies had been created to promote the economic development of the region.

Government experts believe that settlers are those who decide to find a second homeland in the Far East, can engage in *agribusiness and processing of agricultural products, forestry, fish farming, low-rise housing construction, crafts*, etc. As for specific measures of state support, small and medium-sized businesses were been expected to have access to preferential loans (with the possibility of compensating part of the costs associated with paying interest on loans), start-up farmers are guaranteed grants of up to 1.5 million rubles, and representatives of family livestock farms up to 21.6 million rubles [3, 4]. Newcomers who decide to link their fate with the far Eastern region and settle in areas of Primorye equated to the regions of the Far North (Kavalerovskiy, Dalnegorskiy, Terneyskiy, and Olginskiy districts; the village of Vostok of the Krasnoarmeyskiy district and individual village councils of the Krasnoarmeyskiy district) are promised a surcharge to the salary and an increased pension.

Trying to attract citizens to the "hectare," the authorities are expanding the list of benefits. Thus, the demands on land recipients are becoming softer every year. In 2019, a law came into force that allows participants of the program to receive a hectare for the voluntary relocation of compatriots living abroad to the Russian Federation. The same act allowed the Russians to preregister the Far Eastern hectares as property when building a house. It is also planned to grant the right to citizens, after successful development of the land plot, to provide the next plot of the same size. In addition, we

are talking about the upcoming preferential quota (2% per annum for 20 years) for the construction of a house, etc.

However, the first results of the implementation of the program do not justify the tasks assigned to it and, above all, the demographic ones. The owners of the far Eastern hectare are being faced with the fact that many of the promised support measures exist only on paper. The problem here is the lack of legal mechanisms for migrants to demand infrastructure from the authorities. In addition, obtaining a grant for farmers is conditional on the availability of special qualifications. Also, the newcomers are faced with limitations on the types of land use. For example, if a hectare is being located in a forest Fund, residential buildings cannot be built on it; it is being forbidden to take plots for tourist purposes near rivers and lakes, etc.

b) The homestead palliative: on the parallels of history

Conceptually, the law on the hectare fits perfectly into a series of well-known acts adopted by various countries to regulate land, forest, and other relations for the purpose of settling and developing free land. However, direct analogies of these acts with the law on "FE-hectares" hardly contain a constructive beginning, taking into account the features of the current era, the Russian "demographic pit," climate realities, geopolitical specifics of the region, and others. This is especially true when compared with the distribution of essentially free land plots in the United States in the XIX century. Here the similarity can be found only in the idea itself and, in part, in the mechanisms of state support.

Recall: The Federal «Homestead-Act», adopted in 1862 during the American Civil war, was a triumph of the Republican party of A. Lincoln, the result of many years of struggle, which culminated in the transfer to the colonists of farm plots-homesteads on labor standards (homesteads) from the Fund of public lands that were available in the West of the country. According to this law, any U.S. citizen over 21 years of age (not participating in the war against the North!) received the opportunity to purchase a land plot of no more than 160 acres (65 hectares), process it, and erect appropriate structures. The registration fee had been set at \$10, after which, after five years, the site became owned (although it could have been purchased earlier at the rate of \$ 1.25 per acre).

Fans of analogies should take into account the following facts:

- * First, in the "wild" American West, vast fertile plains were empty, including those that were capable of producing two crops a year;
- * Secondly, in the young state, many of yesterday's migrants (and their children) were very interested in arranging their fate in regions that were

characterized by security, stability, and a completely benign climate;

- * Third, the country was engulfed in the civil war and the establishment of agribusiness in new territories (production of wheat, tobacco, wool, etc.) promised guaranteed income to the colonists;
- * Fourth, history shows that the demand of farmers, the urban poor and business representatives quickly exceeded the possibilities of acquiring land through the established procedure;
- * And, finally, fifth, Lincoln was aware that sooner or later the vacant land will find a host from among European competitors (including Russia).

The conditions for implementing the Russian law on "FE-hectares" differ dramatically from those set out above. So, perhaps, when developing the far Eastern region, the experience of Stolypin's agrarian reform could be more in demand?

It is being known that the policy of the imperial Prime Minister Stolypin on the practical implementation of the "Siberian colonization" pursued several goals and was complex. In the context of the problem related to the government's "Far Eastern hectare" initiative, we note that the essence of Stolypin's agrarian reform was associated primarily with the strict consolidation of peasants' ownership of land and the replacement of collective and limited ownership of the land of peasant communities by *the private property* of individual peasant householders. In modern terms, the reformer tried to prepare the conditions for the formation of a progressive "farm system" in Russia.

Each settler had the opportunity to get up to 100 tithes of land at his disposal (the tithe exceeds the area of a hectare!), but after 1901, the calculation had been adjusted to 15 tithes per man. Elements of state support also provided for 150 rubles of lift per family (the cost of a cow was 3 rubles), preferential railway travel and preferential lending, etc.

Unfortunately, the vigorous activity of Stolypin, for various reasons, did not bring the expected result, which is confirmed, in particular, by the valuable idea of D. Lekukh: "...from 1905 to 1914, about 3.5 million people left to develop new territories. But at the same time, even though they were entitled not only to "free land," but also to start-up capital and even received a special "salary," about 16% of the population did not settle in Siberia and returned to the European part of Russia. At the same time, they returned poor, ruined, and this greatly increased the already considerable tension in the then Russian Empire. And this is not counting the fact that a decent part of the "settlers" simply did not settle on the ground, but went to the cities, to gold mining, to the extraction of furs, to work on the construction and maintenance of the Siberian and Trans-Siberian Railways, which was actively conducted in the same years" [5].

But the conditions of state support for farmers were then more noticeable than in the implementation of the current project "Far Eastern hectare," if only because the issued lifting (equivalent to the cost of 50 cows!) then it was enough to build a house and get a farm.

c) *On the overestimation of expectations from the "Far Eastern hectare"*

From the very beginning of the implementation of the analyzed Federal project - the free allocation of one hectare of land in the Far Eastern Federal District, it has been subjected to severe, sometimes insufficiently reasoned criticism. A wave of acute dissatisfaction with the law was manifested, in particular, in the Republic of Sakha Yakutia, where an attempt had even been made to hold a referendum to repeal the law on the territory of the Republic. One of the heads of the Institute of the Far East of the Russian Academy of Sciences, A. Ostrovsky, also contributed to the "piggy bank of skepticism": "if we talk about the issue of land in the Far East, it is not a good thing. Even if they gave out land for free, then you have to spend a lot of money on it so that something grows on it... Without infrastructure, who needs land?" [6]. "The idea is an empty shell", "fixed idea," etc. - such metaphors are often (openly or latently) put by authors in the content of critical assessments of the law.

In this regard, the point of view of the head of the Russian state Vladimir Putin seems to be quite balanced: "the idea itself is correct and was already being implemented in Siberia in the history of Russia. Modern farming conditions, the modern economy is a little different, so you need to think through all the details carefully. You can see where these lands are, what quality they are, whether one hectare is enough in the Far East, and what conditions should be associated with the need to use them" [7]. It is taking into account all the details and conditions for implementing this Federal project that can not only "save" it from sharp criticism, but also help to achieve a real effect, especially since the development of Siberia and the Far East was designated by the head of state as a national priority for the entire XXI century in 2013.

Later, 12 priority development territories were created within the Far East (with more than \$15 billion in funds raised at the end of 2016.); established the Russian-Chinese Fund in the area of agribusiness; received the status of the free port of Vladivostok, which gave the impetus for the creation of various logistics projects; is intended to provide the "Porto-Franco" other key harbors of Primorye, etc. But all these facts did not change skepticism of critics of "Far Eastern hectare."

One of the well-known experts in regional studies, Yu. Krupnov has the following bright phrase: "in the Far East, you need to give a job, not a "hectare." Despite its peremptory nature, it, in fact, correctly grasps the idea that it is very problematic to lure people to the Far East by land alone - it is necessary to create social

and industrial infrastructure in parallel. Let's remember that in the "wild" West in the United States, highways and railways were being laid on new territories at the same time, cities were being created, social infrastructure facilities were being built, and new jobs were being appeared. Krupnov believes that despite the position of the head of state, little is being done in the Far East for this purpose: "No one creates decent employment in the Far East, that is, they do not implement the main function and purpose of the state. This is the tragedy that we are witnessing - the tragedy of inadequate management, the tragedy of not understanding the basic issues of human life in general" [8].

You can understand a critic who is nostalgic for the positive Soviet experience of developing new territories, when the secretaries of district committees reported that they had introduced another school, another hospital, another paramedic station, another factory. But we can hardly agree with him about the lack of "positive, meaningful actions of the government" about the implementation of the far Eastern hectare project. By the way, in parallel, we can cite examples of egregious economic and social costs of developing new territories under the Soviet regime (at least the development of "virgin and fallow lands").

Of course, we should not lose sight of the fact that in the "Stolypin" era, the basis of the migration wave to Siberia and the Far East had been made up of small-land peasants from today's Ukraine, who made do before moving to a new place of residence, mainly with a cow, a horse and a plow, which represented a natural economy. Modern migrants (including Ukrainians) are mostly "residents of high-rise buildings," i.e., workers who do not have the skills of agricultural labor, but who seek immediately to buy a tractor, car, seeds, etc. They are talking about multi-million dollar expenses, which they usually can't afford to implement.

The authors associate the overestimation of expectations from the implementation of the Far Eastern hectare project not only with economic, social, or political reasons, but also with *geographical* ones. Many authors, and, above all, geographers, including the authors, have written about the severity of the nature of Siberia, as the most extensive circumpolar territory on Earth, and the "misfortunes" generated by this [9, 10, 11, 12, 13, etc]. Of course, Primorye and neighboring territories are not the circumpolar regions, but no one has "canceled" the pronounced continental climate and the zone of "risky agriculture." (For this reason, often drawn analogies with the agricultural development of the American "wild" West suffer not only from inaccuracy but also from geographical illiteracy).

The situation is being complicated by the fact that, on the one hand, the traditional form of *farming* practiced in Western countries is unlikely to become widespread in the climatic conditions of the Far East. Several experts rightly believe that large cooperative

farms could be more effective here, which in some ways contradicts the promoted idea of "one family - one hectare." Therefore, the regional authorities should study more carefully the possibilities of developing both classical "farming" and vertically integrated agro-industrial complexes (taking into account the lessons of Stolypin's colonization of Siberia).

On the other hand, such agricultural complexes, aimed at marketing products in the countries of the Asia-Pacific region, will inevitably face the difficult problem of low production efficiency of commodity crops - primarily soybeans and durum wheat. At the same time, the low efficiency by world standards is due not only to the unacceptable yield (wheat - only 15-18 c/ha) but also to the widespread cultivation of genetically modified wheat and soy varieties in the Asia-Pacific region. Under these conditions, the cost of wheat and soybeans cultivated in the Far East will remain higher than foreign crops.

Weighing all the arguments "for" and "against" the FE-hectare, we can conclude that this is a good idea (although it was turned by some officials into a PR campaign). Even the most "incorrigible" pessimists of this initiative cannot but admit that the Far Eastern vector of Russia's development was implemented in practice successfully. Huge changes are associated with dozens of industrial enterprises, new ports, the Vostochny cosmodrome, the trans-Siberian highway, the BAM-2 program, and so on. "The Far Eastern hectare" is only one of the elements of the state strategy that can bring a synergistic effect.

As the main drivers of successful implementation of far Eastern strategy of Russia, of course, is not FE-hectare, and industrial buildings in the south of the Far Eastern Federal district, the construction of large production infrastructure, organization, and extensive high-speed rail, the spread mode "Porto-Franco" on all the key harbors, intensive housing construction, recreational development of territory, etc. This type of activity will give additional geopolitical and geo-economic weight to the Russian Far East and will actually reduce the outflow of the population and attract new immigrants.

IV. CONCLUSION

Currently, "The Far Eastern hectare" program involves not only citizens of the whole of Russia, but also foreigners who can get an FE-hectare for free use, and after registration of their Russian citizenship - in subsequent ownership. Also, a piece of far Eastern land can be found by compatriots who live abroad and are participants in the voluntary resettlement program in the Russian Federation.

In the first two years of the EF-hectare law, more than 120,000 applications for land have been submitted. This is why supporters of the "futility" of the government

initiative are mistaken. Primorskiy Krai became the leader among the Far Eastern Federal district subjects - almost 40% of the total number. More than 2 thousand applications were being received from residents of Moscow. According to available data, more than 40% of those who want to get land plan to build housing on their site, 26% - to engage in agriculture, 13% intend to equip a dacha complex or a subsidiary farm, 12% - to implement projects in the tourism industry, 8% have chosen other types of business, including the opening of cafes, shops, gas stations and much more.

It follows that about half of the recipients of the EF-hectare have an active life position and plan to engage in business activities on their land. This fact indicates that the law on EF-hectares has started to work. It has already initiated the creation of new settlements by citizens in the Far East, has become an additional incentive for the development of cooperation, and the formation of industry communities, new points of growth. Of course, the law needs to be adjusted, amended, and supplemented.

The law will be in effect until 2040, and everyone can apply for a land plot until 2035 inclusive. Registration of the DV-hectare is carried out free of charge, without contact with officials, via the Internet from anywhere in the world [14].

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“Blue is the New Green”: The Economy of the Sea as a (Regional) Development Policy

By Thauan Santos & Andrea Bento Carvalho

Abstract- This paper has as main objective to propose the economy of the sea as a (regional) development policy in “maritime countries” by nature. To this end, we begin by analyzing the evolution of the economy of the sea concept, understood as an analytical tool that can play the role of strategic (regional) development policy. To make it possible, we analyzed the cluster theory (maritime), highlighting particularities of its governance, nature, and performance. We then narrow the dialogue between the theoretical framework and regional development, presenting some key variables that can contribute to the analysis and evaluation of different cases of maritime clusters, suggesting it as a model to make such a development policy feasible. Taking the case of two maritime clusters in Brazil (Rio Grande, and Rio de Janeiro), we create and analyze the Herfindahl-Hirschman index (HHI) based on the number of employees of the municipalities facing the sea using official data of the Annual List of Social Information (RAIS), having as base year 2018. This proxy may be used as a guide to promoting both clusters, evaluating the current scenario and, at the same time, indicating potential sectors to be developed or encouraged in both cases.

Keywords: economy of the sea, maritime clusters, regional development, blue economy, brazil.

GJHSS-E Classification: JEL Code: C38, H70, L11, R12, R58.



Strictly as per the compliance and regulations of:



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Thauan Santos ^α & Andrea Bento Carvalho ^σ

Abstract- This paper has as main objective to propose the economy of the sea as a (regional) development policy in “maritime countries” by nature. To this end, we begin by analyzing the evolution of the economy of the sea concept, understood as an analytical tool that can play the role of strategic (regional) development policy. To make it possible, we analyzed the cluster theory (maritime), highlighting particularities of its governance, nature, and performance. We then narrow the dialogue between the theoretical framework and regional development, presenting some key variables that can contribute to the analysis and evaluation of different cases of maritime clusters, suggesting it as a model to make such a development policy feasible. Taking the case of two maritime clusters in Brazil (Rio Grande, and Rio de Janeiro), we create and analyze the Herfindahl-Hirschman index (HHI) based on the number of employees of the municipalities facing the sea using official data of the Annual List of Social Information (RAIS), having as base year 2018. This proxy may be used as a guide to promoting both clusters, evaluating the current scenario and, at the same time, indicating potential sectors to be developed or encouraged in both cases. Through this economy of the sea perspective, the sea can be explored, needs to be managed and must be protected.

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I. INTRODUCTION

Since the second half of the 20th century and particularly after the 1970s, raises concerns about the environment and the climate, the “green” perspective progressively replaces the old “gray” one (infrastructure, asphalt, and smoke). With the turn to the current century, there is a significant paradigm shift towards the “blue” paradigma. Hence, despite the confusion about what these colors represent in terms of ideology and politics, it is possible to argue that in the 21st century, some academics, agencies, politicians, and environmentalists are trying to re-brand and reframe it suggesting that “blue is the new green.”

In 2007, Seele associates the term “blue” with the humanitarian variable in which some companies tried to spiff up their public image linked to the United Nations (UN), taken as a moral authority; in this case, the association was due to the color of the UN logo and flags, as well as because of blue helmets of the UN-troops. In 2008, The New York Times released an opinion piece stating that “blue is the new green,” again in the face of a narrower view with a focus on the use and access of water as a resource. In the following

decade, Ido and Shimrit (2015) expanded the notion of “blue” in their analysis, associating it with an ecological enhancement of concrete based coastal and marine infrastructure (CMI). It is precisely in line with this last perception that this paper reinforces that “blue is the new green,” considering a broader spectrum of coastal and marine economy, infrastructure, and ecosystems – often associated with the “Blue Economy.”

“Pauli named the “Blue Economy” not only in reference to the oceans, but primarily in the idea that “blue is the new green,” in the sense that the blue economy, unlike the green one, must be profitable in itself, because Nature is both a waste-free industrial system and still a cheaper, leaner, more effective one than ours.” (Aberkane, 2016: 285).

Opposing the green color, Pauli (1995) analyzed business toward sustainability and stress the role of industrial clusters of the twenty-first century. From some case studies, the author stated that new clusters might reshape (i) industrial policies, allowing governments at local and regional levels to create new jobs; and (ii) corporate strategies, impacting partnerships, research and development (R&D) programs, acquisitions, and new startups, as well as mobilizing investments especially in infrastructure. In line with Pauli’s perspective (2010, 2015), this paper will focus on the economic and social benefits and impacts of promoting sectors directed associated with the sea, associating them with regional development policy.

Despite being aligned with the author’s perspective regarding the quantification of impacts and the relevance of clusters, our proposal uses the concept of Economy of the Sea as a baseline. We propose to assess the particularities of maritime clusters through a methodology based on (i) a theoretical-conceptual discussion; and (ii) the Herfindahl-Hirschman index (HHI). At first, we contributed to the literature to tie frameworks that initially had little dialogue: economy of the sea, (maritime) clustering, and regional development, proposing a more general theoretical framework. Then, we briefly present the construction history and analyze the activities incorporated into two Brazilian cases of maritime clusters: (i) Rio Grande (extreme south of the country), which has existed since 2009, but which has been changing recently; and (ii) Rio de Janeiro (southeastern region of the country), whose official launch took place in the second half of 2019. The

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number of employees of the municipalities facing the sea using official data of the Annual List of Social Information (RAIS), having as base year 2018, is the base for HHI values.

The analysis of the Brazilian case makes perfect sense, since about 20% of the country's population, production, and formal jobs are related to the economy of the sea (Carvalho, 2018). Precisely because these clusters are currently taking place in the country, our analysis is justified because these are relevant and current events for the Brazilian economy, requiring further analysis and studies. Also, the conjuncture of low economic growth coupled with the high rate of national unemployment demands responses from the Brazilian State capable of mobilizing employment and income to stimulate strategic sectors of the economy, taking advantage of sectorial, local, regional and/nationals features that the country has.

Therefore, this paper aims to propose the economy of the sea as a (strategic and analytical) policy of regional development through the maritime cluster (model). The analysis of the concentration of economic activities in these two case studies will not only allow a diagnosis conducive to the identification of industries and sectors potentially benefited by the cluster model but above all, to map them and propose public policies to encourage their development.

II. THE ECONOMY OF THE SEA, MARITIME CLUSTER, AND REGIONAL DEVELOPMENT

Once the paper aims at first to provide a theoretical contribution to the specialized literature, this section will be divided into two parts. In the first subsection, we explain the concept of the economy of the sea (understood as an analytical and strategic tool capable of contributing to the formulation of public policies), tying it to the cluster theory, particularly that of maritime clusters (understood as a model by which the economy of the sea can be used as a public policy vector). In the second subsection, we narrow the dialogue between the theoretical framework presented and regional development, briefly presenting how development theory has evolved since the 1940s, noting the increase in the range of themes and the relevance of the regional focus. Finally, we show some key variables that can contribute to the analysis and evaluation of different cases of maritime clusters – including those that will be presented and analyzed in the next section.

a) *The economy of the sea and maritime cluster*

Covering more than 70 percent of the Earth's surface, water provides different resources (i.e., food, minerals, raw materials, employment, leisure, energy) to support and to deal with the pressure of the global population growth rate, in addition to enabling different economic activities (i.e., fisheries and aquaculture, seabed mining, maritime transport, cruising, offshore

exploration, and hospitality). Despite the recognized pressure on the sustainability of natural resources, there is a vast and hopeful future since only 5% of the seabed has been mapped and photographed.

As briefly presented in the introduction, there is a conceptual confusion between the terms "green" and "blue," which also extends to "the blue economy" and "the economy of the sea" (Santos, 2019). In general, the use of "blue" indicates a way of thinking and doing business in the context of sustainable development, direct opposing to the used term "green," therefore not limited to the sea, coast, and ocean. On the other hand, the concept of "economy of the sea" is a more precise one, specific to each country, and limited to activities directly, and indirectly related to the seas (Carvalho, 2018). Nevertheless, the understanding of what the economy of the sea is has changed a lot in the last century, expanding the range of sectors, actors and associated policies.

The concept of "economy of the sea" seems to have been mentioned academically for the first time by Danish marine biologists Joh Petersen and Boysen Jensen (1913), when evaluating the sea-based on the animal life of the sea-bottom and highlighting the role of phytoplankton in the sea economy. In the 19th century, the economy of the sea was not considered an area of knowledge (what persists in some regions), and its contributions came from the biological sciences. Clarke (1935), professor of biology at Harvard University, has the first publication made with "economy of the sea" in its title; however, as well as the others of the period, the author associated the sunshine to the nutrition of plants and animals in the sea – therefore still focusing on discussions in the area of biology. Shortly afterward, Jones (1965) is one of the few authors who foresee the relevance of the economy of the sea, using it also in the title of his publication; particularly analyzing the biochemical characteristics of living marine organisms, the microbiologist concludes his paper by stating that it is a "young science" full of questions to be answered.

Probably due to (i) much of the discussion associated with the economy of the sea comes historically from the biological sciences; (ii) having interfaces with so many established areas and sub-areas in Economic Science; and (iii) allowing studies of different methodological nature, there is still no standardized method for classifying it even in the JEL (Journal of Economic Literature) classification system. Consequently, the studies end up spreading out, making it difficult to consolidate a group of professionals and researchers on the topic – since in the JEL system there is no mention of the terms "marine," "maritime," "blue," "river," "sea," "ocean," "coast" or "offshore" (Santos, 2019).

Thus, because we do not necessarily focus on approaches such as biological (marine economy), port and shipping (maritime economics), sustainable and

natural resource management (blue economy), we will use the concept of the economy of the sea in our analyzes. It can be understood as the area of economic science responsible for identifying and measuring economic sectors directly and indirectly related to resources and activities in/from the sea (Carvalho, 2018), corresponding to an analytical tool capable of contributing to the formulation of public policy. Hence, through this perspective the sea can be explored, needs to be managed, and must be protected.

The economy of the sea is therefore not just an area of economic studies, but must be understood as an analytical tool. Also, our main argument is that it serves as regional development policy, given the range of stakeholders involved in its sectors and segments. However, it is necessary to propose a model by which the economy of the sea can serve the purpose of public policy, which led us to consider the cluster theory.

Marques(2015) narrows the relationship between "economy of the sea" and "clustering," highlighting the relevance of cooperation between different associated stakeholders (states, levels of government, universities, private sector, and civil society). According to Porter (1998:3), cluster may be understood as "geographical concentrations of interconnected companies and institutions in a particular field," linked by mutual and complementary characteristics (Porter, 1999), where firms can compete and cooperate among themselves (Porter, 2000).

Andriani et al. (2005) claim that these are systems of localized economic activity and innovation in and between firms, allowing to raise productivity, competitiveness, and economic growth, as well as being able to change based on five main dimensions: proximity, input-output links, knowledge/innovation, governance, and embeddedness. The authors stress some principles related to cluster approach, such as (i) its development maybe measured in a longer-term perspective, given its life-cycle; (ii) its measure shall consider both qualitative and quantitative performances; and (iii) in some cases, its focus should be on some product families, instead of on industrial sectors.

Given existing endowments and socioeconomic conditions, clusters tend to appear spontaneously – which does not mean that they cannot be stimulated and supported by different (public) policies. Notwithstanding, there is no consensus on this point since De Langen (2002) states that its delimitation is constructed, rather than natural. In any case, taking advantage of local, regional or even national particularities (e.g. proximity between firms; shared and specialized labor; knowledge transfer; business networks and relationships; infrastructure and support services), it is possible to create incentives and conditions to attract some firms, being necessary to consider issues such as access and capital provision, skills development, and specific risk conditions.

The geographic reach of clusters ranges from a city or state, covering a country or even nearby countries. They allow a powerful set of tools for analysis, formulation, and implementation of policies to increase the effectiveness of economic development strategies (João, 2008). Therefore, local-regional policies must reinforce collective and shared actions, fortifying higher-level political efforts.

Nevertheless, Pitelis and Pseiridis (2006) point out that the economic literature has given little attention to clusters of small firms, claiming to be responsible for positively impacting the productivity of these small companies, especially about infrastructure, human resources, institutional arrangements, and innovation. Evaluating the case of small and medium-sized enterprise (SME) clusters, Niya (2010) argues that they play an essential role in promoting regional and global economic growth and improving industrial competitiveness.

However, although it is very much associated with Porter's publications, the notion of clustering of firms and regional development is by no means new, dating back in Marshall's (1890, 1919) works on industrial districts. Since the very end of the 19th century, the author was the first one to identify the advantages arising from the territorial agglomeration of companies in the same industry. In this way, the aim was to form a key industry (or key industries) in a given region, to transform them into market leaders (if possible, internationally) and to make them drivers of the development of that region (Amaral Filho, 2001). Thus, it retrieves some traditional concepts from the theory of economic development such as "growth pole" (Perroux, 1955), "concatenated effects" (Hirschman, 1958) and "export-base theory" (North, 1990).

Ergo, it is clear that "clusters come in many types, sizes, and origins, and there is a wide array of cluster definitions." (Fløysand et al., 2012: 948). Feser (2009: 363) reinforces this argument arguing that:

"Perhaps the only universal point of agreement in the increasingly vast literature on industry clusters is that there is no agreement on how clusters should be defined or how the relationships between firms and industries that generate purported productivity or innovation advantages to clustering should be bounded, classified, and subjected to systematic analysis."

Within the scope of this paper, it is important to stress that "the cluster concept can be usefully applied to study the clustering of maritime activities" (De Langen, 2002: 209). This is especially true for countries "maritime by nature," as is the case in Brazil – to be analyzed in detail in the next section. The author identifies four agglomeration economies that attract firms to cluster: a joint labor pool, a broad supplier and customer base, knowledge spillovers, and low

transaction costs. As a consequence, we understand maritime clustering as a relevant element for the mobilization between the public and private sectors in the achievement of strategic objectives associated with the sea (Marinha do Brasil, the official website). Thus, the "economy of the sea" and the "maritime cluster" do not compete, since cluster comes close to a "model" – given its more normative nature. We then propose the maritime cluster (model) to enable the economy of the sea (analytical and strategic policy) to promote regional development.

b) *Regional development and public policies*

Without aiming to make a historical discussion about the concept of development, this subsection

seeks to narrow the previously presented dialogue on the economy of the sea and maritime cluster with the theoretical (regional) development discussion, suggesting its interfaces with public policies. Therefore, to understand the state of the art of regional development theory, we will briefly present the evolution of the debate from the second half of the last century, especially highlighting the contributions of the 1980s and 1990s to the advancement of regional perspectives. To this end, *Figure 1* summarizes the theoretical debate from the presentation of a timeline covering the period 1940-2015. Next, *Figure 2* shows how to evaluate clusters, taking into account three main variables (governance, nature, and performance).

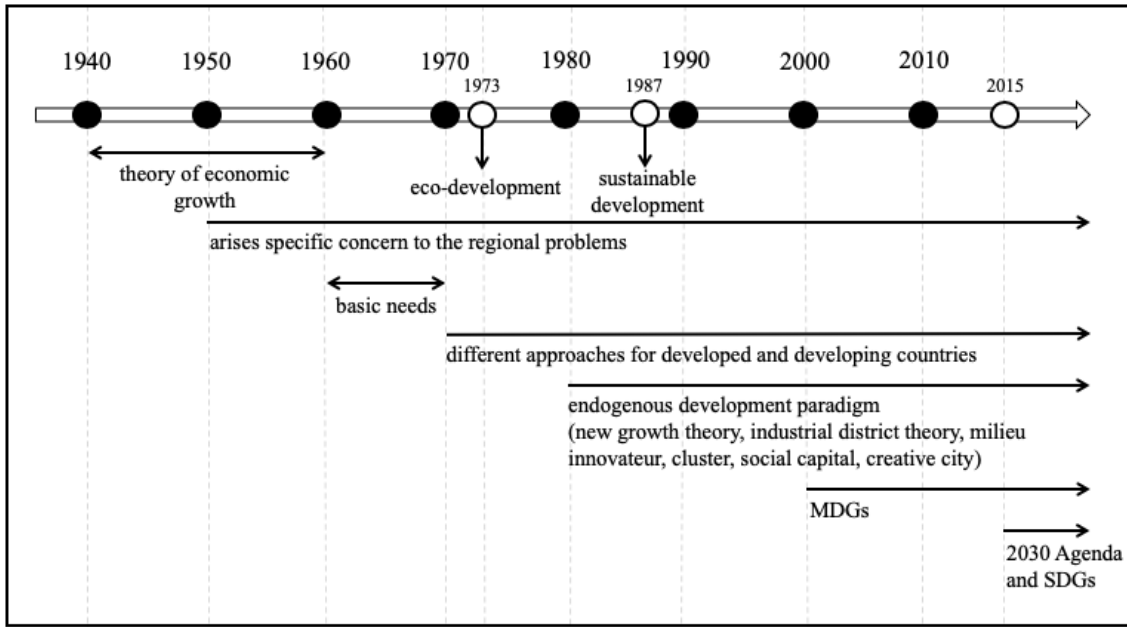


Figure 1: Summary of the main theories of economic development (1940-2015)

Until the mid-20th century, the classic economic growth model predominated, whereby growth originates from the accumulation of capital. In this model, the explanation for regional/local development was confused with that of national development itself. Thus, the 1940s and 1950s focused on (re)industrialization, growth, and modernization, particularly after the adversities after World War II (WWII), being marked by contributions from Nurkse, Rosenstein-Rodan, Harrod-Domar, Solow and Lewis, for example. From the 1950s, comes a specific concern with regional problems (Bellingieri, 2017).

The 1960s focus on ensuring basic needs, suggesting structural transformations. Authors like Rostow, Gerschenkron, Huntington and Myrdal stand out in the period. From the 1970s onwards, the planet's survival became the new development paradigm (Sachs, 2000), and in 1973 emerged the concept of eco-development. In parallel, there is an effort to differentiate approaches between developed and

developing countries, due to the structural nature of these countries and their insertion in international trade, with authors such as Furtado, Prebisch, Sunkel, Frank, Singer and Hirschman. Besides, "there were discussions on the proper role of state intervention and market-led development, as well as inward-looking and outward-oriented development strategies" (OECD, 2018:146), highlighting Krueger, Bhagwati and Chenery's contributions.

In the 1980s, emerged the endogenous development paradigm, which argued that development would not be determined by the functioning of free-market forces or by territorial planning policies originating from the central power, but by aspects intrinsic to the local – opening room for regional territories and local authorities to adopt active development policies. This paradigm presents different approaches, such as new growth theory, industrial district, *milieu innovateur*, cluster, social capital, creative



city (Bellingieri, 2017). In parallel, from 1987 onwards, the sustainable development paradigm was created.

Therefore, it is possible to argue that from the 1980s onwards, the local/regional emerges as the new protagonist of development, interpreted in a broader and more complex way. Between the 1980s and 2000s, development policies had a greater focus on macroeconomic stability influenced by the Washington Consensus, highlighting the work of Williamson, Lucas, Romer, Sen, Adelman, and Sachs.

From the end of the 1990s and even more from the 2000s, the emergence of the endogenous development paradigm emphasizing bottom-up approaches brought regional/local development back as a relevant theme. However, as already indicated, it should be noted that local development is not synonymous with municipal development (Bellingieri, 2017).

From the turn of the century, the discussion on the development started to focus on goal-based strategies. In 2000 and 2015, respectively, the Millennium Development Goals (MDGs) and the Sustainable Development Goals (SDGs) became relevant as a guide for targets and results, suggesting specific areas and strategic segments. Therefore, from these two global agendas, we will highlight its potential on the economy of the sea and maritime clustering.

In 2000, a global response started with the MDGs. Totaling eight goals, MDG 7 dealt on ensuring environmental sustainability, focused mainly on life on land; however, target 7.b aimed to protect terrestrial and marine ecosystems, addressing, for example, protected coastal areas and overexploitation of fish (UN, 2015).

In 2015, the 2030 Agenda led to the establishment of the SDGs, which came into force as of January 1, 2016. With 17 interconnected goals, the 2030

Agenda and, in particular, the SDG 14 have a broader perspective on the sustainable use and management of oceans, maritime resources, and related ecosystems for sustainable development. Therefore, the 2030 Agenda provides a new impetus to the mandates of clean, healthy, productive and resilient oceans, as well as related marine resources, which were promulgated in the results of major summits and conferences (UNCTAD website).

However, SDG 14 will require robust international cooperation and coordination to protect the oceans and preserve fish and other marine resources from being achieved. This is mainly because the current governance of the oceans and fisheries is characterized by a myriad of international and regulatory agreements, often implemented in a disjointed manner by a variety of agencies (UNCTAD, 2016). When it comes to 2030 Agenda, it is not only SDG 14 that deals with issues related to the sea and the ocean.

The evolution of the theory of economic development focused on regional approaches has not only broadened the range of actors and sectors but is also in line with the current SDG agenda in force. Thus, it is possible to understand and analyze maritime clusters based on variables and themes included in this agenda, putting local and regional approaches together with the national objectives of different countries. However, given the fact that "maritime clusters evolve over time in terms of the composition of maritime services provided and actors represented" (MIPC, 2013: 3), it is possible to evaluate them in different ways. Although its driving forces may have different nuances, and the literature states that its performance should be measured in value-added, *Figure 2* shed light on how to evaluate clusters taking into account three main areas.

| Governance | Nature | Performance |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • Political support and stability • Public policies and instruments • Banking support and financing • Equipment and infrastructure suppliers • Public organizations • Universities • Industry associations • Private initiative and investors • Presence of SMEs and start-ups • Nongovernmental agencies • Civil society | <ul style="list-style-type: none"> • Entry and exit barriers • Presence of scale economies • Economic specialization • Number of sectors involved • Heterogeneity among companies • Existence of common suppliers, customers and complementary resources • Proximity • Knowledge spillovers (dissemination and sharing) • Quantity and quality of jobs • Encouraging entrepreneurship • Emergence of new opportunities | <ul style="list-style-type: none"> • Trust among actors • Level of cooperation, internal competition and networking • Intensity of transactions • Labour pool • PPPs • Presence (or not) of a leader firm • Improved efficiency and productivity • Commitment to sustainability • Creation of new start-ups and entrants • Product, process and/or technology development • R&D and innovation • Increase or decrease of skilled workers • Processes of representation or identification • FDI attraction |

Figure 2: Key variables to assess cluster governance, nature, and performance

a) *Rio Grande case*

The State of Rio Grande do Sul (RS) is located in the southern region of Brazil and has 497 municipalities. With a population of 10.7 million people in 2019 (5th largest in the country), area of 281.7 thousand km² (9th largest Brazilian state), GDP of R\$ 423.2 million in 2017 (4th largest in the country), it has nominal income per capita household monthly income of R\$ 1,705.00 (3rd largest in the country) and HDI of 0.746 (6th best in Brazil). Not corresponding to the state capital (Porto Alegre), the municipality of Rio Grande

has an estimated population of 211.0 thousand people in 2019 (2.0% of the state's population), an area of 2,708 km² (almost 1% of the territory), GDP per capita of R\$ 44,014 (100th in the state ranking), it has an average monthly salary of formal workers of 3.5 minimum wages in 2017 (7th highest in the state) and municipal HDI (MHDI) of 0.744 in 2010 (667th in the country's municipal HDI ranking). *Figure 4* shows the geography of the state of RS, detailed by municipalities, and highlighting the Rio Grande one.



Figure 4: RS's map, highlighting the municipality of Rio Grande

In comparison with the national economy, the coastal municipalities of the state of RS incorporated 2% of the population and generation of wealth. 2005 dates back to the beginning of negotiations for the implementation of projects aimed at the naval and offshore pole of Rio Grande, with the bidding process for the construction of the dry dock to build platforms for Petrobras. Thus, the spatial deconcentration of the Brazilian naval industry served as a driving factor for industrial development and technological innovation in the region, important factors in the formation of productive arrangements and clusters (Carvalho, 2011; Carvalho et al., 2016). When "taking over" the Rio Grande port site and planning and implementing a naval pole on it, mobilizing state companies like Petrobras and large national and international private companies, "the Brazilian state sets in motion, in the words of Claude Raffestin (1993), its spatial practice, induced by a system of actions or behaviors that translates into a territorial production that intervenes node, network and rings" (Carvalho, 2011: 24).

The naval and offshore pole of Rio Grande, by articulating and integrating production chains spatially distributed in different regions of Rio Grande do Sul, in the country and even abroad, set in motion horizontalities and verticalities, continuities and discontinuities in motion, mobilized by syntagmatic actors. Given these projects, in 2013, the *Arranjo Produtivo Local (APL) do Polo Naval e de Energia do Rio Grande e Entorno* is consequently launched, an initiative of the *Agência Gaúcha de Desenvolvimento Industrial (AGDI)* and *Universidade Federal do Rio Grande (FURG)* with many companies associated.

Although of regional scope, the spatial configuration of the APL was structured in the municipality of the Rio Grande, headquarters of the port. Since 2015, several factors compromised the sustainability of the naval and offshore pole of Rio Grande, from the national crisis to corruption scandals, culminating in the demobilization of the naval pole and, consequently, the weakening of the Local Productive Arrangement (LPA – "APL" in Portuguese) that still it was

in the process of structuring. However, 2019 marked the effort for a return to LPA activities, starting to be configured in Maritime LPA, including the sectors of waterway navigation, port operations, logistics, fishing, and aquaculture, among other issues.

b) *Rio de Janeiro case*

The State of Rio de Janeiro (RJ) is located in the southeastern region of Brazil and has 92 municipalities. With an estimated population of 17.3 million people in 2019 (3rd largest in the country), an area of 43.8 thousand km² (24th in the ranking of Brazilian states), GDP of R\$ 671billion in 2017 (2nd largest in the country, after São Paulo), it has a nominal monthly household

income per capita of R\$ 1,689.00 (4th highest in the country) and HDI of 0.761 (4th best in the country). Being the capital of the State, the municipality of Rio de Janeiro has an estimated population of 6.7 million people in 2019 (38.7% of the state's population), an area of 1,200 km² (2.7% of the state's territory), GDP per capita of R\$ 51,776 (14th in the state ranking), has an average monthly salary of formal workers of 4.1 minimum wages in 2017 (2nd highest in the State) and MHDH of 0.799 in 2010 (45th in the country's municipal HDI ranking). *Figure 5* presents the geography of the State of RJ, detailed by municipalities, and highlighting the Rio de Janeiro one.

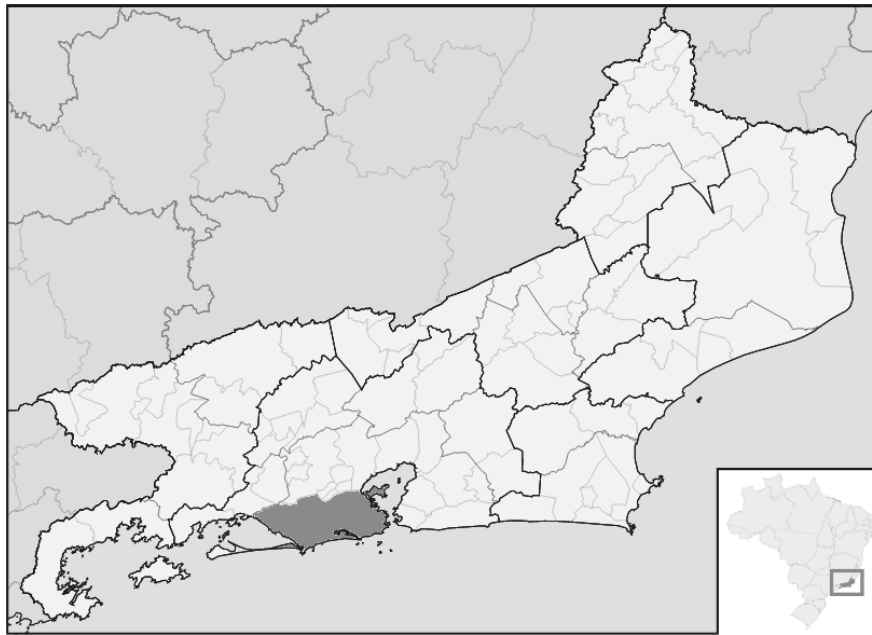


Figure 5: RS's map, highlighting the municipality of Rio de Janeiro

In comparison with the national economy, the coastal municipalities of the state of RJ stand out both in the population (5.7%) and in the generation of wealth (8.6%). The greater weight of these municipalities in the national economy is due to a large number of coastal municipalities (25) and the activities of the extractive industry and tourism, highly developed on the coast of RJ (Carvalho, 2018; Santos and Carvalho, 2020).

Given these figures and data, in November 2019 the Rio de Janeiro Naval Technological Cluster Association (Naval Technological Cluster) is launched, an initiative of the companies *Empresa Gerencial de Projetos Navais* (Emgepron), *Nuclebras Equipamentos Pesados S.A.* (Nuclep), *Amazônia Azul Tecnologias de Defesa S.A.* (Amazul) and *Condor Tecnologias Não Letais*. The location in the city of RJ is due to the proximity to reference centers of education, research and training in Brazil, such as the Military Institute of Engineering (IME), the Federal University of Rio de Janeiro (UFRJ), the Alberto Luiz Coimbra Institute of

Graduate Studies and Engineering Research (COPPE), the Federation of the Industries of the State of Rio de Janeiro (FIRJAN), Social Service of Industry (SESI), National Service for Industrial Learning (SENAI), Brazilian Micro and Small Business Support Service (SEBRAE), Brazilian Naval War College (EGN), in addition to the Rio de Janeiro Navy Arsenal (AMRJ).

In general, the Naval Technological Cluster has as strategic focus (i) the promotion of the regional domestic market; (ii) the expansion of the foreign market; (iii) densification of business chains with different sectors of the economy (public, business, financial institutions, and research); (iv) the education and training of personnel; (v) the innovation and technology; (vi) the valorization of the local identity; and (vii) the environmental sustainability. Not limited to the municipality of Rio de Janeiro, it considers its regional surroundings, adding the municipalities of Niterói, Magé, Duque de Caxias, São Gonçalo, Guapimirim, and Itaboraí.

Among its priority axes, there are initially production chains related to military and merchant naval construction and repair, generating incentives to the economy of the sea (e.g., tourism, gastronomy, port activities, and other offshore activities), and to strengthen the export platform defense industrial base (Caiafa, 2019). Before its launch, it is noteworthy that the cluster had a strong inclination towards the defense area, which is still reflected in the companies that make up the association.

Thus, the aim is to take advantage of the local potential of RJ to help the growth of the local maritime industry. The RJ cluster has great potential for success, given that the region concentrates most of the activities of the Brazilian Navy (MB) and that it already has two active centers: (i) Sepetiba Bay, with the submarine program (Prosub); and (ii) Guanabara Bay, which concentrates more than ten construction and repair yards; also, the presence of the AMRJ above stands out. On November 21, 2019, in Rio de Janeiro, the 1st International Seminar was held addressing the theme, precisely tying the concepts of the economy of the sea, and maritime cluster – just like proposed in the theoretical-conceptual framework of this paper.

IV. QUANTITATIVE ANALYSIS

This section initially introduces the methodology used in the quantitative analysis and then analyzes the data and proposes recommended policies associated with each case. In the first subsection, we show its formula, how to evaluate its results and why we use the Herfindahl-Hirschman index (HHI) to assess the concentration for maritime clusters. The second subsection respectively analyzes the case of the clusters of Rio Grande do Sul (RS) and Rio de Janeiro (RJ), having as base year 2018 and having the HHIs elaborated based on the number of employees of the municipalities facing the sea of the two states from the official data of the Annual List of Social Information (RAIS).

a) Methodology

The analysis method uses a concentration index known and widely used in economic literature and the analysis of competition economic policy, especially because it establishes a conceptual link between the market structure and its performance (Cooper, 2007) – fully aligned with the proposed cluster assessment presented in the *Figure 2*. Albert Hirschman created the index in 1945 and Orris Herfindahl reinvented a calculation formula in 1950, thus becoming known as the Herfindahl-Hirschman index (HHI). *Equation 1* presents the calculation of the index (Hoffman, 1998):

$$HHI = \sum_{i=1}^n S_i^2 \quad (\text{eq. 1})$$

where:

n = total number of firms

S_i = share of i -th firm of the total market

The HHI is a statistical measure of concentration, calculated from the sum of the squares of the firms in the sector under analysis in relation to the total. In contrast to the concentration ratio (CR), HHI takes into account the relative size of firms by squaring each company's share, so that the higher the index, the greater the concentration in the market. Thus, "as firm share is calculated on a scale between 0 and 100, the HHI ranges from close to zero (a very large number of firms with very small market shares) to a maximum value of 10,000, in which a single firm holds a monopoly." (de-Ramon and Straughan, 2017: 32). Consequently:

$HHI < 1,000 \rightarrow$ not concentrated

$1,000 \leq HHI \leq 1,800 \rightarrow$ moderately concentrated

$HHI > 1,800 \rightarrow$ highly concentrated

Similar to what we propose in this article, Viederyte (2016) suggests the use of HHI in the clustering attributes identification. Carvalho et al. (2017) use HHI to analyze naval pole in Brazil. Ramos (2013) does the same in the Brazilian high education system, while Tonin et al. (2019) use HHI to evaluate the Brazilian regional banking sector. Thus, although the index was created to measure the concentration of firms in a given market, this methodology has been used in other contexts that use the same notion of (de)concentration.

b) Data analysis and policy implications

To calculate the Herfindahl-Hirschman Index (HHI) of the clusters presented in the previous section, we use as a proxy for the concentration of the number of employees of the municipalities facing the sea using official data of the Annual List of Social Information (RAIS), having as the base year 2018. The analysis of economic activities followed the aggregation of the National Classification of Economic Activities (CNAE) 2.0, which is the classification officially adopted by the Brazilian national statistical system and by the Brazilian federal agencies that manage administrative records, aggregating activities into 21 sections (first level of aggregation). For the municipalities of the Rio Grande and the Rio de Janeiro, the analysis took into account more disaggregated levels, considering 673 different classes of economic activities (fourth and penultimate level of aggregation). For more details, see *Annex 1*.

Table 1 shows the HHI and the concentration level of the municipalities facing the sea in the state of Rio Grande do Sul (RS). It is noteworthy that although the state has 497 municipalities, only 16 are coastal municipalities (3.2%).

Table 1: HHI ranking of the municipalities facing the sea in the state of RS

| Municipalities | HHI | Level of concentration |
|-------------------------|----------|------------------------|
| Cidreira | 3.680,70 | High |
| Chuí | 3.511,87 | |
| Balneário Pinhal | 3.262,24 | |
| Tavares | 3.134,31 | |
| Imbé | 3.076,81 | |
| Arroio do Sal | 3.041,31 | |
| Xangri-la | 2.553,62 | |
| Santa Vitória do Palmar | 2.504,56 | |
| Terra de Areia | 2.212,05 | |
| Mostardas | 2.135,43 | |
| Palmares do Sul | 2.045,78 | |
| São Jose do Norte | 1.905,29 | |
| Capão da Canoa | 1.686,27 | Medium |
| Osorio | 1.555,80 | |
| Torres | 1.518,69 | |
| Rio Grande | 1.155,10 | |

Twelve municipalities facing the sea (Cidreira, Chuí, Balneário Pinhal, Tavares, Imbé, Arroio do Sal, Xangri-la, Santa Vitória do Palmar, Terra de Areia, Mostardas, Palmares do Sul, São Jose do Norte) have high concentrated HHI ($HHI > 1,800$). According to the proposed classification, the municipalities with the highest concentration rates have higher HHI values in the service sector, more specifically: trade, repair of motor vehicles, and motorcycles; public administration, defense, and social security. It is worth mentioning that the municipalities of Mostardas and Santa Vitória do Palmar, in the extreme south concentrate workers almost exclusively in the sector of agriculture, livestock, forestry production, fishing and aquaculture, reflecting the productive structure of the state, which is strongly agricultural.

Still, according to Table 1, it is also noticed that four municipalities (Capão da Canoa, Osório, Torres,

Rio Grande) present moderate concentration indices ($1,000 \leq HHI \leq 1,800$), with higher HHI values in the services and industry sector, namely: public administration in general; transformation industry; trade, repair of motor vehicles and motorcycles. The municipality of Rio Grande stands out, having the Maritime Local Productive Arrangement (LPA), which has a contingent of workers in areas similar to the LPA, such as construction of boats and floating structures; manufacture of machinery, equipment and apparatus for transporting and lifting loads and people.

Paying attention to the other municipalities in the state of RS, which have extremely concentrated rates ($HHI > 1,800$), Figure 6 shows the region of the mountain range, with activities related to the manufacturing industry and public administration, defense and social security.

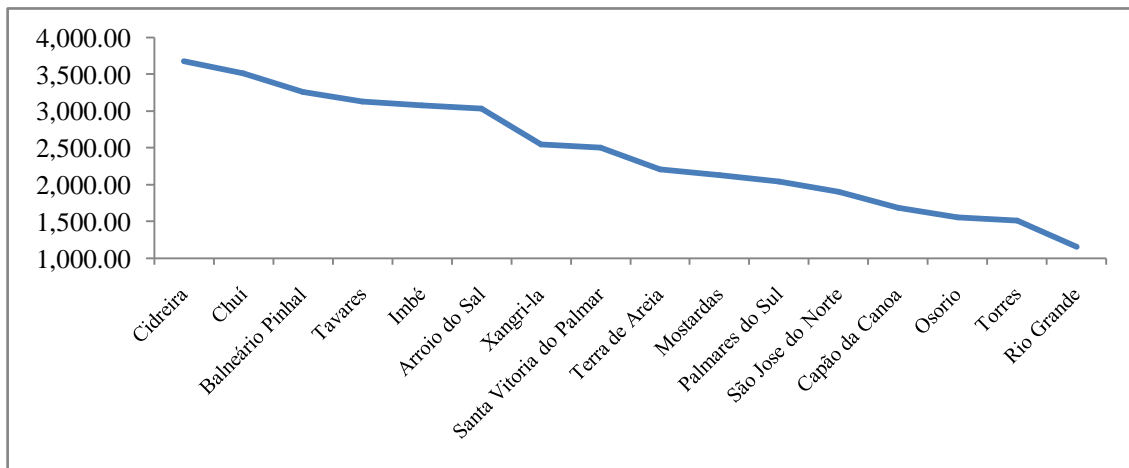


Figure 6: HHI of the municipalities facing the sea in the RS

Municipalities facing the sea of RS have slightly more diversified economies (especially when compared to the case of RJ to be presented below), even in the

face of a scenario of high concentration that the state presents. These are smaller municipalities on the coast (differently from RJ) and less economically relevant than



other municipalities in the state of RS (given the importance of economic activities in the interior). In this way, municipalities in the mountains have a high share of tourism, the manufacturing industry, and the metal-mechanical chain, rivaling the economic relevance of other municipalities facing the sea in the state. Notwithstanding, it is possible to expect that the smaller economic weight of these municipalities tends to

reverse, taking advantage of policies and stimuli from the Rio Grande cluster.

Regarding the state of Rio de Janeiro (RJ), *Table 2* shows the HHI of the municipalities facing the sea in the state. Although the state has 92 municipalities, only 25 are coastal municipalities (27.2%).

Table 2: HHI ranking of the municipalities facing the sea in the state of RJ

| Municipalities | HHI | Level of concentration |
|-----------------------------|----------|------------------------|
| Carapebus | 5.931,61 | High |
| Quissamã | 4.435,49 | |
| São Francisco de Itabapoana | 2.983,46 | |
| Mangaratiba | 2.841,37 | |
| Casimiro de Abreu | 2.553,86 | |
| Guapimirim | 2.400,51 | |
| Armação de Búzios | 2.290,73 | |
| Arraial do Cabo | 2.224,74 | |
| Saquarema | 2.092,14 | |
| Marica | 1.997,88 | |
| Araruama | 1.743,62 | Medium |
| Cabo Frio | 1.782,24 | |
| Magé | 1.779,78 | |
| Paraty | 1.764,20 | |
| São João da Barra | 1.677,79 | |
| Itaboraí | 1.537,93 | |
| Itaguaí | 1.529,83 | |
| São Gonçalo | 1.503,43 | |
| Duque de Caxias | 1.492,47 | |
| Rio das Ostras | 1.482,19 | |
| Campos dos Goytacazes | 1.461,01 | |
| Angra dos Reis | 1.264,60 | |
| Niterói | 1.087,93 | |
| Rio de Janeiro | 1.061,68 | |
| Macaé | 1.029,57 | |

Ten municipalities facing the sea (Carapebus, Quissamã, São Francisco de Itabapoana, Mangaratiba, Casimiro de Abreu, Guapimirim, Armação de Búzios, Arraial do Cabo, Saquarema, Marica) have high concentrated indexes ($HHI > 1,800$), in which the service sector stands out (public administration, defense, and social security). Still, two municipalities stand out in the specialization of activities ($HHI > 4,000$). In this sense, we can argue that employment in these municipalities is concentrated in a few sectors, having a relatively specialized productive structure.

Still according to *Table 2*, it is also noticed that seven municipalities (Araruama, Angra dos Reis, Cabo Frio, Magé, Paraty, São João da Barra, Itaboraí, Itaguaí, São Gonçalo, Duque de Caxias, Rio das Ostras, Campos dos Goytacazes, Niterói, Rio de Janeiro, Macaé) presented moderate concentration indexes ($1,000 \leq HHI \leq 1,800$), with higher HHI values in the services and industrial sector, such as public administration in general; transformation industry; trade, repair of motor vehicles, and motorcycles; and restaurants, and other establishments. It is noteworthy

that the municipality of Itaguaí, which has a large contingent of workers in the manufacture of heavy boiler works, reflecting the manufacturing activities for the shipbuilding industry and which are currently part of the scope of the Naval Technological Cluster of RJ. In these municipalities, employment is more concentrated and the productive structure is not specialized (being more diversified).

Paying attention to the other municipalities in the state of RJ, which have extremely concentrated rates ($HHI > 4,000$), we highlight three (one is located in the north of the state and the others in the mountain region). The highest HHI values are essentially linked to the services and industrial sector, namely: public administration, defense and social security; and manufacturing industry.

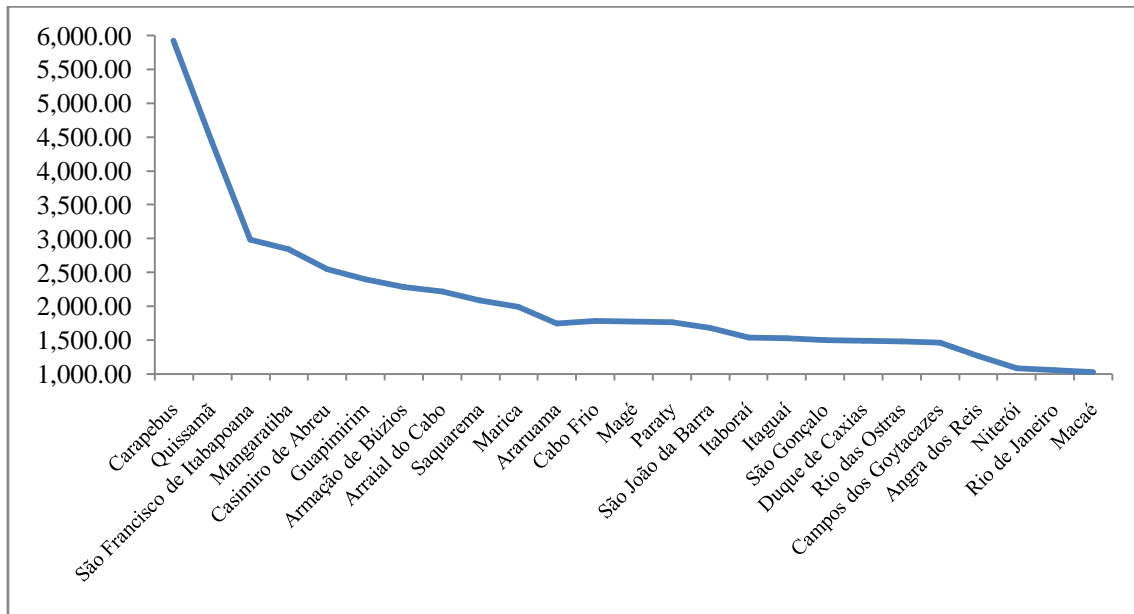


Figure 6: HHI of the municipalities facing the sea in the RJ

The municipalities facing the sea of RJ are larger (compared to the weight of municipalities facing the sea in the RS economy), constituting municipalities that are really relevant to the state, and highly concentrated in the service sectors (mainly tourism and related activities). It stands out, for example, the capital (Rio de Janeiro), which is a municipality facing the sea and a megalopolis, therefore being almost absent from the list of municipalities of medium concentration, since by, its nature, it has different economic activities and, consequently, significant decentralization of activities and work.

V. CONCLUSIONS

We argue that “blue is the new green” in the sense that the term “blue” is currently used as a flag of a political-ideological nature that seeks to engage and mobilize society in general in the cause of sustainability (which also includes maritime themes, but is not restricted to them). In this way, it can be understood as a way of thinking and doing business in the context of sustainable development, corresponding to a broader and vague notion. From the analysis of the historical evolution of the economy of the sea concept, it was concluded that it is a more precise one, specific to each country, and limited to activities directly and indirectly related to the seas. Therefore, it corresponds to the area of economic science responsible for identifying and measuring economic sectors directly and indirectly related to resources and activities in/from the sea.

As the economy of the sea can be understood as an analytical and strategic tool capable of contributing to the formulation of public policies, we have tied it to the maritime cluster theory – understood as a model by which the economy of the sea can be

used as a public policy vector. In fact, the “economy of the sea” and “maritime cluster” do not compete since cluster comes close to a “model” while the economy of the sea is the “analytical and strategic policy” itself. Linking this conceptual discussion with economic development, we highlighted that the regional focus begins in the 1950s, gains strength after the 1980s, and, from the 21st century on, the discussion on the development started focusing on goal-based strategies. Therefore, the analysis of the evolution of the economic development theory focused on regional approaches has not only showed the broader range of actors and sectors, but that is also in line with the current SDG agenda in force.

Since Brazil can be understood as a “maritime by nature” country, we considered the economic crisis context that the country has been experiencing since 2016 to stress how it has been developing maritime clusters to promoting the country’s economic growth. We analyzed the creation, and objectives of the Rio Grande cluster (located in the state of RS) and the Naval Technological Cluster (located in the state of RJ) and, from a methodological point of view, we used the Herfindahl-Hirschman index (HHI) to analyze the spatial concentration of some activities (using the number of employees of the municipalities facing the sea).

Using variables in Figure 2 to evaluate both clusters analyzed, it is necessary to consider: (i) in the RS case: related maritime services, such as tourism, gastronomy, port activities; and (ii) in the RJ case: services and production chains (not only final sectors themselves). Therefore, in both cases services, and public administration stand out as main areas where we found medium or high labor concentration. This proxy may be used as a guide to promote both clusters. It is

worth noting that both clusters also benefit from local characteristics, such as proximity to reference centers of education, research and training in Brazil, as well as past experiences (Rio Grande case) or neighbors (Rio de Janeiro case) to take into account.

Proportionally, the state of RJ has more municipalities facing the sea (27.2%) than RS (3.2%). However, the extension in terms of km of coastline in RS exceeds that of RJ. At the same time, it was noticed that the municipalities facing the sea of RJ are larger and more relevant to the state, being highly concentrated in the service sectors (mainly tourism and related activities). On the other hand, the municipalities facing the sea in RS do not correspond to those larger and more relevant to the state's economy, either because the state is formed by many small municipalities, or because the municipalities in the interior are very economically relevant. The mountain region stands out, with tourism, transformation industry, very strong metal-mechanical chain in the state of RS, rivaling other parts of the state.

The degree of concentration of the municipalities of the Rio Grande and the Rio de Janeiro is medium, due to the size of the municipality and because they have several activities developed. In the case of RS, the Rio Grande Naval Offshore Pole (not the LPA created from it), which included shipyards, Petrobras orders, supply industries, and industries that were operating on the docks at the port of Rio Grande, boosted the state's economy and helped to promote the municipal economy, placing it among the most relevant in the state. Thus, the municipality ends up projecting itself with the naval and offshore pole, but with the suspension of orders by Petrobras and with the crisis, the naval pole breaks down (leading to the fall of the municipality's economic relevance).

In the case of RJ, municipalities facing the sea, such as Rio de Janeiro and Macaé, had a heavy concentration associated with oil, being very much affected by the fall of the oil barrel and the economic crisis. Therefore, it is possible to infer that these events promoted the deconcentration of activities in RJ, given the national crisis and the fall in formal jobs, deconcentrating the state's economic activities.

Hence, although clusters tend to appear spontaneously, it does not mean that they cannot be stimulated and supported by different (public) policies. Considering both case studies analyzed in this paper, the identification of activities and economic sectors in both states can take advantage of sectors already concentrated to give the initial starting point of the activities of these clusters. If there is a current lack of labor in these respective sectors (related to the *nature* of each of the maritime clusters), it is necessary to design and establish public policies capable of promoting the creation and consolidation of *governance* favorable to the development, and *performance* of these clusters.

Through this perspective (economy of the sea), the sea can be explored, needs to be managed and must be protected.

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Annex 1: CNAE 2.0, detailed by section, divisions and denomination

| Section | Divisions | Denomination |
|---------|-----------|---------------------------------------------------------------------|
| A | 01-03 | AGRICULTURE, LIVESTOCK, FOREST PRODUCTION, FISHING, AND AQUACULTURE |
| B | 05-09 | MANUFACTURING INDUSTRIES |
| C | 10-33 | TRANSFORMATION INDUSTRIES |
| D | 35-35 | ELECTRICITY, AND GAS |
| E | 36-39 | WATER, SEWAGE, ADMINISTRATION OF RESIDUES, AND DECONTAMINATION |
| F | 41-43 | CONSTRUCTION |
| G | 45-47 | TRADE, REPAIR OF MOTOR VEHICLES, AND MOTORCYCLES |
| H | 49-53 | TRANSPORT, STORAGE, AND MAIL |
| I | 55-56 | ACCOMMODATION, AND FOOD |
| J | 58-63 | INFORMATION, AND COMMUNICATION |
| K | 64-66 | FINANCIAL, INSURANCE, AND RELATED SERVICES ACTIVITIES |
| L | 68-68 | REAL ESTATE ACTIVITIES |
| M | 69-75 | PROFESSIONAL, SCIENTIFIC, AND TECHNICAL ACTIVITIES |
| N | 77-82 | ADMINISTRATIVE ACTIVITIES, AND COMPLEMENTARY SERVICES |
| O | 84-84 | PUBLIC ADMINISTRATION, DEFENSE AND SOCIAL SECURITY |
| P | 85-85 | EDUCATION |
| Q | 86-88 | HUMAN HEALTH, AND SOCIAL SERVICES |
| R | 90-93 | ARTS, CULTURE, SPORTS, AND LEISURE |
| S | 94-96 | OTHER SERVICE ACTIVITIES |
| T | 97-97 | HOUSEHOLD SERVICES |
| U | 99-99 | INTERNATIONAL ORGANISMS, AND OTHER EXTRATERRITORIAL INSTITUTIONS |

Source: IBGE.





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Les Politiques De Préventions Et La Criminalité En Afrique Sub-Saharienne

By Dr. Ayang Eric, Dr. Alhadj Malloum & Tchal Touang

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Abstract- This paper aims to examine the short and long-term effects of the prevention policy on crimes in Sub-Saharan Africa over the period of time ranging from 1985-2018. We used an estimated model of panel data by the fish regression method. The results showed that an increase in government expenditures on education led to a decrease in crime in Sub-Saharan Africa. Otherwise, we also found out that the increase in defense forces led to a slight increase in the crime rate in Sub-Saharan Africa. This work has therefore shown us that the long-term prevention policy is more effective than the short-term prevention policy.

Keywords: *crime, government policy, long-term prevention, short-term prevention.*

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Les Politiques De Préventions Et La Criminalité En Afrique Sub-Saharienne

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Résumé- Ce papier a pour objectif d'examiner les effets de la politique de prévention à court terme et à long terme sur la criminalité en Afrique Sub-saharienne de la période 1985 à 2018. Nous faisons recours à un modèle estimé en données de panel par la méthode de régression de poisson. Les résultats montrent qu'une augmentation des dépenses publiques d'éducation entraîne une baisse de la criminalité en Afrique Sub-saharienne. Par ailleurs, on trouve aussi que l'augmentation des forces de l'ordre entraîne une légère augmentation du taux de criminalité en Afrique Sub-saharienne. Ce travail nous a montré que la politique de prévention à long terme est plus efficace que la politique de prévention à court terme.

Mots-clés: criminalité, politique publique, prévention à long terme, prévention à court terme.

Abstract- This paper aims to examine the short and long-term effects of the prevention policy on crimes in Sub-Saharan Africa over the period of time ranging from 1985-2018. We used an estimated model of panel data by the fish regression method. The results showed that an increase in government expenditures on education led to a decrease in crime in Sub-Saharan Africa. Otherwise, we also found out that the increase in defense forces led to a slight increase in the crime rate in Sub-Saharan Africa. This work has therefore shown us that the long-term prevention policy is more effective than the short-term prevention policy.

Keywords: crime, government policy, long-term prevention, short-term prevention.

I. INTRODUCTION

Au cours de ces trente (30) dernières années, l'Afrique sub-saharienne a vu s'accroître considérablement son taux d'homicide, avec d'énormes écarts entre les pays. Selon l'Office des Nations Unies pour la lutte contre la Drogue et le Crime (ONUDC) cet écart évolue de 2 homicides par 100 000 habitants au Niger à 33 par 100 000 homicides en Afrique du Sud. Cette situation pourrait s'expliquer par la montée en flèche de la violence.

De nos jours, la réflexion sur les moyens de faire face à ce phénomène de criminalité est au cœur des principales préoccupations de plusieurs pays et organisations mondiales, entre autres, les pays de l'Afrique sub-saharienne et l'ONUDC.

En allant dans le même ordre d'idée, le précurseur de la théorie économique du crime, Becker (1968) focalise ses travaux sur les politiques de lutte

contre le crime, il cherche un équilibre entre la dissuasion et la répression. Selon Becker, « plus la dépense en policiers, personnel de justice et équipement spécialisé est importante, plus il est facile de découvrir les offenses et de condamner les criminels ».

De même, Ehrlich (1973) étudie le choix individuel de l'activité criminelle en prenant en compte les politiques de lutte contre le crime et d'autres facteurs. Dans le prolongement des travaux de Becker, Ehrlich pense que la dissuasion et la répression peuvent diminuer la criminalité dans un pays.

La littérature propose plusieurs politiques de lutte contre la criminalité parmi lesquelles: la politique publique basée sur la répression, la dissuasion et la prévention; la politique publique de la répression se résume généralement à la sanction. La politique publique basée sur la dissuasion quant à elle consiste à détourner un criminel de la résolution de commettre un crime. Pourtant, la politique publique basée sur la prévention consiste à empêcher le crime.

Plusieurs travaux soutiennent que l'augmentation des forces de police (considérée comme une politique publique basée sur la prévention et la dissuasion) a un effet négatif sur la criminalité, Becker (1968), Levitt (1996), Machin et Olivier Marie (2005), etc.; Par contre, d'autres pensent que le contrôle des ventes d'armes (considéré comme une politique de prévention) dans les zones où il existe un stock important va permettre de réduire la criminalité, Kovandzic et Al. (2008), Ehrlich (2010), etc.; une autre catégorie de travaux trouve plutôt qu'il faut rendre les peines de prison plus légères (considérées comme politique basée sur la répression et la dissuasion), car plus la peine de prison est lourde plus la criminalité augmente, Chen et Shapiro (2002), Yeh (2010), etc.

Ainsi, plusieurs auteurs ont proposé des solutions contre le crime violent. Certains ont proposé des solutions en faveur de la répression Becker (1968), Ehrlich (1973), etc. D'autres ont suggéré des solutions en faveur de dissuasion Usher (1997), Lochner et Moretti (2004), etc. D'autres par contre ont proposé des solutions beaucoup plus pacifiques comme la prévention Azam (1995), Azam et Al. (1996), etc. En ce qui concerne la politique de prévention, elle est de deux sortes : premièrement, la politique qui est appliquée au moment même de l'infraction (présence policière, alarmes, vidéosurveillance, etc.). Cette politique est

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souvent qualifiée de « prévention à court terme ». Deuxièmement, la politique qui s'attaque aux causes profondes de la criminalité (encourage la scolarisation, lutte contre la pauvreté, etc.), elle est qualifiée de « prévention à long terme ».

Il est évident que pour un pays la prévention peut-être la meilleure politique de lutte contre la criminalité. Si c'est le cas, une question fondamentale se pose: Faut-il appliquer la prévention à court terme ou la prévention à long terme? En d'autres termes, entre la prévention à court terme et la prévention à long terme, quel est le meilleur moyen de faire face à la criminalité?

Ainsi, plutôt que de s'intéresser à la politique répression ou à la politique de dissuasion, nous nous intéressons plutôt à la politique de prévention de la criminalité. Par ailleurs, la plupart des études qui se sont intéressées à cette question, posent le problème des conflits (Snyder et Bhavnani, 2005; Burgoon, 2006; Van de Walle, 1996; etc.).

Ce travail se démarque des travaux cités plus haut dans la mesure où nous considérons la question d'utilisation des forces de l'ordre (prévention à court terme) et des ressources publiques d'éducation (prévention à long terme) dans la lutte contre la criminalité. Par conséquent, cette étude contribue à enrichir la littérature empirique sur les politiques publiques de lutte contre la criminalité.

Après cette introduction, cet article est organisé de la manière suivante. La deuxième section présente les canaux d'influence des dépenses d'éducation sur la criminalité. La troisième section esquisse la méthodologie. La quatrième section présente et analyse les résultats. La cinquième section conclut et formule quelques recommandations de politiques économiques.

II. DÉFINITION DE LA NOTION DE CRIMINALITÉ

La notion de la criminalité, même si elle semble évidente pour tous, mérite d'être démêlée davantage. Dans son entendement juridique, « la criminalité est un ensemble des infractions à la loi pénale commises pendant une période de référence (en général l'année) dans un pays déterminé »¹. De plus, selon Milton Keynes « la criminalité est essentiellement un comportement qui viole le droit pénal d'un Etat, par conséquent, assujetti à une forme de sanction pénale » (CRIMPREV 2009). Par ailleurs, pour l'économiste, la criminalité est un concept très large qui regroupe tous les comportements intégrant toutes les activités illégales dont un individu puisse avoir à répondre en justice.

Il existe plusieurs types d'activité illégale ou infraction : les contraventions, les délits et le crime. Toutes ces activités illégales ne peuvent pas être développées au même moment, car c'est un champ

très vaste. Selon le lexique des termes juridiques, une contravention est une infraction la moins grave sanctionnée de peines contraventionnelles (une amende). Un délit quant à lui est une infraction dont l'auteur est punissable d'une peine correctionnelle (emprisonnement). Le crime, considéré comme le plus grave de toutes les infractions est défini comme « infraction du droit commun ou infraction politique, sanctionnée, pour les personnes physiques, de la réclusion ou de la détention à perpétuité ou à temps, voire d'une d'amende et de peines complémentaires... »².

Ainsi, dans ce travail, le terme « criminalité » pourrait être défini selon son acception économique, c'est-à-dire incluant toutes les activités illégales. Mais comme il s'agit d'un champ d'investigation très vaste, celui-ci sera réduit en prenant en compte un critère. Ce critère tient du fait que les sociétés des pays de l'Afrique Sub-saharienne se caractérisent par une extrême violence. Par conséquent, seuls les actes d'atteinte à la vie des personnes seront considérés.

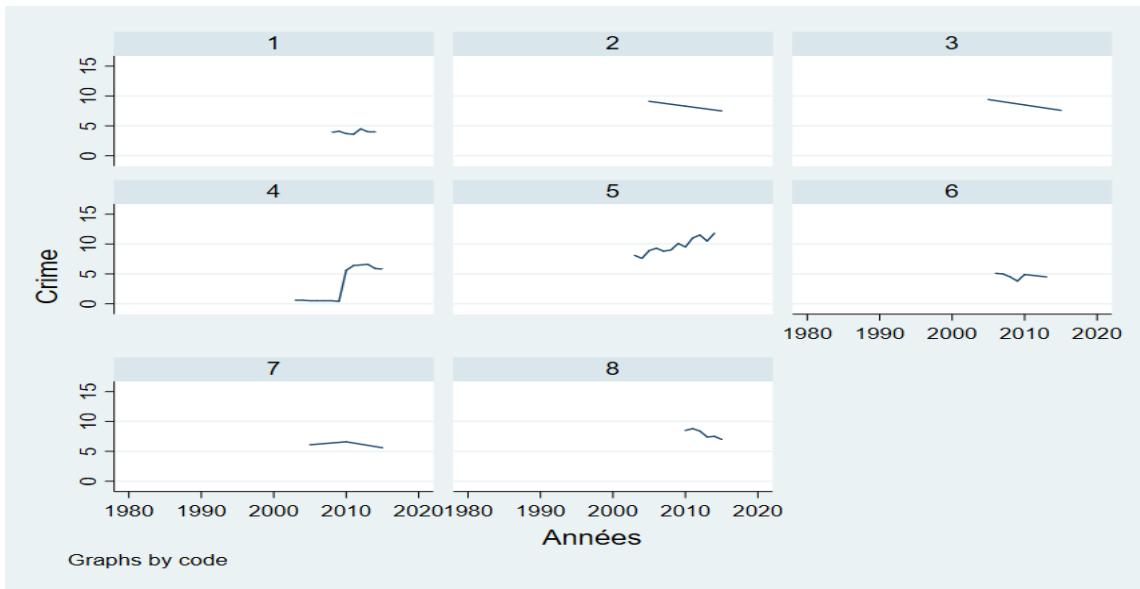
III. LA SITUATION DE LA CRIMINALITÉ EN AFRIQUE SUB-SAHARIENNE

Selon une étude de l'ONUUDC en 2016, les États de l'Afrique Sub-saharienne possédant les taux d'homicide volontaire les plus élevés sont le Lesotho avec un taux d'homicide de 41,25%, l'Afrique du Sud vient en deuxième position avec un taux d'homicide de 33,97%, la Centrafrique, le Swaziland et la Namibie ont un taux d'homicide respectivement de 19,76%, 17,29% et 17,14%. Les pays les moins touchés par la criminalité violente sont le Burkina Faso, le Ghana et la Sierra Leone qui enregistrent respectivement un taux d'homicide de 0,37%, 1,68% et 1,71%.

Les graphiques 1, 2, 3 et 4 donnent les filtres de Prescott du taux de criminalité des pays de l'Afrique Sub-saharienne. L'observation importante à faire ici est que les pays de l'Afrique Australe (Afrique du Sud, Namibie, Botswana, etc) ont un taux de criminalité plus élevé que les pays de l'Afrique Centrale (Cameroun, Tchad, Gabon, etc.), de l'Afrique de l'Ouest (Côte d'Ivoire, Nigeria, Burkina Faso, etc.) et de l'Afrique de l'Est (Burundi, Soudan du Sud, etc.).

¹ Selon le lexique des termes juridiques, 13^e édition, Dalloz.

² Selon le lexique des termes juridiques, 13^e édition, Dalloz, pp. 172



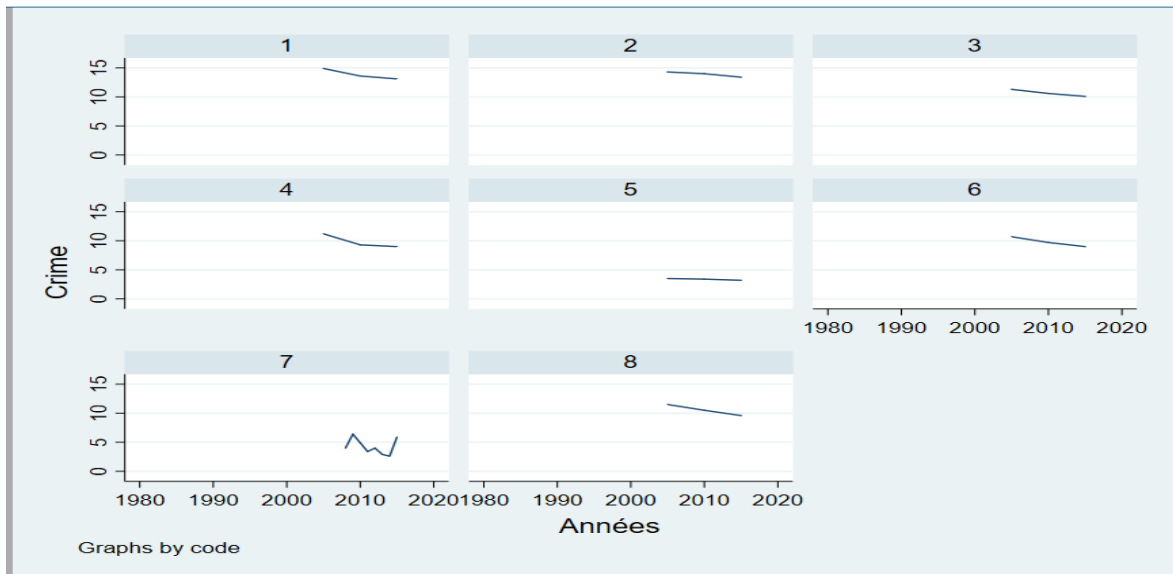
Note: 1) Burundi; 2) Erythrée; 3) Ethiopie; 4) Kenya; 5) Ouganda; 6) Rwanda; 7) Somalie; 8) Tanzanie.
Source: Auteurs

Graphique 1: Évolution par pays du taux de criminalité en Afrique de l'Est



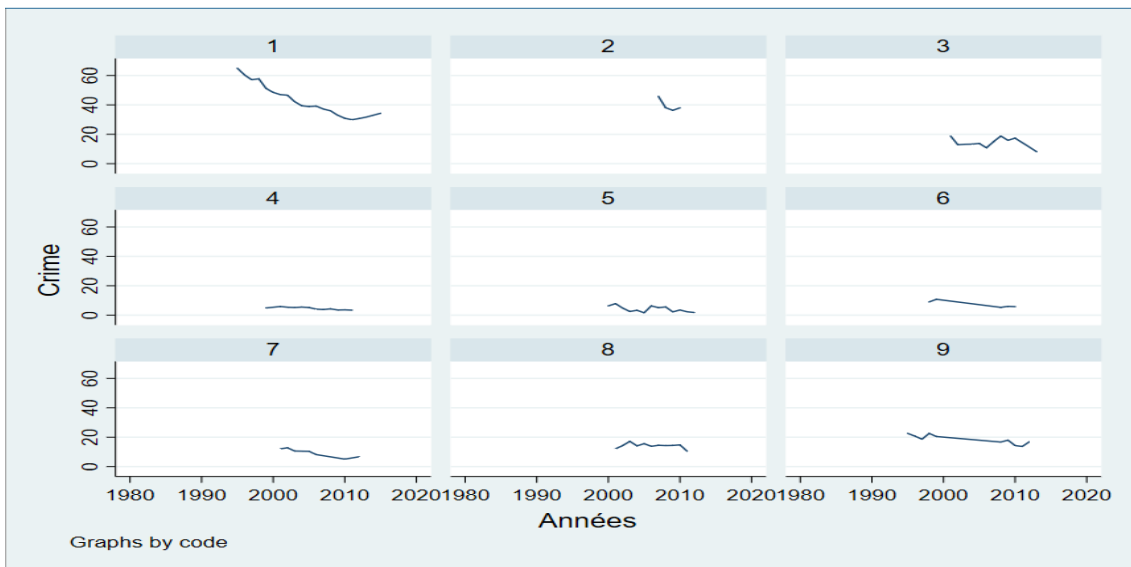
Note: 1) Benin; 2) Burkina Faso; 3) Côte d'Ivoire; 4) Gambie; 5) Ghana; 6) Guinée; 7) Guinée Bissau; 8) Libéria; 9) Mali; 10) Mauritanie; 11) Niger; 12) Nigéria; 13) Sénégal; 14) Sierra Léone; 15) Togo
Source: Auteurs

Graphique 2: Évolution par pays du taux de criminalité en Afrique de l'Ouest



Note: 1) République Centrafricaine; 2) RDC; 3) République du Congo; 4) Gabon; 5) Guinée Equatoriale; 6) Tchad; 7) Cameroun; 8) Angola
Source: Auteurs

Graphique 3: Évolution par pays du taux de criminalité en Afrique Centrale



Note: 1) Afrique du Sud; 2) Lesotho; 3) Swaziland; 4) Mozambique; 5) Malawi; 6) Zambie; 7) Zimbabwe; 8) Botswana; 9) Namibie
Source: Auteurs

Graphique 4: Évolution par pays du taux de criminalité en Afrique Australe

IV. METHODOLOGIE

a) Modèle

Pour montrer l'effet des dépenses publiques d'éducation sur la criminalité en Afrique sub-saharienne nous utilisons le modèle empirique inspiré de Vaillant et Dervaux (2011). Ce modèle est défini à partir du cadre théorique, basé sur Becker (1968) et Ehrlich (1973). La version compacte du modèle est donnée par l'équation (1):

$$CRIME_{i,t} = \beta_0 + \beta_1 Dpub_{i,t} + \beta \cdot X_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$CRIME_{i,t} = \alpha_0 + \alpha_1 Nbrepol_{i,t} + \alpha \cdot X_{i,t} + \varepsilon_{i,t} \quad (2)$$

$CRIME_{i,t}$ capture le taux de criminalité dans le pays i à la période t . Suivant Smriti S. (2014) le taux de criminalité est approximé par le taux d'homicide pour 10000 habitants.

X représente la matrice des variables de contrôle constituée du chômage (Cho_{it}) mesurée par le taux de chômage (Martin A. Andresen, 2012). Waller (1991)

présente la corrélation entre le taux de chômage et la criminalité, il trouve que cette corrélation n'est pas convaincante. Pour lui, le taux de chômage des jeunes est plutôt lié au taux de délinquance. D'un autre côté, Awad (1988) montre que le taux de chômage a un effet positif et significatif sur la criminalité aux Etats-Unis.

Le niveau d'éducation est mesuré par le taux d'alphabétisation (Txa_{it}). Il diminue le taux de criminalité (Jacob et Lefgren, 2003, Lochner; 2010, etc.). Ehrlich (1975) note qu'il y a une relation positive et statistiquement significative entre la durée moyenne de la scolarité de la population adulte et le nombre des crimes commis aux Etats-Unis en 1960. Par contre, Nabeela Khan et al. (2015) démontrent dans leur étude sur le Pakistan qu'il y a une relation négative et statistiquement significative entre le taux de criminalité et l'éducation. Pour eux, plus un individu acquiert une éducation plus son revenu augmente, ce qui peut augmenter à la fois le coût d'opportunité des crimes et le coût du temps passé dans une activité criminelle. De même, Petronella Jonck et al. (2015) montrent dans le contexte sud-africain que l'éducation réduit la probabilité d'être incarcéré.

Le niveau de revenu est mesuré par le PIB par habitant ($PIBhab_{it}$), il réduit le niveau de criminalité (Nabeela Khan et al. 2015, Tony Beaton et al. 2017). Le niveau de la population jeune est approximé par la

population active totale qui est constituée des personnes âgées de 15 ans. Il a un effet positivement significatif sur la criminalité (Saridakis, 2004).

L'inégalité de revenu est mesurée par l'indice de Gini ($Gini_{it}$). Il a un effet positif sur la criminalité (Kelly 2000, Fajnzylber et al. 2015, etc.). Fajnzylber et al. (2002) étudient la relation entre les crimes et les inégalités de revenus. Ils trouvent qu'il existe une corrélation entre l'indice de Gini, le taux de vols qualifiés et les homicides dans les pays. A l'issue de leur travail, ils montrent qu'il y a une relation positive entre les taux de criminalité et l'inégalité des revenus. Fajnzylber et al (2015) montrent que le taux de criminalité et l'inégalité de revenus sont positivement corrélés. De même, Kelly (2000) montre que les inégalités de revenus élevées et les taux élevés de criminalité sont liés.

ε_{it} est le terme d'erreur; i désigne les pays de l'échantillon (les pays de l'Afrique au sud du Sahara), t représente l'année, α et β sont les paramètres à estimer.

b) Les données

Notre étude porte sur un échantillon constitué de quarante-deux (42) pays de l'Afrique Subsaharienne. Elle couvre la période allant de 1985 à 2018. Les données utilisées dans notre travail sont extraites de la base de données de la Banque Mondiale (BM) de 2018, encore appelé *World Development Indicators* (WDI) 2017.

Tableau 1: Descriptions des variables

| VARIABLES | DESCRIPTION | SOURCE |
|-----------------------|--------------------------------------------------------------------------------------------------------|-------------------------------------------|
| Crime _{it} | Taux d'homicide intentionnel pour 100 000 à la date t du pays i. | World Development Indicators, World Bank. |
| Txa _{it} | Taux d'alphabétisation des adultes à la date t du pays i (15 ans et plus), en pourcentage | World Development Indicators, World Bank. |
| Pjeu _{it} | La population active totale à la date t du pays i. Elle comprend les personnes âgées de 15 ans et plus | World Development Indicators, World Bank. |
| Gini _{it} | Inégalité de revenu entre les individus ou les ménages à la date t du pays i. | World Development Indicators, World Bank. |
| PIBhab _{it} | PIB par habitant à la date t du pays i, en dollars courants | World Development Indicators, World Bank. |
| Cho _{it} | Le taux de chômage à la date t du pays i. | World Development Indicators, World Bank. |
| Dpube _{it} | Dépenses publiques d'éducation à la date t du pays i, en dollars courants | World Development Indicators, World Bank. |
| Nbrepol _{it} | Présence des forces de sécurité à la date t du pays i | World Development Indicators, World Bank. |

V. RÉSULTATS ET DISCUSSION

Les résultats de la régression de notre modèle sont présentés dans le tableau 2 suivant:

Tableau 2: Effet de la prévention sur la criminalité en Afrique Sub-saharienne

| Variable expliquée: Crime | | |
|---------------------------|------------------------------|---------------------------------------|
| | (1) Estimateur de poisson | (2) Estimateur de poisson (Robust) |
| C | 0.8937328 (0.192) | 0.3759527 (0.029)** |
| Cho _{it} | 0.0810489 (0.001)* | 0.0458179 (0.127) |
| Txa _{it} | 0.0096718 (0.113) | 0.0162603 (0.000)* |

| | | |
|-----------------------|------------------------|-----------------------|
| Gini _{it} | 0.0125995 (0.474) | -0.0037002 (0.434) |
| pibhab _{it} | -0.0000543 (0.566) | 0.0000555 (0.731) |
| Pjeu _{it} | 1.72e-08 (0.269) | 3.37e-08 (0.000)* |
| dpube _{it} | -0.1382394 (0.005)* | |
| Nbrepol _{it} | | 0.0000147 (0.001)* |
| Wald Chi2 | 333.09 (0.0000) | 412.32 (0.0000) |

*significatif à 1%; ** significatif à 5% ; *** significatif à 10%

Source: Auteurs

La colonne (1) du tableau 2 présente les résultats de l'estimation par la méthode de poisson. Les résultats du modèle montrent que le coefficient associé à la variable dépenses publiques d'éducation ($Dpube_{it}$) a un effet négatif et statistiquement significatif sur le taux de criminalité en Afrique sub-saharienne. En d'autres termes, toutes choses étant égales par ailleurs, une augmentation d'une unité des dépenses publiques d'éducation entraîne une diminution du taux de criminalité de 0.138 en Afrique Sub-saharienne. Ce résultat confirme les conclusions faites par Azam (1995). Par ailleurs, le taux de chômage (Cho_{it}) a un effet positif et statistiquement significatif sur le taux de criminalité. Concrètement, toutes choses étant égales par ailleurs, une augmentation d'un point du taux de chômage entraîne une augmentation du taux de criminalité de 0.081 point en Afrique Sub-saharienne. Ce résultat confirme les travaux de Cerro et Meloni (2000), Martin A. Andresen (2012) et Nabeela Khan et al. (2015) selon laquelle le taux de chômage a un effet positif et statistiquement significatif sur la criminalité.

Selon la colonne (2) du tableau 2, le nombre d'agent de police ($Nbrepol_{it}$) a un effet positif et statistiquement significatif sur le taux de criminalité en Afrique Sub-saharienne. Toutes choses étant égales par ailleurs, une augmentation d'une unité du nombre de policier conduit à une augmentation du taux de criminalité de 0.000014 en Afrique Sub-saharienne. Ce résultat confirme les travaux de Levitt et Miles (2007), pour lui l'augmentation du nombre des forces de l'ordre réduit le taux de criminalité.

Par contre, les résultats montrent également que le coefficient associé à la variable population jeune ($Pjeu_{it}$) a un effet positif sur le taux d'homicide en Afrique Sub-saharienne. En d'autres termes, toutes choses égales par ailleurs, une augmentation d'une unité de la population jeune entraîne une augmentation du taux de criminalité de 3.37e-08 point en Afrique Sub-saharienne. Ce résultat rejoint les travaux de Deadman (2000); Foresight Directorate (2000b), pour eux, la démographie est un déterminant très significatif de la criminalité.

VI. CONCLUSION ET RECOMMANDATIONS DE POLITIQUES ECONOMIQUES

Dans ce papier nous avons analysé les effets de la politique de prévention à court terme (augmentation du nombre de policiers) et à long terme (l'augmentation des dépenses publiques d'éducation) sur la criminalité en Afrique Sub-saharienne. Les investigations empiriques menées, nous ont amené à utiliser les données de panel estimées par les méthodes de poisson. Des différentes estimations, il ressort qu'en Afrique Sub-saharienne, l'augmentation des dépenses publiques d'éducation a un effet négatif et statistiquement significatif sur la criminalité, mais par contre, l'augmentation du nombre de policiers a un effet positif et statistiquement significatif sur la criminalité. Ces résultats nous montrent que la politique de prévention à long terme est plus efficace que la politique de prévention à court terme. Par ailleurs, d'autres études effectuées dans d'autres contextes montrent que l'augmentation des forces de police est un moyen efficace pour combattre le crime Levitt et Miles (2007). Mais dans le contexte de l'Afrique Sub-saharienne on constate que l'augmentation des forces de l'ordre entraîne une hausse le taux de criminalité, ceci pourrait s'expliquer par la forte répression des forces de l'ordre. Ce résultat corrobore les travaux de Beccaria (1764). Pour lui, plus la répression est forte plus le taux de criminalité augmente. Ainsi, la principale recommandation de politiques économiques formulée est la suivante: les autorités politiques des pays de l'Afrique Sub-saharienne doivent plus adopter la politique de prévention à long terme, c'est-à-dire mettre plus l'accent sur les dépenses publiques d'éducation et modérer les dépenses liées au recrutement des forces de police.

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The Impact of Poverty Alleviation Policies on Inequality in Income Distribution: A Case Study of the Ethnic Minority Group in Lam-Dong Province, Vietnam

By Nam H. Tran & Hoang M. Do

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Keywords: *poverty alleviation, inequality, income distribution, ethnic minority group.*

GJHSS-E Classification: *FOR Code: 140213p*



THE IMPACT OF POVERTY ALLEVIATION POLICIES ON INEQUALITY IN INCOME DISTRIBUTION A CASE STUDY OF THE ETHNIC MINORITY GROUP IN LAM DONG PROVINCE VIETNAM

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The Impact of Poverty Alleviation Policies on Inequality in Income Distribution: A Case Study of the Ethnic Minority Group in Lam-Dong Province, Vietnam

Nam H. Tran ^α & Hoang M. Do ^ο

Abstract- This study aims at valuing the impact of poverty alleviation policies on inequality in the income distribution of ethnic minority groups in Duc-Trong, Lam-Dong province. Welfare economics was employed in this study. In particular, The Lorenz curve and Gini coefficient were used to measure reductions in the poverty rate and changes in inequality of income distribution for a local ethnic minority groups. A sample of 258 households in N'thol Ha and Tan Thanh commune was used. Key results showed that the poverty reduction policies had not influenced income inequality for ethnic minority groups as reflected by the Lorenz curve of receiving support groups near 45° groups unsupported. This means that the Gini coefficient of the supported group (0.39) is lower than the Gini coefficient of the unsupported group is (0.48).

Keywords: poverty alleviation, inequality, income distribution, ethnic minority group.

I. INTRODUCTION

Vietnam has enacted and implemented a comprehensive policy system for poverty reduction targets. Poverty reduction is a great policy that has been consistently implemented by the Vietnamese Government for many years. Poverty reduction results achieved during the past time is impressive, the poverty rate has decreased from 22% in 2005 to 9.45% in 2010 and from 14.2% in 2010 to 9.6% in 2012 (Government, 2014). However, there are many concerns related to the living standard of the poor and the near-poor, which are not significantly different, and therefore, the risk of re-poverty is high, and the gap between rich and poor people tends to increase (from 8.1% to 9.4% in 2012). The poverty rate in the ethnic minority, remote, and mountainous areas remains high, ethnic minorities make up nearly 50% of the data on poor people of the whole country (Thu D.M, 2017). It may be due to a lack of synchronous poverty reduction programs and policies which are given in the short run. The mechanism of management, operation, and decentralization is not still reasonable, as well as the implementation of poverty reduction targets in some areas is not deep (Government, 2014).

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Additionally, the ethnic minority community participating in poverty reduction programs mainly stops in the role of "beneficiaries" and does not jump out of poverty actively (Tho T.L, 2013). As a result, the poverty reduction program in Vietnam would be increasingly difficult, and this program was identified as a focus of development policy (Cuong N.V, 2010). This study was conducted to assess the impact of poverty reduction programs on income inequality of ethnic minority households focusing on ethnic groups, and suggestion of solutions related to poverty reduction policy for ethnic minorities.

II. CONCEPTUAL FRAMEWORK

Poverty reduction policies are the decisions and regulations of the Vietnamese government to concretize programs and projects together with the resources, modalities, processes for implementing specific targets the poor, the poor households, or the poor commune with the ultimate goal of poverty reduction (Son N. N, 2012). Social inequalities are inequalities in opportunities or benefits for different individuals in a group or groups in society. Inequality is mentioned here as the inequality of income and enjoyment of services and common interests in society (Cuong N. A, 2014). Poverty reduction support is a process of using policy mechanisms, government resources, and socio-economic organizations at home country and abroad to support the process of poverty reduction through the implementation of mechanisms policy, public investment solutions. The focus of public support and public investment in poverty reduction in each country is focused on several different focus areas; such as China government focuses on public investment in priority education, irrigation, energy, and transport; The Indian government has inverted on education, irrigation, rural development. Thailand's government has concentrated on education and transport (Chung D.K, 2010). The Vietnamese government has been allocating resources in supporting and increasing public investment for poverty reduction, including the National Target Program for Poverty Reduction 2006-2010, the Poverty Reduction Program 135 in the extremely difficult

communes, Program 134 supports residential land for ethnic minority households. Since December 2007, the government implemented Resolution 30a on fast and sustainable poverty reduction support for poor districts (Ministry of Labour, War Invalids and Social Affairs, 2009). Income inequality and poverty alleviation, however, are dependent on five sources: human capital, natural capital, physical capital, financial capital, social capital. It also depends on increasing influences of institutional capital as a component of social capital, which is one of the three breakthroughs in the spirit of the documents of the XI Congress. Poverty alleviation and reduced inequality can yield two benefits and three characteristics. The two benefits are increasing labor productivity and developing the domestic market; The three characteristics are social policies focusing on the poor, social policies to support, philanthropy and

increased privatization, decentralized, participatory social policies (Cuong N.A, 2014).

III. STUDY AREA

Lamdong is a province in the South of Central highland with an average elevation of 800 - 1,500 m above sea level and an area of 9,764 km². It covers three highlands and it is also the head of seven big rivers. Lamdong has a tropical monsoon climate with two seasons: the rainy season and the dry one. The climate is mild and cool all year, with the average temperature is from 18°C to 25°C. Lamdong's population to 2019 is 1,296,906 people, of which 508,755 (39,20%) urban residents and 788,151 (60,80%) rural residents. It is the homeland of several ethnic minority groups, such as Churu, Ma, K'ho, M'ngong, etc.

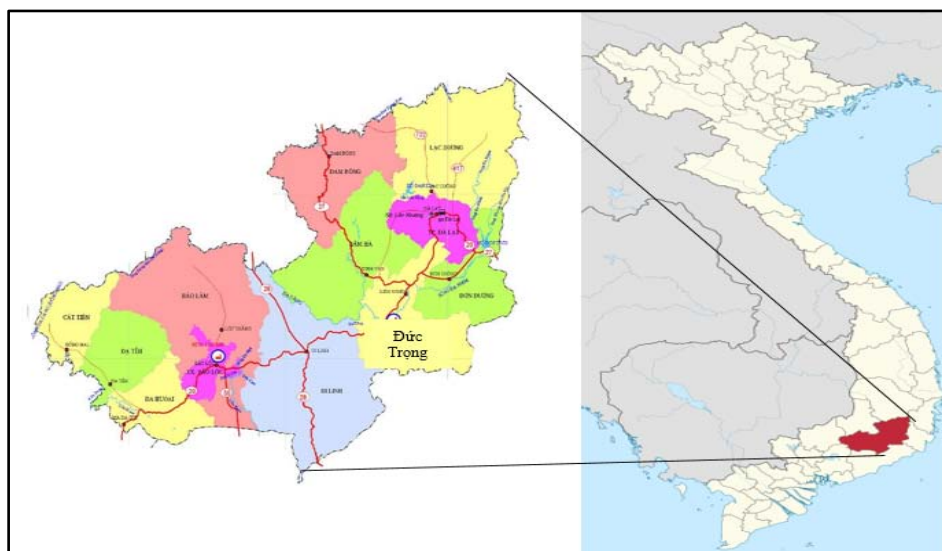


Figure 1: Study area

IV. MATERIALS AND METHODS

a) Data sources

The data used in this study was selected by interviewing 258 households in the N'thol Ha and Tan Thanh commune, Duc Trong district. Poverty is widespread in an ethnic minority group, and the poverty reduction policies were implemented at N'thol Ha and Tan Thanh commune.

b) Methodology

Income inequality is measured by the following two indexes: The Gini coefficient and the Generalized Entropy (GE) index. The Gini coefficient, which is based on the Lorenz curve, is the most widely indexes used to measure inequality due to its straightforward calculation, flexibility across different population groups, and independence from sample size and economic scale. The Gini coefficient is estimated by the area between the Lorenz curve and the line of equality.

$$G = \frac{n+1}{n-1} - \frac{2}{n(n-1)Y} \sum_{i=1}^n \rho_i Y_i$$

Where ρ_i is the rank of individual i by income; ρ_i is equal to 1 for the richest and increases for individuals with lower incomes; n is the total number of individuals in the sample. The Gini coefficient ranges from 0 to 1. As income inequality increases, the Gini coefficient increases (Brian Slack & Jean-Puan Rodrigue, 2003).

This study also measures household inequality by the GE index, which is calculated by a general formula as follows:

$$GE_{(\alpha)} = \frac{1}{\alpha(\alpha-1)} \left[\frac{1}{N} \sum_{i=1}^n \left(\frac{y_i}{y} \right)^\alpha - 1 \right]$$

where y_i denotes a welfare indicator for the person i (measured by per capita income); \bar{y} is the mean income per capita; α is the weight given to distances between incomes at different parts of the income distribution. For lower values of α , GE is more sensitive to changes in the lower tail of the income distribution. In contrast, for higher values of α , GE is more sensitive to changes in the upper tail of the income distribution. The three most common values of α are 0, 1, and 2. GE ($\alpha = 2$), which is equal to half the squared coefficient of variation, gives more weight to gaps in the upper tail of the distribution. $GE(\alpha = 1)$, known as the Theil's L, assigns equal weights to the dispersion of income across the distribution, while $GE(\alpha = 0)$, also known as Theil's T, gives more weight to distances between incomes in the lower tail. The values of GE measures vary between 0 and ∞ , where a GE of zero indicates a

perfectly equal distribution and higher values of GE represent higher levels of inequality (Platt, 2011).

V. RESULTS AND DISCUSSION

a) The poverty reduction situation of the households

The results shown in Table 1 indicate that average income of unsupported households is 1.9 times higher than that of supported households, at VND 28,486,440/year and VND 15,089,450/ year respectively. The income-generating ability of households is reflected in the production activities of agriculture and non-agriculture. However, 70% of the total income of the households comes from agricultural production activity and farming (coffee, mulberry) as well as livestock (dairy, silkworm, pig) is the key sources creating income. At the same time, the household income shifted from agricultural activities to non-agricultural activities remains relatively low.

Table 1: Average income per person in 2018

| Income source | Supported group | | Unsupported group | |
|-------------------------|--------------------|-------------|--------------------|-------------|
| | Total income (VND) | Ratio(%) | Total income (VND) | Ratio (%) |
| Average | 15,089,450 | | 28,486,440 | |
| Agriculture | 10,125,200 | 67.1 | 22,458,900 | 78.8 |
| Farming | 9,365,800 | 92.5 | 14,876,000 | 66.2 |
| Livestock | 759,400 | 7.5 | 7,582,900 | 33.8 |
| Non- agriculture | 4,964,250 | 32.9 | 6,127,540 | 21.2 |
| Wage | 1,245,000 | 25.1 | 2,406,000 | 39.9 |
| Hired labour | 2,630,000 | 53.0 | 3,491,540 | 57.9 |
| Forest | 641,000 | 12.9 | 0 | 0 |
| Subsidy | 448,250 | 9.0 | 130,000 | 2.2 |

Unit: VND

Source: Survey data, 2019

Of the 258 households surveyed (Table 2), the number of poor households has decreased overtime, but the level of disparity between the ethnic minority groups and the number of poor inhabitants is still concentrated in N'thol Ha commune, where the majority of indigenous minorities are living. This result implies that where ethnic

minority people live, the problem of poverty always requires the attention of the authorities by social welfare such as subsidies, health insurance, and policy, which is also the reason for the inequality of income distribution between poor and non-poor households.

Table 2: Situation of poverty reduction over time

| Year | N'thol Ha Commune | | Tan Thanh Commune | |
|------|-------------------|------------|-------------------|------------|
| | Poor | Non - poor | Poor | Non - poor |
| 2010 | 45 | 84 | 15 | 114 |
| 2015 | 40 | 89 | 9 | 120 |
| 2018 | 13 | 116 | 2 | 127 |

Unit: household

Source: Survey data, 2019

b) Impact of poverty reduction program on income inequality of ethnic minority households

i. Support policy in the period from 2010 to 2018

Local poverty reduction policies shown in Table 3 partly focused on ethnic minority groups with specific support policies such as housing assistance, job creation, medical, capital, education, clean water supply, and contribution of productive land, and it has contributed to

improving income, infrastructure in extremely difficult areas. These policies made people and poor households have access to basic social services for their basic living standards.

Table 3: Poverty reduction policies between 2010 and 2018

| Support policy | Total (household) | Ratio (%) |
|--------------------|-------------------|-----------|
| Housing assistance | 29 | 14.1 |
| Job creation | 9 | 4.4 |
| Medical | 83 | 40.5 |
| Capital | 31 | 15.1 |
| Clean water supply | 3 | 1.5 |
| Education | 47 | 22.9 |
| Productive land | 3 | 14.5 |

Source: Survey data, 2019

ii. Satisfaction evaluation of household poverty reduction policies

The level of household satisfaction for poverty reduction policy shown in Table 4, the level of household satisfaction on the support policies indicates that the

majority of people have satisfied with the poverty reduction programs. However, the figure for households is not satisfied in the housing assistance policy at 51.73 %, and this can be seen as a failure of the local housing assistance program.

Table 4: The level of household satisfaction for poverty reduction policy

| Support policy | Unit: % | | |
|---------------------------|-----------|--------|--------------|
| | Satisfied | Normal | Dissatisfied |
| Housing assistance (n=29) | 31.03 | 17.24 | 51.73 |
| Job creation (n=9) | 55.56 | 44.45 | 0 |
| Medical (n=83) | 75.90 | 18.07 | 6.03 |
| Capital (n=31) | 58.06 | 29.03 | 12.91 |
| Clean water supply (n=3) | 0 | 66.67 | 33.33 |
| Education (n=47) | 74.47 | 21.28 | 4.25 |
| Productive land (n=3) | 0 | 100.00 | 0 |

Source: Survey data, 2019

iii. Evaluation of the impact of poverty reduction policies on income distribution inequality

a. Lorenz curve

Inequality is one of the consequences of poverty, and the level of inequality is reflected in the income distribution of the household groups. Table 5 shows that the annual income of the 20% richest households for supported groups is 7 times higher than the annual income

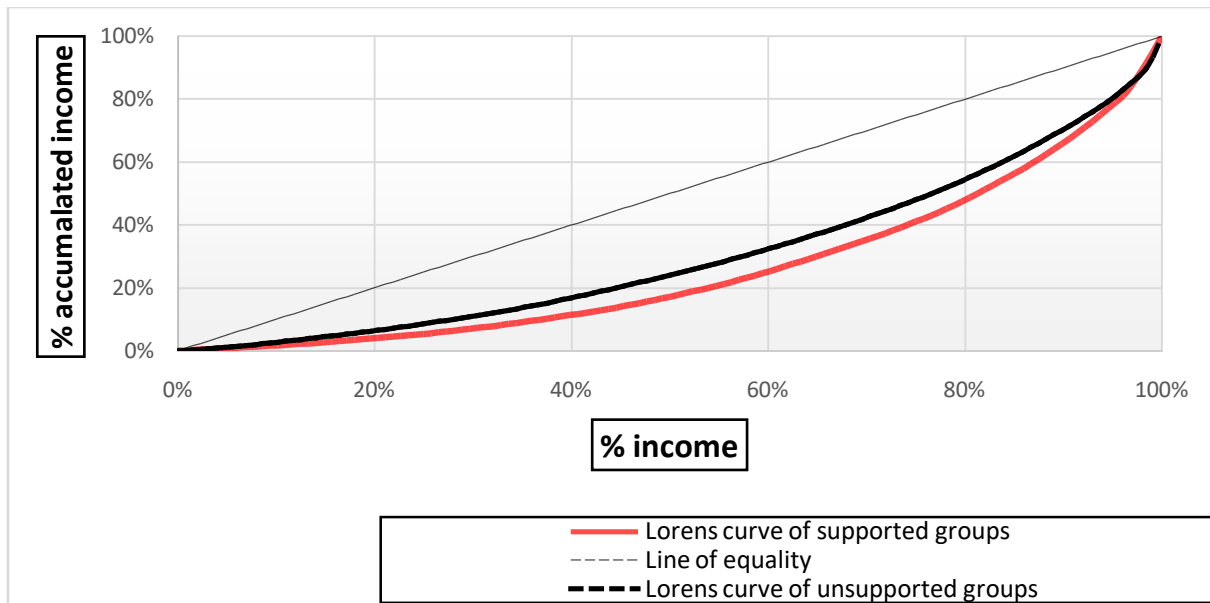
of the 20% poorest ones, at 45.95% and 6.23%, respectively. Meanwhile, income inequality has also significantly risen in the number of unsupported groups, and the proportion of the average income of the 20% poorest people is only 3.49%, which is 14 times lower in comparison with the proportion of income of the 20% richest group, accounting for 51.14%.

Table 5: Income distribution between supported groups and unsupported groups

| % accumulated population | % supported group income | % supported group accumulation income | % unsupported group income | % unsupported group accumulation income |
|--------------------------|--------------------------|---------------------------------------|----------------------------|-----------------------------------------|
| 20 | 6.23 | 6.23 | 3.49 | 3.49 |
| 40 | 10.02 | 16.25 | 7.66 | 11.15 |
| 60 | 15.58 | 31.83 | 14.37 | 25.52 |
| 80 | 22.22 | 54.05 | 23.34 | 48.86 |
| 100 | 45.95 | 100.00 | 51.14 | 100.00 |

Source: Survey data, 2019

The Lorenz curve shown in Figure 2 reveals that the distance from the Lorenz curve to the 45degreescurve (absolute equality) in the unsupported groups is relatively far greater than that of the supported groups and this figure portrays a high-income inequality between the unsupported groups and the supported groups, or the poverty reduction policies do not affect the income inequality of ethnic minority households received support in the local.



Source: Survey data, 2019

Figure 2: Lorenz curve of income distribution between supported groups and unsupported groups

b. *Gini coefficient*

The Gini coefficient of 258 households surveyed is 0.49. While the Gini coefficient of the supported groups is 0.39 (slow inequality), and the Gini coefficient of the unsupported groups is 0.48 (moderate inequality). Besides the successes from the poverty reduction policies such as production support policies, support policies for poor inhabitants accessed social services, and the training courses of staff support for the poverty reduction program have contributed greatly to poverty reduction. Thus, the poverty reduction policy is considered to be a success for the locals, especially for ethnic minority households.

The GE index in a given value corresponding to the three values of alpha (0; 1; 2) increase for each group, confirming the hypothesis that income inequality of inside the unsupported group is higher than inside the supported group.

c) *Proposing some solutions to improve poverty reduction policies on income distribution inequality*

It is necessary to investigate and to classify the poverty levels of the households in order to grant the proper support solutions. Possible implications are as follows:

Farm and non-farm economic activities should be encouraged poor households to accelerate income improvement.

The Vietnamese government should invest more in education and training in rural areas to equip young people with the knowledge and skills to improve livelihoods and alleviate poverty. In addition, the government should provide physical support such as land production areas for rent and modern tools in production because it would increase overall

employment in the farm sector and this could lead to income growth of poor households.

VI. CONCLUSION

Poverty reduction is the process of using policy mechanisms, government resources, and socio-economic organizations at home and abroad to support the process of poverty reduction. The poverty reduction programs for ethnic minorities have created conditions for them to develop their economy and sustainability lives. Key results showed that poverty alleviation policies applied to the two communes have not significantly reduced inequality in the income distribution of local people. Policy implications were also suggested to help policymakers in planning and driving poverty alleviation policies in Vietnam.

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Les Technologies De l'Information Et De La Communication (TIC) Promeuvent-Elles L'inclusion Financière En Afrique Sub-Saharienne ? Do Information and Communication Technologies (ICTS) Promote Financial Inclusion in Sub-Saharan Africa?

By Timbi Sézard & Abessolo Yves André

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Abstract- The objective of this paper is to assess the effect of ICTs on financial inclusion in Sub-Saharan African countries. The main contribution of this work lies in the application of Rogers' (2003) theory of diffusion of innovation to the explanation of access to financial services and the introduction of the financial inclusion index that we develop following the work of Sethy (2016). The methodology is based on the fixed-effect model inspired by the modified version of the Gompertz innovation diffusion model introduced by Chow (1983) and revised by Rogers (2003). The sample includes 33 SSA countries and the study period is 2004-2017. The empirical analysis leads to the results that, on the one hand, mobile phones and the internet have a positive and significant effect on financial inclusion and, on the other hand, fixed phones negatively and significantly affect accessibility to financial services.

Keywords: *ICT, financial inclusion, theory of the diffusion of innovation.*

GJHSS-E Classification: *FOR Code: 349999*



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Les Technologies De l'Information Et De La Communication (TIC) Promeuvent-Elles L'inclusion Financière En Afrique Sub-Saharienne ? Do Information and Communication Technologies (ICTs) Promote Financial Inclusion in Sub-Saharan Africa?

Timbi Sézard ^α & Abessolo Yves André ^ο

Résumé- L'objectif de ce papier est d'évaluer l'effet des TIC sur l'inclusion financière dans les pays de l'Afrique Sub-Saharienne. La principale contribution de ce travail réside dans l'application de la théorie de la diffusion de l'innovation de Rogers (2003) à l'explication de l'accès aux services financiers et de l'introduction de l'indice d'inclusion financière que nous développons suivant les travaux de Sethy (2016). La méthodologie s'appuie sur le modèle à effet fixe inspirée de la version modifiée du modèle de diffusion de l'innovation de Gompertz introduite par Chow (1983) et révisée par Rogers (2003). L'échantillon inclut 33 pays de l'ASS et la période d'étude s'étale de 2004-2017. L'analyse empirique permet d'arriver aux résultats selon lesquels, d'une part le téléphone mobile et internet ont un effet positif et significatif sur l'inclusion financière et d'autre part le téléphone fixe affecte négativement et significativement l'accessibilité aux services financiers.

Mots-clés: TIC, inclusion financière, théorie de la diffusion de l'innovation.

Abstract The objective of this paper is to assess the effect of ICTs on financial inclusion in Sub-Saharan African countries. The main contribution of this work lies in the application of Rogers' (2003) theory of diffusion of innovation to the explanation of access to financial services and the introduction of the financial inclusion index that we develop following the work of Sethy (2016). The methodology is based on the fixed-effect model inspired by the modified version of the Gompertz innovation diffusion model introduced by Chow (1983) and revised by Rogers (2003). The sample includes 33 SSA countries and the study period is 2004-2017. The empirical analysis leads to the results that, on the one hand, mobile phones and the internet have a positive and significant effect on financial inclusion and, on the other hand, fixed phones negatively and significantly affect accessibility to financial services.

Keywords : ICT, financial inclusion, theory of the diffusion of innovation.

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I. INTRODUCTION

Le niveau d'inclusion financière des pays et des différentes régions du monde affichent des disparités remarquables. Par exemple, la Banque Mondiale (2018) fait état de ce que le taux de bancarisation a évolué de 18 points. Alors que le niveau d'accessibilité aux services financiers dans les pays de l'OCDE est resté très élevé (95% en 2017), les pays de l'Asie de l'Est et du Pacifique ont connu une hausse de 14 points et les pays en développement ont enregistré une hausse de 21 points. Les pays de l'Afrique Sub-Saharienne (ASS) ne sont pas en reste de ces progrès et ont enregistré 20 points en hausse. Cependant, le taux de bancarisation est resté inférieur à la moyenne mondiale¹ soient 23% en 2011, 34% en 2014 et 43% en 2017. De plus, ces divergences de niveau sont davantage accentuées en ASS. Alors que l'Afrique Orientale enregistre 54% de taux de bancarisation, l'Afrique Australe affiche 53%, l'Afrique Occidentale, 35% et l'Afrique Centrale affiche le taux de 30%. Selon Gloukoviezoff (2004) du Centre Walras l'exclusion financière est assimilée à l'exclusion bancaire. Pour lui, l'exclusion financière est « le processus par lequel une personne rencontre des difficultés d'accès et d'usage des services financiers offerts par les prestataires classiques adaptés à ses besoins et lui permettant de mener une vie sociale normale dans la société qui est la sienne ».

L'accès aux services financiers favorise non seulement la croissance économique inclusive (Honohan, 2004), réduit la pauvreté et les inégalités de revenus² (Demirgüç-kunt et Klapper, 2018), mais contribue fortement au développement financier. Nonobstant ces effets positifs avérés, il existe toujours

¹ Les moyennes mondiales sont respectivement de 51% en 2011, 62% en 2014 et 69% en 2017.

² L'inclusion financière est un élément important qui rend la croissance Inclusive dans la mesure où l'accès à la finance peut permettre aux agents économiques de prendre des décisions de croissance de long terme et d'investissement, de participer dans les activités productives ainsi qu'à faire face aux chocs inattendus de court terme (Park et Mercado, 2015)

des pays qui ont un niveau d'inclusion financière élevée et d'autre qui ont des niveaux faibles. Dans cette veine, s'est développé un courant de recherche ayant pour objectif la recherche des facteurs explicatifs de l'inclusion financière. Claessens (2006), par exemple, trouve que l'accès aux services financiers est renforcé par les infrastructures institutionnelles, la libéralisation des marchés et la facilitation d'une plus grande concurrence et l'encouragement des innovations et de la technologie. S'agissant particulièrement de ce dernier facteur, les TIC³ occupent de plus en plus une place de choix (Beck et de la Torre, 2006, Claessens, 2006) dans l'étude des déterminants de l'accès financier. L'un des constats fait ces dernières années révèle une progression fulgurante des TIC dans les pays en développement. En ASS, en particulier, le nombre de titulaires de compte bancaire sur mobile a doublé, passant à 21% (Demirgüç-kunt et al., 2018). Les pays de l'ASS se positionnent parmi les pays qui ont connus la plus forte pénétration mobile ces récentes années. Selon l'International Telecommunication Union (2018), le nombre de personnes ayant souscrit à un téléphone mobile est passé de 53 en 2011 à 71 en 2014 et 73 pour 100 habitants en moyenne en 2017. Nonobstant cette hausse des TIC, leur effet sur l'inclusion financière reste toujours flou et la littérature aussi bien théorique qu'empirique est peu concluante sur ce débat. Les travaux portant sur les déterminants de l'accessibilité aux services financiers en ASS ont été menés en général dans le cadre de l'économie de développement (Kendall et al., 2010; Andrianaivo et Kpodar, 2011; Olaniyi et Adeoye, 2016).

Les travaux relatifs à l'étude des déterminants de l'inclusion financière en ASS ont été entrepris en considérant les facteurs technologiques comme de simples variables de contrôle sans véritable modèle théorique y afférent et utilisent des indicateurs partiels de l'inclusion financière. Lundqvist et al. (2014) analysent la relation entre la technologie et l'inclusion financière dans le contexte de la recherche des facteurs de la croissance économique. Ils montrent que l'inclusion financière est un canal indirect qui renforce l'effet de la technologie sur la croissance économique. Andrianaivo et Kpodar (2011) étudient la relation entre la technologie et l'inclusion financière, mais l'étude repose sur un ensemble d'hypothèses critiques qui affectent la validité de leurs résultats. Asongu et Moulin (2016) quant à eux analysent le rôle des TIC dans la complémentarité des bureaux de crédit privés et des registres publics du crédit dans la réduction de

l'asymétrie de l'information d'accès aux services financiers.

L'objectif de ce travail est d'évaluer les effets des TIC sur l'inclusion financière en ASS dans le cadre de la théorie de la diffusion de l'innovation de Rogers (2003). Ceci se justifie par le fait que les TIC permettent de pallier au manque ou à l'insuffisance en infrastructures bancaires qui limitent l'accès aux services financiers de certaines couches de population. Le reste du travail se présente comme suit. La section deux fait un état de l'art, la troisième section développe l'approche méthodologique, la section quatre évalue empiriquement l'effet des TIC sur l'inclusion financière en ASS et la cinquième section conclut l'étude.

II. REVUE DE LA LITTÉRATURE

a) TIC et inclusion financière : une analyse théorique

Une abondante littérature a tenté de mettre en exergue les effets des TIC sur les activités économiques en général et sur les activités financières en particulier. Sur le plan théorique, plusieurs économistes tels que Gerschenkron (1962), Hicks et Niehans (1983), Romer (1990), Rogers (1983), Goel et Hsieh (2002), Aghion et Howitt (2009) ont tenté de mettre en évidence les effets des TIC sur l'économie et sur la finance. Ces théories explicatives se déclinent en cinq groupes. Alors que les théories de la croissance, la théorie des marchés contestables, la théorie des coûts de transaction de l'innovation financière et la théorie de la diffusion de l'innovation montrent l'effet positif des TIC sur l'accès aux services financiers, le paradoxe de productivité de Solow (1987) montre l'effet négatif des TIC sur l'accessibilité aux services financiers.

Les théories de la croissance des TIC apparaissent dans les années 1960 et plusieurs modèles explicatifs peuvent être évoqués. Tout d'abord l'approche du saut technologique (« *Leapfrogging* ») de Gerschenkron (1962) qui tire son origine de la théorie du rattrapage. Selon l'auteur, le *leapfrogging* est le fait de contourner les étapes du processus d'accumulation des investissements fixes et en capacités humaines afin de réduire le retard (Steinmuller, 2001). Ensuite, le modèle de produit-variété (Romer, 1990) soutient que l'innovation cause la productivité de la croissance, créant de nouveaux produits, mais non nécessairement la variété de produits améliorés. Ce paradigme est passé de la nouvelle théorie du commerce international à la mise d'une emphase sur le rôle des retombées de la technologie. Par ailleurs, la théorie de la croissance schumpétérienne met l'accent sur l'innovation développée par Aghion et Howitt (1992). Née de la théorie de l'organisation industrielle moderne, elle insiste sur la qualité des innovations qui remplace les anciens produits obsolètes et aussi incluent la force de la « destruction-crédation ». Le modèle de Nordhaus (1969) souligne la nature privée de la technologie et la

³ Les TIC font référence à un terme large qui intègre tout support de communication ou englobe la radio, la télévision, les téléphones mobiles, l'ordinateur, les réseaux matériels et immatériels, les systèmes satellites ainsi que les divers services et applications qui leurs sont associés tels que les vidéoconférences et l'apprentissage à distance (Charoensukmongkol et Moqbel, 2014)

traite comme endogène et, le modèle linéaire endogène de Uzawa (1965) traite la technologie comme un bien public et non concurrentiel susceptible d'avoir des retombées. Enfin, la théorie des marchés contestables (Baumol et al., 1982) qui concourt à expliquer l'effet de la croissance internet sur la croissance économique (Goel et Hsieh, 2002). En effet, le modèle développé par Goel et Hsieh (2002) met l'accent sur l'importance des TIC dans l'accès à la finance et soutient que certains effets d'internet peuvent être compris dans le contexte des sciences économiques traditionnelles. De façon plus spécifique, internet a le potentiel de rendre les marchés plus contestables et plus concurrentiels.

La théorie des coûts de transaction d'innovation financière de Hicks et Niehans (1983) qui trouve son origine dans la théorie des coûts de transaction (Coase, 1937 ; Williamson, 1975) soutient que les TIC peuvent réduire les imperfections du système économique. Ainsi, Hicks et Niehans (1983) pensent que l'innovation financière est la réponse de l'avancée de la technologie qui entraîne la réduction des coûts de transaction. De bonnes infrastructures de TIC réduisent les asymétries d'information et la volatilité des prix.

La théorie de la diffusion de l'innovation (Rogers, 1983 ; Chow, 1967) a été introduite afin de tester, rehausser et comprendre la diffusion, l'adoption, l'acceptation et l'usage des TIC. Cette théorie est inspirée de la théorie de la statique comparative de demande. Elle repose fondamentalement sur le modèle modifié de diffusion de l'innovation de Gompertz (Rogers, 2003) qui suppose que l'usage de la technologie tend vers un sentier d'équilibre sous la forme de S. Les travaux théoriques ultérieurs montrent que cette théorie explique l'effet de l'innovation sur le développement des systèmes financiers à travers l'accès, l'approfondissement des services financiers. Des développements empiriques ultérieurs font de la théorie de la diffusion de l'innovation le modèle par excellence d'analyse des effets des TIC sur les performances économiques et notamment le développement financier. Par contre, Berger et Humphrey (1996) et Frei et Harker (1997) montrent, dans la continuité des travaux de Solow (1987)⁴ que les TIC peuvent contribuer à réduire le nombre de clients des grandes banques suite à l'atteinte d'un seuil d'usage des GAB.

b) Enseignement empirique de la relation entre TIC et inclusion financière

Sur le plan empirique, les premiers travaux traitant des effets des TIC les lient à la performance de la croissance et de la productivité⁵, à l'inflation⁶ et au

volume du commerce⁷. Les travaux liant les TIC à l'inclusion financière s'inscrivent dans le champ plus large de la relation entre d'une part les TIC et les systèmes financiers et d'autre part entre les TIC et l'inclusion financière et les sens de causalité restent encore flous. Il en découle trois enseignements.

Le premier enseignement rapporte l'effet positif des TIC sur l'inclusion financière. Kendall et al. (2010) estiment l'effet du développement du téléphone mobile sur l'inclusion financière en contrôlant un ensemble de variables et trouvent que le téléphone mobile joue un rôle important dans la variation en coupe instantanée sur la pénétration des comptes de dépôt et de crédit. Abondant dans le même sens, Andrianaivo et Kpodar (2011) évaluent l'effet du développement du téléphone mobile sur l'inclusion financière à l'aide de l'estimation à effet aléatoire sur un ensemble de pays africains sur la période moyenne de 2000-2003 et 2004-2007. Ils aboutissent au résultat selon lequel le développement des TIC est positivement corrélé à l'inclusion financière mesurée par le nombre de dépôt et de crédit par tête. Dans la même optique, Beck et al. (2010) utilisent des données de ménages et trouvent que la détention d'un téléphone cellulaire accroît la probabilité d'usage des services financiers au Kenya. Par ailleurs, Andrianaivo et Kpodar (op.cit) ont utilisé un modèle de croissance standardisée et l'estimateur en système GMM pour analyser l'effet des TIC et particulièrement du réseau de téléphone mobile sur l'inclusion financière et la croissance économique sur un échantillon de pays africains entre 1988 et 2007. Ils trouvent que le développement des TIC contribue à la croissance économique sur le continent et que l'inclusion financière est un canal de transmission du téléphone mobile sur la croissance.

Sarma et Pais (2011) étudient le niveau d'inclusion financière dans 49 pays et établissent d'une part une relation positive et significative entre le niveau d'inclusion des ménages et le revenu et d'autre part, une relation inverse et significative avec l'illettrisme. La pénétration et l'accessibilité de l'infrastructure bancaire contribuent positivement à une meilleure inclusion et au développement humain. De plus, les auteurs mettent en exergue la relation positive et significative entre l'utilisation des TIC et les conditions de vie des ménages. Allen et al. (2014) ont montré que le mobile banking étend l'accès financier. Olaniyi et Adeoye (2016) analysent les déterminants de l'inclusion financière en Afrique à l'aide d'une approche de données de panel dynamique entre 2005 et 2014. Mesurant l'inclusion financière par le nombre de déposants auprès des banques commerciales, ils trouvent que l'accès à internet, la présence des banques islamiques, le revenu par tête, la monnaie

⁴ Selon le paradoxe de Solow (1987), « On voit des ordinateurs partout sauf dans les statistiques de productivité ».

⁵ Dewan et Riggins, (2005)

⁶ Choi et Yi, (2009)

⁷ Freund et Weinhold, (2004)

large et l'alphabétisation ont un effet positif sur l'inclusion financière.

Ezirim et al. (2009) ont employé la version modifiée du modèle de diffusion de la technologie de Gompertz introduite par Chow (1983) pour examiner l'effet des TIC sur la croissance et le développement des marchés financiers au Nigéria entre 1998 et 2007. Ils ont trouvé que les TIC affectent la capitalisation des marchés financiers ainsi que le volume et la valeur des actions vendues. Cependant, les TIC n'ont pas un effet significatif sur le nombre de listing et bons d'obligations. Bhunia (2011) adopte également la version modifiée du modèle de diffusion de la technologie de Gompertz introduite par Chow (1983) en le réorganisant afin d'avoir les TIC comme variable explicative et les indicateurs du stock de marché comme variables dépendantes. Ils trouvent un effet significatif du développement des TIC sur les indicateurs du stock de marché. Sassi et Goeid (2013) mènent une étude comparative couvrant les régions de la MENA et soutiennent qu'un niveau très élevé de pénétration mobile affecte positivement le développement financier et au cas où, la relation à double sens est prise en compte, c'est un stimulus pour la croissance économique.

Le second enseignement rapporte que les TIC ont un effet négatif sur l'inclusion financière. Perez (2002) et Pozzi et al. (2003) soulignent que les écarts de pénétration des TIC dans diverses localités apporte le risque d'exclusion financière accrue et l'élargissement d'écarts entre ceux qui ont accès directement aux flux d'informations et ceux qui sont exclus de telles opportunités. En effet, les TIC amplifient la volatilité des prix et le volume de fluctuation et aggrave les différences d'accès aux services financiers. L'Institut CFA (2012) pensent que les TIC peuvent accroître la fragmentation des marchés. Ilyina et Samaniego (2011) pensent qu'il existe des domaines où l'usage intensif des TIC peut conduire à la menace de la stabilité financière. Asongu et Moulin (2016) offrent des résultats de 53 pays africains entre 2004 et 2011 et opinent que les interactions entre les TIC et l'efficacité des bureaux et registres privés sont encore mitigés et faibles. Les TIC jouent un rôle très limité dans l'accélération de l'accès aux services financiers (une dimension du développement financier).

Le troisième enseignement rapporte l'effet mitigé des TIC sur l'inclusion financière. Okwu (2015) évalue l'effet du développement des TIC sur les marchés de stock du Nigéria et de Johannesburg en utilisant le modèle modifié de Gompertz. Ils trouvent que les TIC ont des effets hétérogènes sur les indicateurs du marché de stock. L'usage d'internet a des effets négatifs sur les indices du marché excepté la capitalisation, certaines variables explicatives n'ont aucun effet sur les mérites individuels, mais l'effet agrégé est significatif.

III. APPROCHE MÉTHODOLOGIQUE D'ANALYSE DES FACTEURS TECHNOLOGIQUES DE L'INCLUSION FINANCIÈRE

a) Le modèle

Le modèle théorique qui sous-tend l'analyse des effets des TIC sur l'inclusion financière est la version modifiée du modèle de Gompertz initialement conçue pour analyser les déterminants et les effets de la dissémination de l'innovation. Il s'écrit comme suit:

$$Y(t) = Se^{-Ae^{-bt}} \quad (1)$$

Ce modèle a fait l'objet de nombreuses adaptations pour devenir ces dernières années le modèle privilégié de l'étude des effets des TIC notamment sur le développement des systèmes financiers (Rogers, 2003 ; Ezirim et al., 2009; Okwu, 2015). La désagrégation de l'équation (1) permet d'obtenir la spécification empirique suivante:

$$IFI_{i,t} = \alpha + \beta_{i,t} \sum_{i=1}^{n=3} TIC_{i,t} + \delta_{j,t} \sum_{j=4}^{k=6} \Theta_{i,t} + \varepsilon_{i,t} \quad (2)$$

Pour $i = 1, \dots, 33$ et $t = 2004, \dots, 2017$

Dans l'équation (2), la variable dépendante est l'indice d'inclusion financière. Cette variable capte l'accès, la disponibilité et l'usage des services financiers. C'est un indice calculé dans le cadre de ce travail suivant les travaux de Sarma et Pais (2011), Sethy (2016) et Abessolo et Timbi (2019). Elle est expliquée par les variables de contrôle suivantes:

Le taux de croissance annuel du PIB par tête (TCPIBHT). En théorie, l'hypothèse du « *supply-leading* » du développement financier enseigne qu'une croissance forte entraîne une demande accrue des services financiers (Ranciere et al., 2007). En effet, la théorie du développement économique soutient qu'un système financier qui montre des signes de croissance et d'expansion créerait une demande additionnelle de finance externe pour les firmes qui peut être satisfaite par les institutions financières (Bhattacharya, 2013).

L'inflation est mesurée par l'indice des prix annuel à la consommation et décrit la stabilité macroéconomique. Kendall et al. (2010) trouvent que l'inflation a un effet négatif et significatif sur la pénétration des dépôts.

La taille de la population (POP). Une forte densité de la population constitue une source de demande des services financiers. Andrianaivo et Kpodar (2011) trouvent un effet positif de la densité de la population sur le nombre de dépôts par tête comme mesure de l'inclusion financière.

Les variables d'intérêt sont représentées par la matrice $TIC_{i,t}$. Cette matrice est constituée de trois variables à savoir : le téléphone mobile (Mobile). Le téléphone mobile est capté par le nombre de souscripteurs de téléphone mobile, internet est capté par le pourcentage d'individus utilisant internet et le téléphone fixe (Fixe) est capté par le nombre de souscripteurs par tête. L'usage du téléphone mobile et d'internet réduisent les obstacles infrastructurels qui limitent l'accès aux services financiers dans les pays en développement. L'usage du M-Pesa a fortement contribué à l'accès aux services financiers au Kenya. Les TIC sont vus comme des ponts qui brisent le retard infrastructurel pour les offreurs de services afin de servir ceux qui étaient antérieurement exclus des structures financières (Diniz et al., 2011).

i. *Technique d'estimation*

Une analyse de la littérature empirique des déterminants de l'inclusion financière en Afrique fait état de l'usage de deux grandes stratégies d'estimation. La première stratégie met en relief la méthode des moments généralisés (Andrianaivo et al., 2011 ; Lundqvist et al., 2014 ; Olaniyi et Adeoye, 2016). Cette technique permet de corriger les insuffisances des techniques économétriques standards des MCO grâce à la prise en compte de la variable dépendante retardée, mais présente deux limites. La première est relative aux échantillons de très petites tailles qui ont des conséquences sur les estimateurs GMM et la seconde est l'obtention des estimateurs biaisés des GMM à deux étapes en cas d'hétéroscédasticité et d'autocorrélation (Windmeijer, 2005). La seconde stratégie est le modèle à effet aléatoire (Kendall et al., 2010) . Cependant, il ne permet pas de résoudre le problème d'hétéroscédasticité et d'autocorrélation. La technique d'estimation retenue dans cette étude est le modèle à effet fixe. Ce modèle permet de corriger les insuffisances des MCO en corrigeant l'hétéroscédasticité et l'autocorrélation qui peuvent

biaisés non seulement les résultats, mais aussi et surtout leur interprétation.

La période de l'analyse de ce travail s'étend de 2004 à 2017 et porte sur un panel de 33 pays de l'Afrique Sub-Saharienne. Le choix de la période d'étude et la taille de l'échantillon s'est fait en tenant compte de la disponibilité des variables. Les données de l'analyse sont secondaires et les variables proviennent de la WDI (2018), la *Heritage Foundation* (2018), de l'Union Internationale de Télécommunication (2018), du Financial Access Survey du FMI (2018) et du Global Financial Development Database (2018).

ii. *Evaluation de l'effet des TIC sur l'inclusion financière en Afrique Sub-Saharienne*

Dans cette section, nous évaluons l'effet des TIC sur l'inclusion financière en Afrique Sub-Saharienne. Il convient tout d'abord d'expliquer la procédure d'application des tests de stationnarité. En effet, deux tests sont généralement appliqués aux données de panel. Il s'agit des tests de première génération et des tests de seconde génération. Les tests de première génération supposent l'indépendance des individus qui constituent un panel (IPS, 2003) alors que ceux de deuxième génération relâchent cette hypothèse et repose sur l'hypothèse d'interdépendance des individus (Pesaran, 2004). Notre échantillon est constitué des pays de l'ASS. Les pays de notre échantillon appartiennent au moins à une union économique ou monétaire. L'on peut, à cet effet, supposer une dépendance possible entre les individus du panel (Mondjeli et Mbassi, 2018). Ceci ne peut être confirmé que par le test de Pesaran (2004).⁸ le test de Pesaran est adapté aux échantillons de petites tailles. A l'issu de ce test, il convient alors d'appliquer le test de Pesaran (2007) de stationnarité afin de vérifier l'ordre d'intégration. L'application du test de Pesaran (2004) conduit au rejet de l'hypothèse nulle d'indépendance aux seuils respectifs de 1% et 5%.

Tableau 1: Tests de dépendance des individus [CD-test~N(0,1)]

| Variables | CD-test | p-value | Corr | abs (corr) |
|-----------|---------|---------|-------|------------|
| IFI | 49,52 | 0,000 | 0,576 | 0,591 |
| TCPIBHT | 5,09 | 0,000 | 0,061 | 0,255 |
| Inflation | 19,39 | 0,000 | 0,262 | 0,378 |
| POP | 84,02 | 0,000 | 0,977 | 0,977 |
| Mobile | 83,36 | 0,000 | 0,978 | 0,978 |
| Internet | 78,84 | 0,000 | 0,921 | 0,921 |
| Fixe | 5,96 | 0,000 | 0,072 | 0,454 |

Source: Auteur

⁸ Pour une variable donnée, Pesaran (2004) teste l'existence de la corrélation entre les résidus de la régression ADF de l'individu i avec ceux des autres n-1 individus de l'échantillon. Ce test peut être valable pour les estimations en panels à effets fixes, ou aléatoires, en pool ou des variables instrumentales.

Tableau 2: Test de stationnarité

| Variables | Retards | A niveau | | En différence première | |
|-----------|---------|----------|---------|------------------------|---------|
| | | Zt-bar | p-value | Zt-bar | p-value |
| IFI | 0 | -2,560 | 0,005 | -6,819 | 0,000 |
| TCPIBHT | 0 | -7,129 | 0,000 | -1,417 | 0,000 |
| Inflation | 0 | -9,039 | 0,000 | -13,259 | 0,000 |
| POP | 0 | -7,975 | 0,000 | -12,289 | 0,000 |
| Mobile | 0 | -4,116 | 0,000 | -7,050 | 0,000 |
| Internet | 0 | 3,074 | 0,999 | -1,336 | 0,091 |
| Fixe | 0 | 2,478 | 0,993 | -5,152 | 0,000 |

Source: Auteur

Afin de contrôler les propriétés d'intégration des séries, nous effectuons le test de Pesaran (2007). Le tableau 2 permet d'observer que les variables sont stationnaires à niveau I(0) et en différence première I(1).

La statistique de Hausman, nous a permis de retenir le modèle à effets fixes dans le cadre de ce travail comme le montre Tableau 3 ci-dessous.

Tableau 3: Résultats de l'estimateur à effets fixes à partir du panel statique

| Variables | IFI MCO (1) | IFI Effets aléatoires (2) | IFI Effets fixes (3) |
|---------------------------|-----------------------|---------------------------------|----------------------------|
| Taux de croissance du PIB | 0,00108 (1,58) | -0,00007 (0,19) | -0,00004 (-0,12) |
| Inflation | 0,00504 (0,82) | -0,00296 (-0,64) | -0,00269 (-0,60) |
| Taille de la population | -0,02022** (-1,99) | -0,0796* (-4,70) | -0,18359* (-2,03) |
| Mobile | 0,02247* (2,71) | 0,03632* (6,67) | 0,04631* (5,81) |
| internet | 0,00354* (7,71) | 0,00318* (11,06) | 0,00300* (9,45) |
| FIXE | 0,01439* (13,29) | 0,00181 (0,86) | -0,01190* (-4,11) |
| constante | 0,05851 (1,46) | 0,47813* (4,07) | 1,10627*** (7,91) |
| Observations | 387 | 387 | 387 |
| R-square | 0,6917 ⁹ | 0,5836 ¹⁰ | 0,5213 ¹¹ |
| Nombre de pays | 33 | 33 | 33 |

$$\text{Test de spécification de Hausman } ch\ 2(6) = (b - B)' \left[(V_b - V_B)^{-1} \right] (b - B) = 52.12$$

$$Pr\ ob > Chi2 = 0.0000$$

Note : *, **, *** correspondent au seuil de significativité à 1%, 5% et 10%, Les valeurs entre parenthèses correspondent aux t-student

Source: Auteur, extrait de Stata à partir des données de la WDI, la Héritage Foundation, UIT, FMI

⁹ R2-Ajusted
¹⁰ R2-between
¹¹ R2-within

Une fois le modèle à effets fixes retenu, nous avons estimé à nouveau le modèle en vue d'évaluer la robustesse des premiers résultats en corrigeant l'hétéroscédasticité et en clustérisant les écarts-types.¹² Nous avons procédé pour cela en quatre étapes. La première étape a consisté à estimer unique la variable

téléphone mobile. La deuxième étape a permis d'estimer uniquement la variable internet. Dans la troisième étape, nous avons estimé l'influence de la variable téléphone fixe. Enfin, la quatrième étape évalue l'effet global des variables. (Tableau 4).

Tableau 4: Résultats issus du panel statique et test de robustesse

| Variable dépendante : indice d'inclusion financière | Modèle à effets fixes | | | |
|--------------------------------------------------------------|------------------------|------------------------|------------------------|-----------------------|
| | (4) | (5) | (6) | (7) |
| TCPIBHT | -0,00009 (-0,16) | 0,00020 (0,45) | 0,00024 (0,48) | -0,00004 (-0,11) |
| Inflation | -0,00910** (-2,50) | -0,00433 (-1,55) | -0,00589*** (-1,97) | -0,00269 (-0,95) |
| POP | 0,22534 (1,48) | 0,23583** (2,13) | 0,56293* (6,77) | -0,18359 (-1,07) |
| Mobile | 0,03694*** (1,99) | | | 0,04631** (2,58) |
| Internet | | 0,00295* (3,33) | | 0,00300* (4,04) |
| Fixe | | | -0,01420** (-2,58) | -0,01190** (-2,48) |
| Constante | -1,63933*** (-1,73) | -1,50837*** (-2,00) | -3,68981* (-6,48) | 1,10627 (1,02) |
| Observations | 389 | 391 | 393 | 387 |
| R2-With in | 0,3606 | 0,4583 | 0,3755 | 0,5213 |
| Pays | 33 | 33 | 33 | 33 |
| Hausman test (Prob) | 0,0099 | 0,0002 | 0,0000 | 0,0000 |

Note: Les valeurs entre parenthèses représentent les t-student. *, **, *** représentent les seuils de significativité à 1%, 5% et 10%.

Source: Auteur, extrait de Stata à partir des données de la WDI, du FMI FAS, de la Heritage Foundation, de l'UIT.

La colonne 7 présente l'influence aussi bien du téléphone mobile, d'internet et du téléphone fixe sur l'indice d'inclusion financière. Les coefficients associés au taux de croissance du PIB, au taux d'inflation, à la taille de la population et au téléphone fixe sont négatifs et seul celui associé au téléphone fixe est significatif. A contrario, les coefficients associés au téléphone mobile et à internet sont positifs et significatifs. L'influence du téléphone mobile et d'internet est significative au seuil de 5% et 1%. Une augmentation du téléphone mobile de 1% entraîne une augmentation de l'inclusion financière de 0.046 point toute chose égale par ailleurs. De façon conséquente, une augmentation du téléphone mobile de 10% entraîne une hausse de l'inclusion financière de 0.46 point Ceteris Paribus. Un accroissement de l'usage d'internet de 1% entraîne une augmentation de l'inclusion financière de 0.003 point toute chose égale par ailleurs et une hausse de la

souscription du téléphone fixe de 10% entraîne une baisse de l'inclusion financière de 0.0119 point. L'effet du téléphone fixe est négatif et significatif. Pris individuellement, l'effet du téléphone mobile est plus important que celui de l'usage d'internet (0.046 > 0.003).

Ces résultats méritent une analyse économique sur le double plan de la théorie économique et des faits stylisés. La première analyse économique qui s'appuie sur la théorie économique s'intéresse à deux résultats obtenus dans ce travail à savoir la non significativité des variables macroéconomiques et la significativité des variables technologiques de l'inclusion financière. S'agissant de la non significativité des variables macroéconomiques que sont le taux de croissance du PIB et l'inflation, cela peut être illustré par la théorie du développement économique. En effet, la théorie du développement économique stipule que le processus

¹² C'est une technique d'estimation robuste disponible dans le logiciel Stata permettant de corriger les écarts-types de l'hétéroscédasticité et l'autocorrélation des erreurs.

de croissance économique provoque une demande croissante des services financiers qui peut être satisfaite par les institutions financières (Boyd et Smith, 1998). La non significativité du taux de croissance économique montre que la croissance économique n'a pas atteint le niveau lui permettant d'entraîner la demande des services financiers. En effet, le taux de croissance moyen des pays de l'échantillon est de 2.5% largement en deçà du seuil de 7% suggéré dans les Objectifs du Millénaire pour le développement pour avoir des effets positifs sur d'autres aspects de l'économie. Ce résultat rejoint spécifiquement l'hypothèse de la causalité indépendante entre la croissance et la finance (Habibullah et Eng, 2006, Atje et Jovanovic, 1993) qui soutient l'absence de relation de causalité entre la croissance et la finance. La non significativité négative de l'inflation rejoint l'étude de Boyd et al. (2011) qui considèrent que l'inflation a un impact négatif, mais minimal sur l'accès aux services financiers. D'autre part la significativité des variables technologiques est une illustration de la diffusion de l'innovation qui considère que la diffusion de la technologie est considérée comme un moteur de développement économique à travers le développement de nouveaux produits qui favorise l'accessibilité aux services financiers. En effet, Andrianaivo et Kpodar (2011) montrent que le développement du téléphone mobile est positivement corrélé à l'inclusion financière. Dans le même sens, Beck et al. (2010) trouvent que la détention du téléphone mobile accroît la probabilité d'usage des services financiers, le cas du M-pesa au Kenya. L'effet négatif du téléphone fixe rejoint l'étude de Vagliansindi et al. (2006) et Donner (2008) qui soutiennent l'avantage du réseau de téléphone mobile par rapport au téléphone fixe.

L'effet positif d'internet sur l'inclusion financière rejoint les travaux de Sarma et Pais (2011) et de Allen et al. (2014) qui ont montrés que l'accès à internet est un facteur essentiel dans le mouvement vers l'économie digitale. Ceci est une évidence dans le cas du Kenya où le M-pesa a transformé le grand spectre des services financiers. Cet impact significatif de l'accès à internet a des implications importantes pour l'inclusion financière. Selon Olaniyi et Adeoye (2016), sans usage intensif d'internet en Afrique, l'inclusion financière peut être très infinitésimale. Couvrir tous les millions de villages du continent africain avec des agences d'institutions financières peut être une tâche ardue en terme d'investissement et d'efficacité. De plus, internet a drastiquement réduit les coûts de transactions à travers le mobile et les guichets automatiques des banques. Il a accru les potentiels de l'offre de crédit dans les zones reculées du continent africain. Internet a rendu possible l'offre des services bancaires à domicile où les comptes sont utilisés par les clients illettrés utilisant les mobiles. Internet est ainsi devenu un facilitateur majeur de l'inclusion financière.

La seconde analyse qui s'appuie sur les faits stylisés apporte une explication au signe attendu des variables d'intérêt. Concernant l'influence positive du téléphone mobile et d'internet sur l'inclusion financière, cela peut s'expliquer par la progression de leur pénétration en ASS entre 2004 et 2017 comparativement à la pénétration du téléphone fixe qui a stagné. À propos de l'influence positive du téléphone mobile, cela peut davantage s'expliquer par le fait que les innovations financières, notamment les services financiers mobiles ou mobile banking requièrent plus le téléphone mobile que le téléphone fixe pour la réalisation des transactions financières en ASS. L'usage d'internet accélère les transactions financières. Par contre, les téléphones fixes sont généralement utilisés en priorité et uniquement pour les appels téléphoniques, leur mise en place requière de lourds investissements en infrastructures physiques.

IV. CONCLUSION

Dans cet article, nous avons examiné la relation entre la technologie et l'inclusion financière en ASS. L'étude a porté sur 33 pays d'ASS et la période d'étude s'est étalée sur la période allant de 2004 à 2017. la méthodologie s'est appuyée sur la régression à effet fixesur données de panel à partir de la version modifiée dumodèle de diffusion de technologie de Gompertz introduite par Chow (1983) et révisée par Rogers(2003). Les estimations empiriques ont été précédées des tests de dépendance des économies (Pesaran, 2004) et des tests de stationnarité de seconde génération (Pesaran, 2007). L'application du test de dépendance a montré l'existence de l'interdépendance entre les économies d'ASS. Le modèle à effet fixe a permis de corriger l'hétéroscédasticité et l'autocorrélation. Il ressort que les indicateurs des TIC expliquent l'inclusion financière en ASS. De façon spécifique, il découle que le téléphone mobile et internet affectent positivement et significativement l'inclusion financière alors que le téléphone fixe a un effet négatif et significatif sur l'inclusion financière. L'originalité de cette étude réside d'une part sur l'application de la théorie de diffusion dela technologie dans la recherche des facteurs technologiques de l'accessibilité aux services financiers et d'autre part de l'introduction de l'indice composite del'inclusion financière dans les pays de l'ASS. Cet indice a été développé suivant les travaux de Sarma et Pais (2011), Sethy (2016) et Abessolo et Timbi (2019).

Deux principales recommandations peuvent découlées de ces résultats. La première consiste à démocratiser l'accès aux téléphones mobiles. Cette recommandation permet de palier à l'insuffisance voir le manque d'infrastructures financières physiques qui constitue un obstacle d'accès aux services financiers du point de vue de l'offre. La seconde recommandation consiste, pour les Etats de l'ASS, à favoriser la

pénétration d'internet. Ceci passe par un investissement dans la fibre optique qui permet la stabilité de la connexion internet et la réduction des inégalités d'accès à internet qui est susceptible de limiter l'accès des populations rurales aux opérations financières.

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ANNEXE

Echantillon des pays de l'Afrique Sub-saharienne

| Liste des pays de l'Afrique Sub-saharienne | | | | |
|--------------------------------------------|----------------------|--------------|---------------|----------|
| Angola | Botswana | Burkina Faso | Burundi | Cameroun |
| Cap Vert | Tchad | Congo | Côte d'ivoire | Djibouti |
| Guinée Equatoriale | Ethiopie | Gabon | Ghana | Guinée |
| Guinée-Bissau | Kenya | Lesotho | Madagascar | Malawi |
| Mali | Mauritanie | Namibie | Niger | Nigéria |
| Rwanda | Sao Tome et Principe | Sénégal | Seychelles | |
| Tanzanie | Uganda | Zimbabwe | Sierra-Leone | |

Source: Auteur



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Impact of Financial Reporting on Management Decision Making in Rivers State-owned Universities

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Abstract- The study examined impact of financial reporting on management decision making in Rivers State owned universities. The study adopted the descriptive survey design and the population consisted of two hundred and twenty-eight (228) principal officers and other staff of the two (2) state-owned universities. Simple random sampling technique was adopted to arrive at a sample size of one hundred and thirty-eight (138) respondents. Two (2) research questions were answered and two (2) null hypotheses were formulated and tested at 0.05 level of significance. The questionnaire was used for data collection. The instrument was validated and a reliability index of 0.78 was obtained using test-retest method. Data were analysed using mean, standard deviation and frequency while t-test statistical tool was used to test the null hypotheses. One of the findings reveals that statement of financial position aids management decision making to a high extent. Also, there is a significance difference in the mean responses of management of Rivers State University and Ignatius Ajuru University of Education on extent statement of financial position aid management decision making in Rivers State-owned universities.

Keywords: *financial, management, decision-making, reporting and universities.*

GJHSS-E Classification: FOR Code: 149999



Strictly as per the compliance and regulations of:



Impact of Financial Reporting on Management Decision Making in Rivers State-owned Universities

Prof. M.N. Koko ^α & Sam-Eleyi, Fortune ^ο

Abstract- The study examined impact of financial reporting on management decision making in Rivers State owned universities. The study adopted the descriptive survey design and the population consisted of two hundred and twenty-eight (228) principal officers and other staff of the two (2) state-owned universities. Simple random sampling technique was adopted to arrive at a sample size of one hundred and thirty-eight (138) respondents. Two (2) research questions were answered and two (2) null hypotheses were formulated and tested at 0.05 level of significance. The questionnaire was used for data collection. The instrument was validated and a reliability index of 0.78 was obtained using test-retest method. Data were analysed using mean, standard deviation and frequency while t-test statistical tool was used to test the null hypotheses. One of the findings reveals that statement of financial position aids management decision making to a high extent. Also, there is a significance difference in the mean responses of management of Rivers State University and Ignatius Ajuru University of Education on extent statement of financial position aid management decision making in Rivers State-owned universities. It was therefore recommended amongst other things that qualified and capable professionals should be employed for financial report preparation and presentation.

Keywords: financial, management, decision-making, reporting and universities.

I. INTRODUCTION

The thrust of consolidated statements is to present, primarily for the benefit of stakeholders and any interested clients/publics about the progress or otherwise of the organisation, the outcomes of operations and the financial position of a parent organisation and its subsidiaries essentially as if the group were a single institution with one or more branches or division. There is a presumption that consolidated statements are more meaningful than separate statements.

Thomas (2008) elicits that financial reporting is the process of communicating economic information to the stakeholders – management, shareholders, publics and so on. To facilitate informed judgement and decision making, it deals with the presentation of financial and other relevant statements to show the extent to which the objectives of the organization have been achieved. It is a statement prepared by the

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directors of an organisation showing how well management have been able to manage the resources entrusted to them by the government and shareholders of the organisation (Benedict & Elliot, 2011). Financial reports are means through which the strengths and weaknesses of an organisation can be ascertained at a glance. Financial reporting are also instruments without which certain operational decisions cannot be made, especially those that deals with investment, expenditure and assets management (Better, Meigns & Whittington, 2009).

For Akintoye (2002), financial reports are used by investors and creditors in deciding where to invest their limited resources in a particular organisation or not. Financial reporting entails the preparation and presentation of both financial and non-financial information by the organisation for effective, planning and reliable decisions. However, the ultimate aim of financial reporting is to provide information that may be useful enough for evaluating management effectiveness in utilising resources under its control to satisfy its user's needs.

Koko (2018) contended that financial management is one of the means to ascertain if an organization's goals for effective decision making are achievable. It is through adequate financial reports in form of financial statements that management can rely on the data for making organizational decisions.

II. STATEMENT OF THE PROBLEM

In order to have an effective financial report for planning and decision making, financial managers must have an analytical knowledge of the instruments used for their decision making. The issues of fraud, cash mismanagement, insolvency and liquidity problems have been conflicting matters over the years in most universities in Nigeria, especially in universities in Rivers State despite the fact that most institutions present true and fair reports (Okoye & Alao, 2012).

These problems often result in cessation of operations and in most cases become very deceitful to the unsuspecting public whose resources are utilized by such organizations. Also, there have been lapses in some financial reporting regulations, some of which include weaknesses during the preparation of financial

reports due to human errors. Therefore, using the above as a spring board, impact of financial reporting on management decision making in Rivers State universities becomes the focus of the study.

III. PURPOSE OF THE STUDY

The main purpose of this study was to examine the impact of financial reporting on management decision making in Rivers State owned universities. The specific objectives therefore include the following:

1. To examine the extent to which statement of financial position aid management decision making in Rivers State owned universities.
2. To ascertain the extent to which cash flow statement enhance management decision making in Rivers State owned universities.

a) *Research Questions*

The following research questions guided the study:

1. To what extent does statement of financial position aids management decision making in Rivers State owned universities?
2. To what extent does statement of cash flow enhance management decision making in Rivers State owned universities?

b) *Null Hypotheses*

The study was further guided by the following null hypotheses.

1. There is no significant difference between the mean responses of management of Rivers State University and Ignatius Ajuru University of Education on extent statement of financial position aids management decisions making in the institutions.
2. There is no significant difference between the mean responses of management of Rivers State University and Ignatius Ajuru University of Education on extent statement of cash flow enhance management decision making in the institutions.

IV. CONCEPT OF FINANCIAL REPORTING

A written message presented on sheets of paper is known as a report (Hall, 2004). Literally, financial report is a written financial information signed, sealed and delivered. According to Meigns, Williams and Haka (2007), financial reporting is the process of communicating financial information to decision making. It provides information useful for making investment decisions. It's disclosure provides both qualitative and quantitative information for its user's effective use and reliable decisions. In order words, it presents information in a way that can be understood by users. Again, the view that is more likely of this opinion is that of Larson (2008), who viewed financial reporting as the communication of relevant financial information to decision makers.

Meanwhile, the American Financial Reporting Standards Board (AFRSB) defined financial reporting as "activities which are intended to serve the information needs of external users, who lack the authority to prescribe the financial information they want from organisation and therefore must use information that the management communicates to them", cited by Pendrill and Lewis (2010). Thus, the management prepares financial reports for the use of external users who cannot but use the information at their disposal to make various decisions concerning an organisation. Majority of the big organisations around us have become so large that they attract investing capital from a great number of investors. Hence, these organisations are required by law to prepare and present their financial reports covering a period of at least (12 months) to their shareholders at their Annual General Meeting (AGM). The small organisations are not left out also.

Meigns et al (2007) stated that financial statement simply means a declaration of what is believed to be true and which, communicated in terms of monetary unit. It describes certain attributes of an organisation that is considered to fairly represent its financial activities. It is also the means of communicating to interested parties, the relevant information on resources, obligation and performances of the reporting entity.

V. FINANCIAL REPORTS AND MANAGEMENT DECISION MAKING

The broad objectives of financial reporting is to provide information about the financial position, performance and financial adaptability of an organisation that is useful to a wide range of users for assessing the stewardship of management and for making economic decision (Elekwachi, 2010). Management is a phenomenon of the 20th century, and there is almost no organisation that does not have its management and whether some organisations will succeed or not, primarily depends on the quality of management of an organisation. Decision making is one of the functions of management amongst many other functions that are undertaken by the management of an organization (Pandey, 2006).

Barkovic (2009) sees decision making as a chosen way of conducting business among several alternatives. In the view of Kurfi (2015), decision making is a process that allows decision-makers to select at least one opinion from a set of possible alternative decisions. Also, decision making is the key to financial managers' success and is very crucial for any business, hence, aid management to constantly take actions that affect the organisation. However, it is imperative to note that financial reporting is crucial to decision makers on investment, credit policy, marketing strategies,

dividends policy, financial and similar decisions (Kaurdi, 2007).

One major variable to consider in financial reporting is the statement of financial position. Statement of financial position is a financial statement showing the assets, liabilities and not equity of an organisation at a given point in time, usually at the end of the year, which facts and figures shown must be true and fair (Helfert, 2010).

Akpan (2009) asserted that statement of financial position determines investment decision of management by aiding management to think better, the financing of their operations at more favourable costs and also permit management to reverse planned investment, should condition change. Similarly, Damodaran (2012) stressed that organisation needs the aid of statement of financial position to assess in which areas the business can improve and, it is important for management of an organisation to reports, so as to plan for future growth of their business.

For Thomas (2008), statement of financial position is seen as a vital tool for investment decision of management in an organization. This is because investment decision affects the organisation value in the sense that, the value increases if investments are profitable, and add to the shareholders wealth.

Statement of cash flow is another variable worthy of consideration in financial reporting. This is a statement prepared at the end of a fiscal period showing how cash was affected by the business operations, investing and financing activities during the accounting period. Statement of cash flow explains how a company's cash was generated during a given period and how the cash was used (John & Wokeh, 2017).

Glautier and Black (2016) opined that statement of cash flow acts as a constraint on the ability of management of an organization to pay dividends. The scholars are of the view that payment of dividend should be based on cash flow rather than accrual earning, because dividend decision on accrual income would result in divided payments that are not internally financed and thus would deteriorate the liquidity and solvency position of the management since cash flow reveals the cash generation power of management.

Kurfi (2012) stressed that several studies linked cash flow information with dividends policies and assume that statement of cash flow have superiority over accrual incomes in explaining dividends policies. Hence, cash flow statement is a direct measure of liquidity since liquidity is considered an important determinant of management dividend policy.

VI. METHODOLOGY

The study adopted the descriptive survey design, and the population consisted of two hundred and twenty-eight (228) staff, comprising of one hundred

and thirty-four (134) principal officers, bursary and audit staff, deans of faculties, heads of department, and directors of institutes/centres from Rivers State University and ninety-four (94) same officers/staff from Ignatius Ajuru University of Education respectively. The simple random sampling technique was adopted to arrive at the sample size of one hundred and thirty-eight (138) respondents comprising of eighty (80) respondents from RSU and fifty-eight (58) respondents from IAUE respectively. Data for the study were collected by means of questionnaire which adopted a five (5) point Likert scale. The said questionnaire was face and content, validated by 2 (two) experts in the field of Accounting. Tests – retest method was used to test the reliability of the items and a reliability co-efficient of 0.78 was obtained. Mean and standard deviation were used to analyse the research questions and t-test statistical tool was used to test the hypotheses. Thus, the hypotheses will be rejected if the calculated value is greater than the critical value, or otherwise accepted.

VII. RESULTS

The result obtained from the respondents is shown below:

Research Question 1: To what extent does statement of financial position aid management decision making in Rivers State-owned universities?

Table 1: Mean and Standard Deviation of the Responses on Extent Statement of Financial Position Aids Management Decision Making

| S/N | Items | RSU (N=80) | | | IAUE (N=58) | | |
|---------------|-----------------------------------------------------------------|------------|------|------|-------------|------|------|
| | | M | SD | Rmks | M | SD | Rmks |
| 1. | Help to assess management area of improvement | 3.70 | 0.16 | HE | 3.71 | 0.23 | HE |
| 2. | Permit management to reverse planned investment when necessary. | 3.13 | 0.13 | ME | 3.64 | 0.22 | HE |
| 3. | Serve as a veritable tool in management decision making. | 3.94 | 0.18 | HE | 4.20 | 0.31 | HE |
| 4. | Use in evaluating management profitability. | 3.61 | 0.15 | HE | 3.60 | 0.21 | HE |
| 5. | Plan for future growth of business. | 3.97 | 0.19 | HE | 3.91 | 0.26 | HE |
| 6. | Help management think better in financing their operations | 3.01 | 0.13 | ME | 3.50 | 0.20 | HE |
| Grand Mean/SD | | 3.56 | 0.16 | HE | 3.76 | 0.24 | HE |

Source: Survey Data, 2019

The result on Table 1 shows that item 1, 3, 4 and 5 with a mean scores of 3.70/3.71, 3.94/4.20, 3.61/3.60 and 3.97/3.91 from RSU and IAUE respondents respectively, indicates that statement of financial position aids management decision making to a high extent. Also, item 2 and 6 with a mean scores of 3.13 and 3.01 from RSU respondents indicates that to a moderate extent while same items with a mean scores of 3.64 and 3.50 from IAUE respondents indicates that to a high extent. The grand mean summary indicated a mean value of 3.56 and 3.76 respectively which proves

that generally, statement of financial position aids management decision making in Rivers State-Owned Universities to a high extent, furthermore, the standard deviation which indicated a total of 0.16 and 0.24 respectively reveals closeness in the opinion of the respondents.

Research Question 2: To what extent does statement of cash flow enhance management decision making in Rivers State-Owned Universities?

Table 2: Mean and Standard Deviation of the Responses on Extent Statement of Cash Flow Enhance Management Decision Making.

| S/N | Items | RSU (N=80) | | | IAUE (N=58) | | |
|---------------|--------------------------------------------------------|------------|------|------|-------------|------|------|
| | | M | SD | Rmks | M | SD | Rmks |
| 1. | Perform better in payment of dividends of shareholders | 3.53 | 0.14 | HE | 3.62 | 0.22 | HE |
| 2. | Serves a measure of liquidity | 3.32 | 0.13 | ME | 3.40 | 0.20 | ME |
| 3. | Reveals the cash power of management | 4.40 | 0.25 | HE | 4.10 | 0.29 | HE |
| 4. | Have superiority over accrual income | 3.75 | 0.16 | HE | 3.55 | 0.21 | HE |
| 5. | Reveals management weakness in payment of dividends. | 3.60 | 0.15 | HE | 3.50 | 0.20 | HE |
| 6. | Act as a guide on ability to pay dividends. | 3.09 | 0.13 | ME | 3.41 | 0.20 | ME |
| Grand Mean/SD | | 3.62 | 0.16 | HE | 3.60 | 0.22 | HE |

Source: Survey Data, 2019

The result on Table 2 shows that item 1, 3, 4 and 5 from both RSU and IAUE respondents with a mean score of 3.53/3.62, 4.40/4.10, 3.75/3.55 and 3.60/3.50 respectively, indicates that statement of cash flow enhance management decision making to a high extent while item 2 and 6 with mean scores of 3.32/3.40 and 3.09/3.41 from both RSU/IAUE respondents respectively, indicates that to a moderate extent. The grand mean summary indicated a mean value of 3.62

and 3.60 respectively, which also prove that statement of cash flow enhance management decision making in Rivers State-Owned Universities to a high extent, furthermore, the standard deviation which indicated a total 0.16 and 0.22 respectively reveals closeness in the opinion of respondents.

a) *Hypotheses Testing*

Hypothesis 1: There is no significance difference between the mean responses of management of RSU

and IAUE on extent statement of financial position aids management decision making in the institutions.

Table 3: T-test of Mean Difference on Responses to Extent Statement of Financial Position Aids Management Decision Making

| Groups | No. of Respondents | \bar{x} | SD | DF | t-cal | t-crit | Decision |
|--------|--------------------|-----------|------|-----|-------|--------|----------|
| RSU | 80 | 3.56 | 0.16 | | | | |
| IAUE | 58 | 3.76 | 0.24 | 136 | 6.70 | 1.96 | Rejected |

The analysis in Table 3 reveals the t-test of the mean difference on responses of RSU and IAUE management staff on extent statement of financial position aid management decision making. The t-calculated value of 6.70 is greater than the t-critical value of 1.96. This is an indication that the null hypothesis is rejected. Therefore, there is a significant

difference in the mean responses of management of RSU and IAUE on extent statement of financial position aids management decision making in the institutions.

Hypothesis 2: There is no significance difference between the mean responses of management of RSU and IAUE on extent statement of cash flow enhance management decision making in the institutions.

Table 4: T-test of Mean Difference on Responses to Extent Statement of Cash Flow Enhance Management Decision Making

| Groups | No. of Respondents | \bar{x} | SD | DF | t-cal | t-crit | Decision |
|--------|--------------------|-----------|------|-----|-------|--------|----------|
| RSU | 80 | 3.62 | 0.16 | | | | |
| IAUE | 58 | 3.60 | 0.22 | 136 | 0.67 | 1.96 | Accepted |

The analysis in Table 4 reveal the t-test of the mean difference on responses of RSU and IAUE management staff, on extent statement of cash flow enhance decision making. The t-calculated value of 0.67 is less than the t-critical value of 1.96. This is an indication that the null hypothesis is accepted. Therefore, there is no significant difference in the mean responses of management of RSU and IAUE on extent statement of cash flow enhance management decision making in the institutions.

policies, hence statement of cash flow is a direct measure of liquidity. Furthermore, finding from the hypotheses proved that, in null hypothesis 1, the hypothesis is rejected which implies that there is a significance difference in the mean responses of management of Rivers State University and Ignatius Ajuru University of Education on extent statement of financial position aids management decision making in the Institutions. Also hypothesis 2 is accepted which implies that there is no significance difference in the mean responses of management of RSU and IAUE on extent statement of cash flow enhance management decision making in the Institutions.

VIII. DISCUSSION OF FINDINGS

Findings from Table 1 revealed that statement of financial position aids management decision making to a high extent. This result is in agreement with Damodaran (2012) that management of organizations need the aid of statement of financial position to evaluate areas in which their businesses can improve. The finding also lend credence with the view of Akpan (2009), that statement of financial position determines investment decision of management in order to think better of the future growth of their businesses, which in other word, is regarded as a veritable tool used to access management strengths and weaknesses.

Findings from Table 2 also revealed that statement of cash flow enhance management decision making to a high extent. This finding is in line with Glautier and Black (2016) that statement of cash flow reveals the cash power of management as well as management weaknesses in the payment of shareholders dividends. Also, the finding is in line with the view of Kurfi (2015) that statement of cash flow have superiority over accrual incomes in explaining dividends

IX. CONCLUSION

The study dealt with impact of financial reporting on management decision making in Rivers State owned universities. The study reveals that a sound effective and efficient financial reporting system tends to improve performance in management operations. For any management to maintain its reputation, respect and dignity, its financial reporting system has to be given proper attention, and as observed, financial reporting is very crucial for management decisions making in the day to day activities of an organisation.

X. RECOMMENDATIONS

Based on the findings, the following recommendations were proffered.

1. Qualified and capable professionals should be employed for financial reports preparation and presentation.

2. Account department should maintain true and fair accounting records at all times.
3. Management should ensure that reporting regulations and standards in preparation of financial statement must be complied with.
4. Management should create conducive working environment and incentives that can encouragement workers to put in their best.
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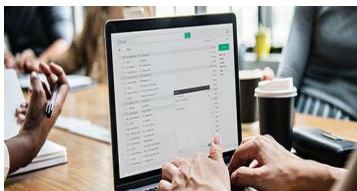
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- The names of second main headings (Heading 2) must not include numbers and must be in italics with a font size of 10.

Structure and Format of Manuscript

The recommended size of an original research paper is under 15,000 words and review papers under 7,000 words. Research articles should be less than 10,000 words. Research papers are usually longer than review papers. Review papers are reports of significant research (typically less than 7,000 words, including tables, figures, and references)

A research paper must include:

- a) A title which should be relevant to the theme of the paper.
- b) A summary, known as an abstract (less than 150 words), containing the major results and conclusions.
- c) Up to 10 keywords that precisely identify the paper's subject, purpose, and focus.
- d) An introduction, giving fundamental background objectives.
- e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition, sources of information must be given, and numerical methods must be specified by reference.
- f) Results which should be presented concisely by well-designed tables and figures.
- g) Suitable statistical data should also be given.
- h) All data must have been gathered with attention to numerical detail in the planning stage.

Design has been recognized to be essential to experiments for a considerable time, and the editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned unrefereed.

- i) Discussion should cover implications and consequences and not just recapitulate the results; conclusions should also be summarized.
- j) There should be brief acknowledgments.
- k) There ought to be references in the conventional format. Global Journals recommends APA format.

Authors should carefully consider the preparation of papers to ensure that they communicate effectively. Papers are much more likely to be accepted if they are carefully designed and laid out, contain few or no errors, are summarizing, and follow instructions. They will also be published with much fewer delays than those that require much technical and editorial correction.

The Editorial Board reserves the right to make literary corrections and suggestions to improve brevity.



FORMAT STRUCTURE

It is necessary that authors take care in submitting a manuscript that is written in simple language and adheres to published guidelines.

All manuscripts submitted to Global Journals should include:

Title

The title page must carry an informative title that reflects the content, a running title (less than 45 characters together with spaces), names of the authors and co-authors, and the place(s) where the work was carried out.

Author details

The full postal address of any related author(s) must be specified.

Abstract

The abstract is the foundation of the research paper. It should be clear and concise and must contain the objective of the paper and inferences drawn. It is advised to not include big mathematical equations or complicated jargon.

Many researchers searching for information online will use search engines such as Google, Yahoo or others. By optimizing your paper for search engines, you will amplify the chance of someone finding it. In turn, this will make it more likely to be viewed and cited in further works. Global Journals has compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

Keywords

A major lynchpin of research work for the writing of research papers is the keyword search, which one will employ to find both library and internet resources. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining, and indexing.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy: planning of a list of possible keywords and phrases to try.

Choice of the main keywords is the first tool of writing a research paper. Research paper writing is an art. Keyword search should be as strategic as possible.

One should start brainstorming lists of potential keywords before even beginning searching. Think about the most important concepts related to research work. Ask, "What words would a source have to include to be truly valuable in a research paper?" Then consider synonyms for the important words.

It may take the discovery of only one important paper to steer in the right keyword direction because, in most databases, the keywords under which a research paper is abstracted are listed with the paper.

Numerical Methods

Numerical methods used should be transparent and, where appropriate, supported by references.

Abbreviations

Authors must list all the abbreviations used in the paper at the end of the paper or in a separate table before using them.

Formulas and equations

Authors are advised to submit any mathematical equation using either MathJax, KaTeX, or LaTeX, or in a very high-quality image.

Tables, Figures, and Figure Legends

Tables: Tables should be cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g., Table 4, a self-explanatory caption, and be on a separate sheet. Authors must submit tables in an editable format and not as images. References to these tables (if any) must be mentioned accurately.



Figures

Figures are supposed to be submitted as separate files. Always include a citation in the text for each figure using Arabic numbers, e.g., Fig. 4. Artwork must be submitted online in vector electronic form or by emailing it.

PREPARATION OF ELETRONIC FIGURES FOR PUBLICATION

Although low-quality images are sufficient for review purposes, print publication requires high-quality images to prevent the final product being blurred or fuzzy. Submit (possibly by e-mail) EPS (line art) or TIFF (halftone/ photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Avoid using pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings). Please give the data for figures in black and white or submit a Color Work Agreement form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

For scanned images, the scanning resolution at final image size ought to be as follows to ensure good reproduction: line art: >650 dpi; halftones (including gel photographs): >350 dpi; figures containing both halftone and line images: >650 dpi.

Color charges: Authors are advised to pay the full cost for the reproduction of their color artwork. Hence, please note that if there is color artwork in your manuscript when it is accepted for publication, we would require you to complete and return a Color Work Agreement form before your paper can be published. Also, you can email your editor to remove the color fee after acceptance of the paper.

TIPS FOR WRITING A GOOD QUALITY SOCIAL SCIENCE RESEARCH PAPER

Techniques for writing a good quality homan social science research paper:

1. Choosing the topic: In most cases, the topic is selected by the interests of the author, but it can also be suggested by the guides. You can have several topics, and then judge which you are most comfortable with. This may be done by asking several questions of yourself, like "Will I be able to carry out a search in this area? Will I find all necessary resources to accomplish the search? Will I be able to find all information in this field area?" If the answer to this type of question is "yes," then you ought to choose that topic. In most cases, you may have to conduct surveys and visit several places. Also, you might have to do a lot of work to find all the rises and falls of the various data on that subject. Sometimes, detailed information plays a vital role, instead of short information. Evaluators are human: The first thing to remember is that evaluators are also human beings. They are not only meant for rejecting a paper. They are here to evaluate your paper. So present your best aspect.

2. Think like evaluators: If you are in confusion or getting demotivated because your paper may not be accepted by the evaluators, then think, and try to evaluate your paper like an evaluator. Try to understand what an evaluator wants in your research paper, and you will automatically have your answer. Make blueprints of paper: The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

3. Ask your guides: If you are having any difficulty with your research, then do not hesitate to share your difficulty with your guide (if you have one). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work, then ask your supervisor to help you with an alternative. He or she might also provide you with a list of essential readings.

4. Use of computer is recommended: As you are doing research in the field of homan social science then this point is quite obvious. Use right software: Always use good quality software packages. If you are not capable of judging good software, then you can lose the quality of your paper unknowingly. There are various programs available to help you which you can get through the internet.

5. Use the internet for help: An excellent start for your paper is using Google. It is a wondrous search engine, where you can have your doubts resolved. You may also read some answers for the frequent question of how to write your research paper or find a model research paper. You can download books from the internet. If you have all the required books, place importance on reading, selecting, and analyzing the specified information. Then sketch out your research paper. Use big pictures: You may use encyclopedias like Wikipedia to get pictures with the best resolution. At Global Journals, you should strictly follow [here](#).



6. Bookmarks are useful: When you read any book or magazine, you generally use bookmarks, right? It is a good habit which helps to not lose your continuity. You should always use bookmarks while searching on the internet also, which will make your search easier.

7. Revise what you wrote: When you write anything, always read it, summarize it, and then finalize it.

8. Make every effort: Make every effort to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in the introduction—what is the need for a particular research paper. Polish your work with good writing skills and always give an evaluator what he wants. Make backups: When you are going to do any important thing like making a research paper, you should always have backup copies of it either on your computer or on paper. This protects you from losing any portion of your important data.

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11. Pick a good study spot: Always try to pick a spot for your research which is quiet. Not every spot is good for studying.

12. Know what you know: Always try to know what you know by making objectives, otherwise you will be confused and unable to achieve your target.

13. Use good grammar: Always use good grammar and words that will have a positive impact on the evaluator; use of good vocabulary does not mean using tough words which the evaluator has to find in a dictionary. Do not fragment sentences. Eliminate one-word sentences. Do not ever use a big word when a smaller one would suffice.

Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

14. Arrangement of information: Each section of the main body should start with an opening sentence, and there should be a changeover at the end of the section. Give only valid and powerful arguments for your topic. You may also maintain your arguments with records.

15. Never start at the last minute: Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

16. Multitasking in research is not good: Doing several things at the same time is a bad habit in the case of research activity. Research is an area where everything has a particular time slot. Divide your research work into parts, and do a particular part in a particular time slot.

17. Never copy others' work: Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

18. Go to seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources. Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.

19. Think technically: Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.



20. Adding unnecessary information: Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

21. Report concluded results: Use concluded results. From raw data, filter the results, and then conclude your studies based on measurements and observations taken. An appropriate number of decimal places should be used. Parenthetical remarks are prohibited here. Proofread carefully at the final stage. At the end, give an outline to your arguments. Spot perspectives of further study of the subject. Justify your conclusion at the bottom sufficiently, which will probably include examples.

22. Upon conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium through which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

INFORMAL GUIDELINES OF RESEARCH PAPER WRITING

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

The introduction: This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

The discussion section:

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

Writing a research paper is not an easy job, no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record-keeping are the only means to make straightforward progression.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear: Adhere to recommended page limits.



Mistakes to avoid:

- Insertion of a title at the foot of a page with subsequent text on the next page.
- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.
- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

Title page:

Choose a revealing title. It should be short and include the name(s) and address(es) of all authors. It should not have acronyms or abbreviations or exceed two printed lines.

Abstract: This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

An abstract is a brief, distinct paragraph summary of finished work or work in development. In a minute or less, a reviewer can be taught the foundation behind the study, common approaches to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Use comprehensive sentences, and do not sacrifice readability for brevity; you can maintain it succinctly by phrasing sentences so that they provide more than a lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study with the subsequent elements in any summary. Try to limit the initial two items to no more than one line each.

Reason for writing the article—theory, overall issue, purpose.

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

Introduction:

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.



The following approach can create a valuable beginning:

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets the declared objectives.

Approach:

Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done. Sort out your thoughts; manufacture one key point for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory specifically—do not take a broad view.

As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

Procedures (methods and materials):

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

Materials may be reported in part of a section or else they may be recognized along with your measures.

Methods:

- Report the method and not the particulars of each process that engaged the same methodology.
- Describe the method entirely.
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
- Simplify—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

Approach:

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

What to keep away from:

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings—save it for the argument.
- Leave out information that is immaterial to a third party.



Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part as entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.

Content:

- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

What to stay away from:

- Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
- Never confuse figures with tables—there is a difference.

Approach:

As always, use past tense when you submit your results, and put the whole thing in a reasonable order.

Put figures and tables, appropriately numbered, in order at the end of the report.

If you desire, you may place your figures and tables properly within the text of your results section.

Figures and tables:

If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

Discussion:

The discussion is expected to be the trickiest segment to write. A lot of papers submitted to the journal are discarded based on problems with the discussion. There is no rule for how long an argument should be.

Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully described.

Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact, you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved the prospect, and let it drop at that. Make a decision as to whether each premise is supported or discarded or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."



Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work.

- You may propose future guidelines, such as how an experiment might be personalized to accomplish a new idea.
- Give details of all of your remarks as much as possible, focusing on mechanisms.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

When you refer to information, differentiate data generated by your own studies from other available information. Present work done by specific persons (including you) in past tense.

Describe generally acknowledged facts and main beliefs in present tense.

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BY GLOBAL JOURNALS

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| Topics | Grades | | |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| | A-B | C-D | E-F |
| <i>Abstract</i> | Clear and concise with appropriate content, Correct format. 200 words or below | Unclear summary and no specific data, Incorrect form Above 200 words | No specific data with ambiguous information Above 250 words |
| <i>Introduction</i> | Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited | Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter | Out of place depth and content, hazy format |
| <i>Methods and Procedures</i> | Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads | Difficult to comprehend with embarrassed text, too much explanation but completed | Incorrect and unorganized structure with hazy meaning |
| <i>Result</i> | Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake | Complete and embarrassed text, difficult to comprehend | Irregular format with wrong facts and figures |
| <i>Discussion</i> | Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited | Wordy, unclear conclusion, spurious | Conclusion is not cited, unorganized, difficult to comprehend |
| <i>References</i> | Complete and correct format, well organized | Beside the point, Incomplete | Wrong format and structuring |



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