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Solidarity Economy in Brazil

Blood Donation Disposition of Students

Highlights

Logistics Distribution of Vaccination

Impact of E-Learning on Indian Students

Discovering Thoughts, Inventing Future

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Systematic Review of the Literature on Family Farming and the Social and Solidarity Economy in Brazil and Latin America

By Pedro Henrique Mariosa & Henrique Dos Santos Pereira

Federal University of Amazonas

Abstract- Concerned with the increase in hunger worldwide, as well as unemployment and the lack of equity in the distribution of income, the United Nations began to address genuinely Latin American scientific categories in its agendas, assemblies and task forces. The two main categories are Family Farming, with the recent establishment of the Family Farming decade (2019-2028) and the Social and Solidarity Economy as a tool for transposing the Sustainable Development Goals (SDGs) in the Territories. Together, these categories can be responsible for achieving the SDGs in 78% of the world's territory. There is a need, however, to clarify whether the science produced in Latin America also presents trends of intersection, in the search for the theoretical construction of a new paradigm of production and consumption. In this sense, the objective of this study was to identify trends in scientific production on the categories Family Farming and Social and Solidarity Economy. An adaptation of the PRISMA method was developed as a systematic literature review to identify these trends in the scientific field in Latin America.

Keywords: PRISMA method; sustainable development goals; social economy; productive inclusion.

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Systematic Review of the Literature on Family Farming and the Social and Solidarity Economy in Brazil and Latin America

Pedro Henrique Mariosa [α] & Henrique Dos Santos Pereira [σ]

Abstract- Concerned with the increase in hunger worldwide, as well as unemployment and the lack of equity in the distribution of income, the United Nations began to address genuinely Latin American scientific categories in its agendas, assemblies and task forces. The two main categories are Family Farming, with the recent establishment of the Family Farming decade (2019-2028) and the Social and Solidarity Economy as a tool for transposing the Sustainable Development Goals (SDGs) in the Territories. Together, these categories can be responsible for achieving the SDGs in 78% of the world's territory. There is a need, however, to clarify whether the science produced in Latin America also presents trends of intersection, in the search for the theoretical construction of a new paradigm of production and consumption. In this sense, the objective of this study was to identify trends in scientific production on the categories Family Farming and Social and Solidarity Economy. An adaptation of the PRISMA method was developed as a systematic literature review to identify these trends in the scientific field in Latin America. After executing the PRISMA method, we arrived at 244 articles from Family Farming and 56 articles from the Social and Solidarity Economy between 2016 and 2020, categorized into Areas of Study and Knowledge, Macrocategories and Microcategories. There are consolidated trends in the intersection between Family Farming and the Social and Solidarity Economy in productions on Productive Inclusion, Sustainable Development and Sustainability Indicators, and with evident growth in the areas of productions on Food Security, mainly in the Organic Foods and Agroecology microcategories and productions on Public Policies in microcategories such as the National School Feeding Program, Social Transformations and Social Technologies. We conclude that the relationship between Social and Solidarity Economy and Family Farming is reciprocal in terms of granting cohesion to the scientific production network, extrapolating the borders of Brazil and integrating not only Latin America, but also Iberoamerica as a path to the expansion of both. the categories.

Keywords: PRISMA method; sustainable development goals; social economy; productive inclusion.

I. Introducion

At the end of 2020, while 400 million people in the world were newly unemployed, in Brazil, 20 million people were facing hunger and 116 million were experiencing some level of food insecurity, a trend that went against the goals of the UN Global Agenda 2030. This scenario is even more serious given the increase in inequality, since, in 2020, the 32 richest companies in the world would have profited 577 billion reais more than in previous years (OXFAM, 2020, 2021).

Nonetheless, it is necessary to consider that, at present, the reduction of jobs in Latin America is not only due to the crisis generated by the pandemic, since in the pre-pandemic period the level of unemployment also showed signs of falling. In relation to rural employment, it was already showing aspects of stagnation. In 2016, Latin America was experiencing approximately zero economic growth rates. The reduction in agricultural jobs is also due to the drop in exports from Latin America and the Caribbean, with a decrease of approximately ¼ of total exports in 2020 (Quicaña, 2020).

The sharp drop in external demand and commodity prices in the region forced many countries to propose fiscal adjustment agendas. Social manifestations emerged in a systematic way, triggered by the gap between the population's expectation of spending on social spending and the ability to provide economic growth in these countries (BM, 2020a). Although agriculture plays an important role in the viability of maintaining the trend of social spending, in addition to the pressure of demand and price variation, this sector suffers from other limiting factors for the supply of affordable and nutritious food to a constantly growing population. Among these factors are climate change, water scarcity, soil depletion and loss of biodiversity, which places agriculture at a crossroads, not only in Latin America, but throughout the world (FAO-IFAD, 2019).

As part of facing these crises, the strengthening of Family Farming (FF) and the Social and Solidarity Economy, objects of this review, emerges as a solution to the structural problems linked to food insecurity, inequality, and unemployment. It is considered that Family Farming is essential for the fulfilment of several goals of the Sustainable Development Goals (SDGs) (UN, 2018). On the other hand, another socio-political category also presents itself as a tool for transposing the Sustainable Development Goals in the territories, the Social and Solidarity Economy (Utting, 2018; Compère & Schoenmaeckers, 2021).

Author α: Dr. in Environmental Science and Sustainability of the Amazon. Professor in Federal University of Amazonas.
e-mail: pedromariosa@ufam.edu.br
Author σ: Ph.D. in Ecology and Full Professor in Federal University of Amazonas. e-mail: hpereira@ufam.edu.br

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Brazil has a prominent position as a country capable of producing practical, positive, and negative effects at a global level and fostering conceptual bases for a paradigmatic change or maintenance of agriculture. Of these actions, we highlight the promotion of rural credit, the guarantee of minimum prices, agricultural research, technical assistance and rural extension and subsidies for the acquisition of inputs and the expansion of the agricultural frontier (Grisa & Schneider, 2015).

As the collective organizations of the Social and Solidarity Economy (SSE) are a representative part of the FF in Brazil, it is possible to envision the synergy and the need for the contribution of resources to the intersection of these two fields, since the mobilizations and social demands of the grassroots organizations of FF and SSE, in many points, have similar and coincident trajectories of struggle.

a) The Family Farming in Brazil

At the end of the 20th century, actions were instituted at the national level for Rural Development (DR), with the aim of leveraging the representativeness of agriculture in the national Gross Domestic Product (GDP). These efforts to leverage agriculture and the unification of development policies made the share of agriculture in Brazilian GDP jump from 6.87% in the early 1990s to a significant 8.54% four years later (BM, 2020b).

The Agricultural GDP, on the one hand, is linked to the agriculture sectors linked to super-specialization, such as the grain and other commodities export sector, which despite contributing to the maintenance of agriculture's share in the country's GDP, presents a mismatch between social and economic responsibilities. policy in relation to the private interests of accumulation downstream and upstream of agricultural activity (Malagodi, 2017). On the other hand, there is the family farming sector, which is always positioned on the margins of the actions of the Brazilian State (Grisa & Schneider, 2015), even though it is the sector responsible for the internal supply and occupation of the rural workforce.

In 2006, The Law #11,326 of 2006, defined the guidelines for the design of the National Family Farming Policy. With the objective of unifying actions to promote the State, then, the generalizing concept of Family Farming (FA) brought together those different denominations of the social agents of agriculture and the countryside, considered until then: peasants, mini landowners, small producers, poor agricultural producers. (Manzanal & Schneider, 2011). Currently, because of this public policy, FF in Brazil is responsible for 22.88% (~20 billion dollars) of production and for the representation of approximately 67% (10.1 million people) of the personnel employed in national agriculture (IBGE, 2019).

Among the actions of the FF development policy, the National Program of Improvement of Familiar Farming (PRONAF) is pointed out as an exemplary case, which presents a systematic increase in the volume of contracts and resources available to FF workers (Manzanal & Schneider, 2011). PRONAF did not emerge as an isolated government policy, but because of intense and diffuse social mobilizations that culminated in the creation of legal frameworks such as the Land Statute, institutions such as the National Institute for Colonization and Agrarian Reform (INCRA) and series of programs such as the Rural Producer Support Program (PAPP), the latter responsible for expanding community associations of FF (Sabourin, 2009; 2017).

Nevertheless, the FF has a multi-located and pluriactive territorial socioeconomic microdynamics as significant characteristics, that is, in addition to intrinsically agricultural activities, such as production and gathering, whether animal and plant, it also develops rural non-farm activities, such as processing, trade and services, in a territory that exceeds the physical limits of the family production unit (Fuller, 1990; Mardens, 1995; Sacco-Dos-Anjos, 2003; Baumel & Basso, 2004; Haggblade, Hazzel & Reardon, 2007; Mattei, 2008; Schneider, 2003, 2009; Gaspari, Khatounian & Marques, 2018; Cazella, et al. 2020).

At the global level, in the last decade, FF has become the focus of sustainable development actions worldwide. The United Nations designates 2014 as the International Year of Family Farming (IYFF). Three years later, it was established that FF becomes a guiding centre for agricultural, environmental and social policy guidelines on international agendas, precepts discussed in the 2019-2028 agenda called the United Nations Decade of Family Farming and institutionalized in the Ten-Year Plan of the United Nations. Family Farming 2019-2028 (FAO-IFAD, 2019). This plan defines PA as a fundamental instrument for the implementation of the Sustainable Development Goals (SDGs) in the territories, since 78% of the 169 goals depend on actions exclusively or mainly carried out in rural areas (BERDEGUE, 2019).

b) Social and Solidarity Economy

Regarding the commitments of the Global Agenda 2030, the United Nations Research Institute for Social Development, in 2018, through an inter-institutional task force, pointed to the SSE aspect as an effective instrument for achieving the SDGs in the territories. The SSE is a branch that demonstrates operating in an unequal field of disputes of economic and financial liberalization, privatization, and austerity measures, which start to favor specific business and economic sectors instead of prioritizing socio-environmental inclusion and the reduction of inequalities (Utting, 2018). Today, the ESS has an increasing

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number of professionals, academics, activists, and policymakers, committed to the consolidation of experiences for the systematization of tools that provide the empirical application of a new economic logic (Compère & Schoenmaeckers, 2021).

The SSE is derived from fields of a plural economy and has the objective of proposing new perspectives towards the inversion of the subalternity of work in relation to capital. In Europe, one of the economic fields that form the SSE, with extensive consolidated academic production, is Social Economy (Defourny & Monzón, 1992; Monzón, 2003; Laville, 2004; Mendiguren, Etxezarreta & Guridi, 2009; Draperi, 2013; Mendiguren & Etxezaretta, 2015; Sá, 2016, 2017) which can be defined as an economic sector of production or circulation of goods and services that does not have profitability as its main objective (VIDAL E GARCÍA, 2006).

In Latin America, the Solidarity Economy (Ecosol) (Laville, 1994; Singer, 1999, 2002; Kraychete, 2000; Gaiger, 2002, 2013, 2014, 2019; Gaiger & Kuyven, 2020; França-Filho, 2002; França-Filho, 2006) has a temporal trajectory concomitant with the reforms in policies to promote family farming in Brazil. Unlike the Social Economy as an economic sector, Ecosol consists of a set of guiding principles for the economic organization and social inclusion of certain groups, with the aim of breaking the isolation of small and micro-enterprises. (SINGER, 1999).

Since the last quarter of the 20th century, Ecosol has permeated important discussions for the establishment of alternatives that represent new production and consumption paradigms. The reference text of the III CONAES (2014, p.5) brings as one of Ecosol's key points, the social valorisation of work as a producer of direct implications for the development of men and women's capacities and the overcoming of the subalternity of work in relation to the capital.

Ecosol's field includes cooperatives and other forms of social enterprises, self-help groups, community organizations, formal and informal economy workers' associations, Non-Governmental Organizations (NGOs) and other civil society organizations that ensure the provision of services, finance initiatives solidarity, among others (Morais, 2013; 2014).

In Brazil, the national representation of cooperatives is divided between the Organization of Cooperatives of Brazil (OCB) and the National Union of Solidarity Cooperative Organizations (UNICOPAS), the latter which now brings together the main sectoral confederations of cooperatives and Ecosol associations. The OCB has under its national unified representation, in 2018, approximately 7 thousand cooperatives, of which 1.6 thousand are linked to the agricultural sector (OCB, 2019), mostly from the south and southeast of the country, with emphasis on the national production of cooperatives in grain monoculture, such as peanuts, soybeans and corn. At UNICOPAS, in turn, more than 2,500 organizations among cooperatives and associations are linked to the 4 cooperative centres, incorporating rural social agents such as farmers and family farmers, settlers and settlers of agrarian reform, indigenous peoples, riverine peoples, quilombolas (maroons) and gatherers, with greater representation in the north of the country.

c) The FF & SSE intersection assumptions

With trajectories and history of achievements of the base and now, with the advent of the SDGs, the internationalization of both concepts presents some intersections. The intersections between FF and SSE are materialized in the following evidence: a) we are in the decade of FF, b) public policies and development strategies in FF can impact 78% for the fulfilment of the SDGs in the territories, c) The SSE a tool for transposing the SDGs and d) the SSE projects are a representative part of the total FF enterprises in the country.

There is a need, however, to clarify whether the science (as a systematic set of knowledge) that underpins these categories also presents trends of intersection, in the search for the theoretical construction of a new paradigm of production and consumption, following the trends of the international political agenda. Although this trend is observable in the intellectual and political fields, it would still be necessary to show whether such intersections are taking place in the economic field in different territories, beyond the multilateral discourses and agendas.

Thus, based on these premises, the guiding question of the study was defined as: "What are the theoretical-methodological intersections and the trend of scientific production on the categories Social and Solidarity Economy and Family Farming?" Therefore, the objective of the study was to identify trends in scientific production on the categories Family Farming and Social and Solidarity Economy.

II. Methods

In a comprehensive way, the historical approach (Bachelard, 1996) was adopted as an epistemological line, in the sense that it was only possible to understand the trend of the discussions and the transformations of the SSE and the AF through a process of reflection that considered the logical, ideological, and historical. In line with the historical approach, the construction of the analysis tool presupposes that all the specific methods of collection, processing and analysis that will be adopted begin with the problems presented and specific hypotheses to solve them.

This FF and SSE representativeness analysis tool followed an adaptation of the PRISMA Method (Preferred Reporting Items for Systematic reviews and Meta-Analyse). The PRISMA guidelines guide the

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objective of improving the quality of reporting data from Systematic Review and Meta-analysis (BRASIL, 2012) and their adaptation consisted of the following methodological approach (Fig.1):

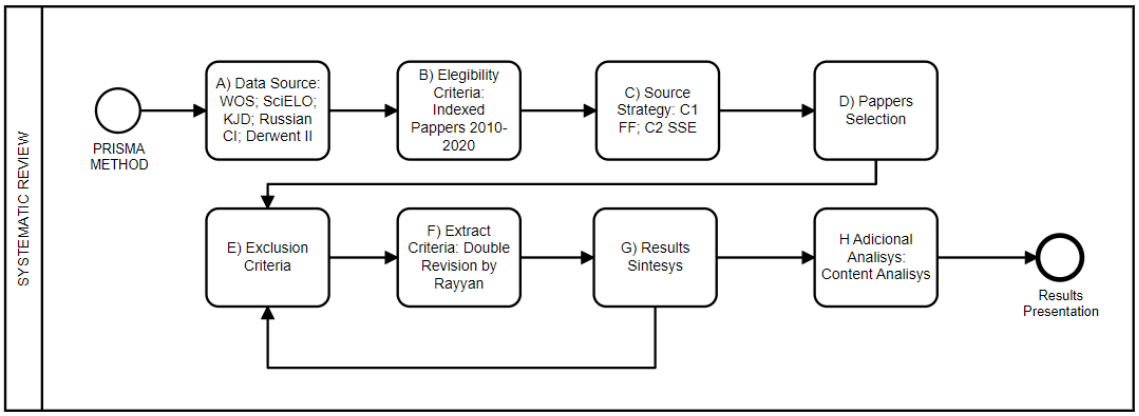

Fig. 1: PRISMA Method Adaptation for Systematic Review of the Literature

The results are presented in two parts. The first deals with the synthesis of the application of the Prisma method on the Systematic Review of the literature on Family Farming, with notes on the trends and intersections of the two areas. The second, following the same logic, but on Social and Solidarity Economy. Finally, at the intersection of both categories, we present a synthesis of the main points of convergence.

III. Results

a) The Family Farming; a systematic review of the literature

The influence of social and trade union movements, from the end of the 20th century to the beginning of the 21st century, transported the demands on Agrarian Reform from a restricted scope of land distribution to a consolidated political agenda uniting agrarian reform policies with those of rural development (Marques, 2007). In this passage from the 20th century to the 21st century, the legitimacy of FF in Brazil was configured in three main points, the first in the political field, the second in the social field and the last in the academy.

b) The main debates in the political and social fields of FF in Brazil

In the political field, the debate intensifies through the social struggles that invade the political field and guarantee the legitimacy by the State of FF as a synthesis-category of protection of the plurality of social categories in the countryside, against the until then category "small producer", which encompassed self-styled agro-industrial positions within this category (Schneider, 2003). In the social field, PRONAF is legitimized as a response to pressure from rural union movements, which now have defence mechanisms for the establishment of public policies differentiated by the category (Schneider, 2003).

At the intersection of the political and social fields, in the last two decades in Brazil, despite the increase in agricultural production accompanied by the increase in family income at all income levels, the income inequality of the rural population is still present and growing (Neves et al., 2020). As of 2015, the dismantling of family farming policies and other policies follows the global tone of weakening democratic institutions (Milhorance et al., 2020).

In Brazil, after the consolidation of the guidelines of the National Policy on Family Farming (Law #11,326/2006), PRONAF obtained significant results in promoting FF. However, the income inequality of the rural population is increasing and this trend, even if at a slower rate, also occurs among PRONAF beneficiaries (Neves et al. 2020).

c) The construction of the academic field of FF in Brazil and Latin America

In the academic sphere, in the last three decades debates on topics such as the labor market, occupational and migratory dynamics, environmental issues and sustainability of local agri-food systems and the rural population have intensified (Schneider, 2003; Souza, Fornazier & Delgrossi, 2020). The practical result of the intensification of the discussion of these themes in the academy is reflected in the role of universities as the main agencies for scientific development and dissemination of social technologies to support farmers and communities (Carvalho & Lago, 2019).

In Latin America, this trend in academic production has intensified in the last 5 years (2016-2020) reflected in the increase in the production of 463 open access articles on the theme of FF, compared to the previous 5 years (2011-2015) which corresponds to a total of 204 articles. Brazil is the protagonist, with 380 of the 463 articles produced. Of the 66 analysis categories related to the articles, 14 of these categories concentrate more than 65% of the articles (303 articles), which shows recent interdisciplinarity while the multiple approaches of FF in the academy.

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In all, the 463 articles received 1280 citations in these 5 years, excluding self-citations. Among these articles, 1214 citations correspond to the 463 articles themselves, also excluding self-citations. This means that there is cohesion among scientists who publish on FF in Latin America.

In a detailed reading of the 463 filtered articles, 219 were excluded, and 191 of these (~87%) because they dealt either only with farming or only with the family environment and not in an associated way, in themes such as agribusiness, soil study, pathologies of plants and animals, families of viruses and bacteria, among others. Of the remaining 28 discarded, 12, despite having both terms worked in an associated way, did not have family farming as the theme or study area of the article, 9 had the study area outside Latin America, 1 was in private access and 1 was not an indexed article. was an article indexed in a journal. At the end of applying the exclusion criteria, a total of 244 indexed articles were obtained, with Family Farming as an object of study, in Latin American countries, from 2016-2020 and with open access.

d) Content Analysis and Categorization of Family Farming valid articles

The analysis by Study Area corresponds to the place where the study was carried out, thus incorporating studies from around the world on Family Farming in Latin America. In other words, the nationality of the scientific journal or the authors was not considered, but the theoretical or empirical field of the study.

The second category level is by Knowledge Area. At this level, 8 areas of knowledge were identified that refer to articles considered post-content analysis. As for national and continental studies, we are referring to the specific cases of Brazil and Latin America, respectively. As most articles refer to studies in Brazil, this one was divided into the 5 regions of the country.

At the third level, called Macrocategory, 12 variations were identified among the 244 valid articles, considering Macrocategory the most comprehensive theme of the article. Among the main categories are the Social and Solidarity Economy, Social Technology, Climate Change, Occupational Health, Animal and Vegetable Production, Market, Economic Viability, among others.

At the fourth level, called Microcategory, in which we consider the specific theme of each article, 44 variations were identified among the 244 valid articles. In this, specificities were observed such as Production Chains (milk, fruit, poultry, among others), Institutional State Programs (PRONAF, PNAE, PAA and PNPB), Agricultural Mechanization, Monoculture, Intoxication, Adaptability, Theoretical Studies (such as literature reviews), among others.

At the fifth and final level, we evaluated the number of total citations and per year, to then arrive at the synthesis of articles and trend categories among the valid indexed articles for the five-year period 2016-2020. This last level was worked transversally in the other levels, that is, when we present that some production is highlighted in a category, we consider this highlight as being the articles with the most citations among the category to which it was assigned.

e) The relationship between FF Study Area and Knowledge Area in volume of articles and main references

i. *Latin America*

In continental studies of Latin America, the production in public policies stands out, with the article on agrarian economic policy of leftist governments in Latin America and the lack of an agenda for social transformation as the protagonist (Vergara-Camus and Kay, 2017).

Ecuador stands out for having 4 articles in 4 different Knowledge Areas, with a leading role in the Socioeconomics article on a study of alternative food systems and the heterogeneity of factors that motivate or not the purchase decision of agroecological and non-agroecological consumers (April-Lalonde et al., 2020).

Another highlight is the study in Costa Rica, in the Food Security Knowledge Area, on the cultural domain of food plants of the Ngäbe indigenous peoples and their perception of the intense decrease in the local production of these plants in the face of new paradigms of conservation and development (D'ambrosio E Puri, 2016).

ii. *Brazil*

The number of articles found was 57 articles from national studies and another 172 from specific regions of the country.

National surveys show a diversity of Knowledge Areas, covering all of them, with prevalence of the Public Policies theme, with 26 of the 57 articles. Of the 6 most cited articles with a National Study Area, 4 are on Public Policies, and of these 3 are on the National School Feeding Program (PNAE). The most relevant of them (Hawkes, et al., 2016) presents 5 lessons about the PNAE on the program's contribution to the interrelationship of family farming with other sectors, such as public health and nutrition.

iii. *Southern Region of Brazil*

At the regional level, the South region leads the volume of total articles, with emphasis on the expressive number of articles on the Socioeconomics Knowledge Area. The main article is by Rover, Genarro & Reselli (2016) on the perception of risk and consumer awareness in relation to food and the growing formation of social networks for the production and consumption

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of healthy foods, with significant results in innovation processes in the structure. of these networks.

The second highlighted discusses the relationship between farmer participation in a public promotion policy and agricultural diversification and family autonomy (Valencia, Wittman & Blesh, 2019) and the third analyzes the construction and dynamics of market structures and networks food alternatives (Schneider, Salvate & Cassol, 2016).

iv. *Northeast Region of Brazil*

The Northeast region is the second region in Brazil in number of articles. It has representation in all Knowledge Areas, with the three main articles in three different areas, Health, Environmental Sciences and Socioeconomics. The most important of these, Health, deals with animal pathology, reports for the first time the infection in goats and the second in infection in family farmers by mites of two species, *Eutrombicula alfreddugesi* (Oudemans) and *Eutrombicula batatas* (Linnaeus) (Faccini et al., 2017).

v. *Southeast Region of Brazil*

In the Southeast region, there is a diversity of Study Areas, as well as in the Northeast, with emphasis on two, Health and Public Policies. The two main articles are also, respectively, from these two areas. The first, on Health, assesses the relationship between exposure to pesticides and respiratory problems in workers and family members of family farming in the Rio de Janeiro State (Buralli et al., 2018) and the second, on Public Policies, addresses questions about the PNAE and evaluates the profile of foods in public calls for the program in the São Paulo State (Amorim, Rosso & Bandoni, 2016).

vi. *Northern Region of Brazil*

The northern region has a volume of articles concentrated in two Knowledge Areas: Agronomy and Geography. The most prominent article, by Geography, studies land use planning by the government in the savannah of the Amapá State, which is under increasing pressure for the expansion of soybean planting (Hilário et al., 2017). The second, Agronomy, portrays the traditional knowledge of the Wapichana and Macuxi indigenous peoples, facing the invasion of more than 30,000 ha of *Acacia mangium* (Willd.) plantation in the state of Roraima (Souza et al., 2018).

vii. *Midwest Region of Brazil*

The Midwest region, among the 5 regions of Brazil, appears with the lowest volume of articles, which does not mean being the least relevant in scientific production, as it has the article with the greatest impact among the 244 articles analyzed. This production is also the protagonist among the 5 regions of the country in the Area of Knowledge in Food Security. The article makes an interlocution between the Areas of Food Security and Public Policies, from the perspective of Food Sovereignty in food acquisition programs in Brazil, with the Zero Hunger program as a social welfare program and how it was able to create links between food and nutrition security with rural development initiatives (Wittman & Blesh, 2017).

f) Family Farming Trends Categories and Articles

We conclude, on Family Farming, that there are trends at 4 levels, Study Area, Knowledge Area, Macrocategories and Microcategories. In Study Area, they stand out in continental studies on Latin America and productions from Ecuador and Costa Rica. In Brazil, in order of relevance, studies at the national level, in the South, Northeast and Southeast regions, stand out. In the Areas of Knowledge, Socioeconomics, Public Policies and Food Security stand out. In the Macrocategories, Social and Solidarity Economy, Climate Change, Animal Production, Market Studies and Plant Production. In Microcategories, Monoculture, Agroecology, Milk Chain, Migration and PNAE.

g) The Social and Solidarity Economy: A Systematic review of the Literature

The Social and Solidarity Economy (ESS) can be seen today as a Research Field in Brazil (Silva, 2020) and is considered an effective instrument for transposing the Sustainable Development Goals in the territories (Utting, 2018). The ESS has an increasing number of academic productions, in practical experiences and articles referring to the construction of the theoretical-methodological bases for the consolidation of the ESS as an economic alternative to the prevailing hegemonic logic (Compère & Schoenmaeckers, 2021). This rise can be seen in advances in three spheres: political, socio-historical and academic.

h) The main debates in the political and social fields of SSE in Brazil

Regarding Solidarity Economy, the regulation on associations and cooperatives is expressed and still in force in the traditional Cooperativism Law (Law #5,764 of 1971), in the Civil Code (Law #10,406 of 2002) and Law Regulatory Framework for Civil Society Organizations (Law #13,019 of 2014. However, the SSE has consolidated itself in the public policy scenario, in the last decade, with a framework of laws and regulations approved, under development and in addition to the laws, for the consolidation of Solidarity Economic Enterprises (SEE) as a new paradigm of production and consumption.

One of these regulations is the institution of the National System of Fair and Solidarity Trade, established under Executive Decree #7,358 of 2010, referring to the organizational forms of the SSE in Brazil. In this law appear the first definitions of the terms "fair trade, alternative trade, solidary trade, ethical trade, ethical and solidary trade" and that these are

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"understood in the concept of fair and solidary trade" (BRASIL, 2010).

This debate about fair and solidary trade interests us a lot because, as already seen in the review of the literature on Family Farming, Agroecology is one of the main specific themes of the Socioeconomics Knowledge Area, in Macrocategories Market Studies and Social Economy and Solidarity, with fair and solidary trade running through the basic organization of the markets for agricultural and agroecological products, marketed by cooperatives and SSE associations.

As in FF, the achievements in the political sphere of the Social and Solidarity Economy go through a socio-historical process of social mobilization. In the 1990s, four events complemented each other as important milestones to consolidate the SSE as a new paradigm, both in society and in academia (Lechat, 2004; Silva, 2020).

i) The academic field of SSE

In the academic sphere, three works foster the construction of the theoretical bases of the Solidarity Economy, the first, already mentioned in this work, is the most cited work by Paul Singer, *Introdução à Economia Solidária* (Singer, 2002). Previous to this one, the work entitled *A Economia Solidária no Brasil: a autogestão como resposta ao desemprego* (Singer & Souza, 2000), also by Paul Singer in association with André Ricardo Souza, encompasses a set of experiences reported by researchers in Brazil. encompassing experiences of different natures reported by several national researchers.

Finally, as a result of debates raised at the II National Symposium of the University-Company on Self-Management and Participation, in 1998, the book *Economia Solidária: o desafio da democratização das relações de trabalho* by Neusa Maria Dal Ri, whose main contribution to the differentiation of traditional cooperativism (this one from the aforementioned cooperativism law), from the cooperativism of practical experiences and social movements (Silva, 2020).

Today, the Solidarity Economy, in the academy, presents itself as a paradigmatic field of scientific investigation, in the dialectic with practical experiences, social movements and the governmental agenda. About this academic production, it presents results that, even with the predominance of articles about experiences. On the one hand, the field of solidarity economy presents conceptual aspects such as self-management, associativism, solidarity as a productive factor and, on the other hand, criticisms about the theoretical consistency or social relevance of the experiences in this field are still latent (Silva, 2020).

The Social and Solidarity Economy incorporating the Social Economy into the framework of the Solidarity Economy, currently consists of a set of economic and social practices, production of goods and services, solidarity finance, exchanges, fair and solidarity trade, social currencies, among others. others. In the union between theory and praxis, SSE brings together different currents that influence thinking about the role and place of SSE as a transforming field of the capitalist mode of production (Morais and Bacic, 2020).

Latin American academic production, which combines the Social and Solidarity Economy in a single concept, has been concentrated in the last decade and has been consolidated, as well as in FF, in the last 5 years, with 58 articles between the years 2016-2020, against 14 articles from 2011-2015, totalling 74 articles in indexed journals, with open access.

Twenty-seven categories of analysis related to the articles were found, with 11 of these categories concentrating more than 60% of the articles (58 articles), which shows a concentration of production in the area in areas related to the social sciences (Economics; Social Sciences; Industrial Relations Labor; Management) and environmental sciences (Environmental Studies; Public Environmental Occupation Health; Environmental Science; Green Sustainable Science Technology).

In all, the 73 articles received 233 citations in these 5 years, excluding self-citations. Among these articles, 182 citations correspond to the 73 articles themselves, also excluding self-citations. This means, like Family Farming, that there is cohesion among the scientists who publish on the Social and Solidarity Economy in Latin America and Brazil.

In a detailed reading of the 73 filtered articles, 18 were excluded, with 8 of them (~47%) not having the Social and Solidarity Economy as their main theme, 5 of them (~29%) with an area of study without considering Latin America, 2 of them (~12%) were duplicate articles, and 2 of them (~12%) were not included among indexed journals. At the end of applying the exclusion criteria, a total of 56 indexed articles were obtained, with the Social and Solidarity Economy as an object of study, in Latin American countries, from 2016-2020 and open access.

j) Content analysis and categorization of valid ESS articles

As in Family Farming, the same 5 levels of incidence categories were established in all articles: Study Area, Knowledge Area, Macrocategory, Microcategory and transversally evaluated as a criterion of relevance, the total citations and per year.

In the Study Area, the Iberoamerica area was exceptionally considered due to the volume of productions in the relationship between the Iberian Peninsula and Latin America. Despite the significantly smaller volume of articles in relation to FF, the diversity of countries and Study Areas is slightly greater.

These were divided into the regions of the country, identifying the absence of productions from the

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North Region and only one production from the Midwest Region. Regarding Knowledge Areas, the same 8 areas were used as parameters for the classification and, despite the wide diversity in Study Areas, Knowledge Areas showed a concentration in Socioeconomics, with 36 (~64%) of 56 valid articles

k) The relationship between SSE Study Area and Knowledge Area in volume of articles and main references

i. *Iberoamerica*

In Ibero-American studies, 7 articles (12.5%) were found out of 56 valid ones, of which 6 were on Socioeconomic and 1 on Education. The construction of the theoretical-methodological bases of the concept are primarily to promote the construction of the concept, with emphasis on three articles.

The first and most relevant Ibero-American study in the Socioeconomic Knowledge Area, criticizes the development of the Social Economy in the last 30 years in Europe, with the third sector following paths of consolidation and economic development, instead of guarantees of integration social (Csoba, 2020).

The second article, also from Socioeconomic and with one of the authors already mentioned as relevant in the junction of the Social Economy and Solidarity Economy concept, addresses the importance of SSE as indispensable in the transition from conventional development models to the Good Living paradigm, in oriented strategies in 4 aspects: regulation, redistribution, resizing and decommodification of the economy (Eguiluz & Mendiguren, 2018).

A third, in the Education Knowledge Area, presents a proposal for cooperative education that articulates productive and educational practices, in the dialectic between action and reflection as a potentiating factor of the teaching and learning process, guided by principles of solidarity and social transformation (Alcantara, Sampaio & Uriarte, 2018).

ii. *Latin America*

In Latin American studies, 8 articles (~14%) were found out of 56 valid ones, of which half were on Public Policies and half on Socioeconomic. We highlight two articles of relevant impact in terms of total number of citations and citations/year.

One of them, the most expressive among the 56 articles, from the Public Policies Knowledge Area, promotes an inversion of the technicist view of the Circular Economy and passes, then, under the aspect that the authors declare themselves as a southern view, to focus on questions about the grassroots organizations linked to selective collection (Gutberlet et al. 2017).

The other also on Public Policies, from the Agriculture Knowledge Area, analyzes the SSE intergovernmental agenda in the processes of regional political cooperation of the Union of South American Nations (UNASUR) and MERCOSUR, as well as the implications of these in the structures of regional governance for social development (Saguier & Brent, 2017).

iii. *Argentina*

About the Argentine Study Area (exclusively), in the Socioeconomics Knowledge Area, a single article among the 56 addresses the debate on cryptocurrency speculation and social currencies in Argentina. It presents as a case the MonedaPAR, a digital currency created in 2017, based on blockchain technology. The article concludes that MonedaPAR can indeed offer solutions for leveraging credit, consumption, employment and strengthening cooperative ties (Pardo, 2020).

iv. *Colombia*

One study stands out in Colombia, with a theoretical basis, on the Socioeconomics Knowledge Area and that discusses the currents of influence and the characteristics of the Colombian Ecosol. It has as a result of analysis of Latin American currents and the Social and Solidarity Economy and despite plural and with multiple agents and social agencies about the concept, there is still no identity (De-Guevara, et al. 2018).

v. *Cuba*

One production reports the results of a participatory diagnosis on the contributions of a communication campaign for the formation of the Popular and Solidarity Economy in Cuba, in a consensus of some principles and values of the Popular and Solidarity Economy in Cuba (Bautista & Sardá, 2017).

vi. *Ecuador*

One study stands out in Ecuador, on the Socioeconomics Knowledge Area. It is about a review of development plans and theoretical propositions about the private ownership of the means of production, which emerged in the second half of the 20th century (Burneo & Sánchez, 2018).

vii. *México*

The main one, among the three scientific productions in Mexico, on Public Policies, talks about the inconsistencies of the development of technological innovation and social innovation in the scope of the so-called sugarcane cluster of Veracruz. It culminates in the finding that the social economy, in this context, is capable of reorganizing agro-industrial value chains for more sustainable development (Bono & Baranda, 2019).

viii. *Uruguay*

A single valid article from Uruguay, after applying the filtering methodology, on Socioeconomic, presents resistance strategies of social economy workers in the country, specifically, they work from the perspective of Recovered Companies as forms of

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collective entrepreneurship that disobeys the conventional order of unemployment. in the country (Castiñeira, 2020).

ix. *Brazil*

Unlike Family Farming, the Social and Solidarity Economy is concentrated in one Knowledge Area, Socioeconomic. Four recent articles are highlighted, two from Socioeconomic itself and two from Public Policies.

The most relevant promotes the theoretical-methodological bases of the Solidarity Economic Enterprise (EES) analysis category, supporting the concept of Alternative Self-Management Enterprises (EAA), which are more advanced enterprises from Ecosol's point of view, with the main function of guarantees income and work for the beneficiaries. (Gaiger, Ferrarini & Veronese, 2018).

x. *Northeast Region of Brazil*

Among the regions of Brazil, the Northeast region stands out in terms of quantity of productions, with predominance in the Socioeconomic Knowledge Area, containing six out of seven articles and another on Public Policies. Of these articles, one article stands out as a prominent bibliographic production, on the reflection of economic action and alternative management models based on proximity relationships in decision-making on the collective management of Community Banks (Rigo, Nascimento & Brandão, 2018).

xi. *Southern Region of Brazil*

Also expressive in number of articles, but with a diversity of Knowledge Areas, the South region has three articles on Socioeconomics, one on Health, one on Food Security and one on Agronomy. The main one, in the Health area, works on inclusion at work as a public policy tool for mental health, highlighting the generation of work and income (Ferro, Macedo & Loureiro, 2016).

xii. *Southeast Region of Brazil*

The Southeast region has a total production of five articles, two in the Public Policy Knowledge Area, two in Socioeconomics and one in Health. As in the South region, the article in Health in Social Assistance stands out, which in Campinas, municipality of São Paulo State, studies social inclusion through associative and cooperative work within the context of the Psychiatric Reform. (Da-Silva & Ferigato, 2017).

Another important article is the one on Public Policies, in the Traditional Peoples Macrocategory, which addresses the social organization and practices of artisanal fishermen in the Campos Basin (Campos, Timóteo & Arruda, 2018).

xiii. *Midwest and Northern Regions of Brazil*

The North region does not present any article at a prominent regional level. The Midwest region presents an article, as well as two of the three previous regions, in the Health and Social Assistance Macro category, in the Federal District, also in the discussion on work and income generation and mental health (Campos et al. 2015).

l) Categories and trend articles in the Social and Solidarity Economy

We conclude, on the SSE, that there are trends in the 4 levels, Study Area, Knowledge Area, Macrocategories and Microcategories. In Area of Study, at an international level, in an intermediate position of representation, they stand out in Iberoamerica, Latino America, and Mexico, and at a national level, with high representation and prominence of academic productions in Brazil and the Southern region. In the Areas of Knowledge, Socioeconomics stands out with extreme relevance and Public Policies with less relevance. In the Macrocategories, Theoretical Studies, Management Models, Family Farming and Solidarity Finance stand out. In the Microcategories, Productive Inclusion and Social Movements stand out.

m) Synthesis of the results and the intersections between Family Farming and the Social and Solidarity Economy

In summary, the trend at the intersection between FF and the SSE (Fig.2) has: i) as a consolidated Knowledge Area: productions on Socioeconomics, with a clear growth of productions on Productive Inclusion, Sustainable Development, and Indicators of Sustainability and ii) as Knowledge Areas on the rise: Food Security productions, mainly in productions on Organic Food and Agroecology; Public Policy productions on topics such as the PNAE, Social Transformations and Social Technologies.

In FF, from the Macrocategories, Social and Solidarity Economy, Climate Change, Animal Production, Market Studies, and Vegetable Production stand out, in addition to the Microcategories Monoculture, Agroecology, Milk Chain, Migration and PNAE. In the SSE, of the Macrocategories, the Theoretical Studies, Management Models, Family Farming and Solidarity Finance stand out, in addition to the Microcategories Productive Inclusion and Social Movements.

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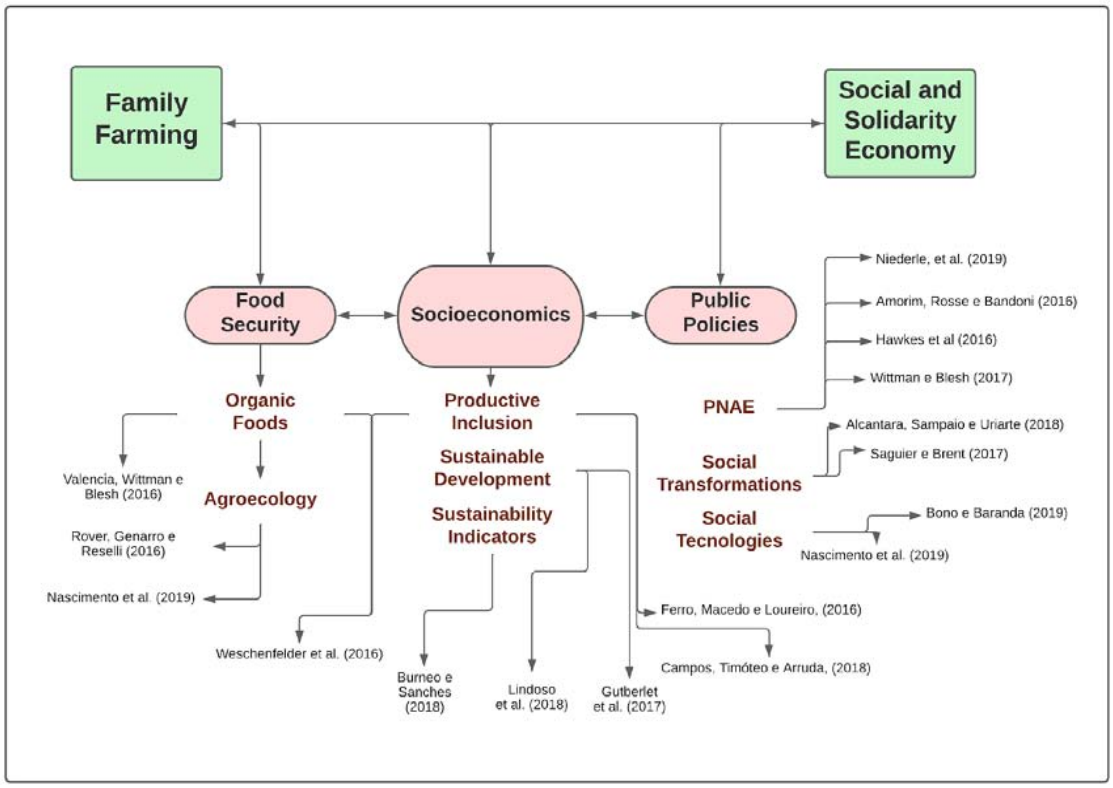

Fig. 2: The intersections of scientific production between FF and SSE

Based on this evidence, it is possible to affirm that both categories are on the rise in the academic environment, in addition to being constructions in a two-way street, both FF is important for the cohesion of the scientific production of the SSE, as well as the SSE is important for the cohesion of the scientific production of FF.

IV. Conclusions

In the rise of two genuinely Latin American categories at the international level, Family Farming and the Social and Solidarity Economy undergo a process of paradigmatic transition and emerge as two new scientific fields. Intersecting at various points, both categories begin their journey based on social movements and mobilizations, passing through the dissemination in the academy and, currently, they come to occupy a privileged space in the international political-economic agendas.

This study sought to analyse the trends of scientific production about both these categories, Family Farming and Social and Solidarity Economy in an initially national panorama, because they are nationally conceived categories, but because of their expansion, they presented regional and international representation. After executing the PRISMA method, we reached 244 articles from FF and 56 articles from SSE between 2016 and 2020.

The results indicated trends in scientific production in both these categories. In the Content Analysis phase to stratify into 4 categories (Study Areas, Knowledge Areas, Macrocategories and Microcategories). In FF, of the 12 Study Areas found, the following stand out: Brazil (studies at the national level), in the Northeast and South regions; of the 8 Areas of Knowledge found, the following stand out: Food Security, Socioeconomics and Public Policies; of the 12 Macrocategories found, the following stand out: Social and Solidarity Economy, Climate Change, Animal Production, Market Studies and Plant Production; and, of the 44 Microcategories, the following stand out: Monoculture, Agroecology, Milk Chain, Migration and PNAE.

Regarding the trends of each category of the Social and Solidarity Economy, it was concluded that of the 13 Study Areas found, the following stand out: Brazil (studies at the national level), the South and Southeast regions; of the 7 Areas of Knowledge found, the following stand out: Socioeconomics as a large category and the absence of productions in Environmental Sciences; of the 10 Macrocategories found, the following stand out: Theoretical Studies, Management Models, Family Farming and Solidarity Finance; and of the 17 Microcategories, the following stand out: Productive Inclusion and Social Movements.

Based on this evidence, it is possible to affirm that both categories are on the rise in the academic

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environment, one being necessary to the other. Family Farming can now be considered an established paradigm at the national level and the Social and Solidarity Economy, in turn, presents itself as a new paradigm at the national level and has already permeated academic discussions at the Ibero-American level.

Finally, in response to the research question in this chapter about "what are the theoretical-methodological intersections and the trend of scientific production on the categories Social and Solidarity Economy and Family Farming?", the trend at the intersection between FF and SSE has: i) as a consolidated Area of Knowledge: productions on Socioeconomics, with a clear growth of productions on Productive Inclusion, Sustainable Development and Sustainability Indicators and ii) as Areas of Knowledge on the rise: productions on Food Security, mainly on topics such as Organic Foods and Agroecology; Public Policy productions on topics such as the PNAE, Social Transformations and Social Technologies.

In short, it was found that the scientific production on these two categories is, in fact, consolidating in recent years, as well as the intersection between them has been configured as an academic, social and political field relevant to the achievement of the objectives of sustainable development of the Global Agenda 2030.

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Niveau de Connaissance du Don De Sang et Disposition au Don de Sang Des Etudiants au Cameroun

By Njianga Mbeyap Benjamin & Fomba Kamga Benjamin

University of Yaoundé 2 Soa

Résumé- But: Ce papier apprécie le niveau de connaissance du don de sang (DS) des étudiants au Cameroun et son effet sur leur disposition à donner du sang. Nous faisons l'hypothèse qu'un niveau de connaissance élevé du DS influence négativement leur disposition à donner du sang.

Méthodologie: Pour ce faire, nous avons construit un indice du niveau de connaissance du don de sang par l'approche d'inertie à partir d'une base de données obtenue auprès de 954 étudiants des universités du Cameroun. Puis, un logit multinomial non ordonné a été utilisé pour apprécier son effet sur la disposition des étudiants à offrir de leur sang.

Résultat: Nos résultats ont montré que les étudiants ont un indice de niveau de connaissance moyen du DS assez bas de 0,48. Son effet diffère selon le type de connaissance. Un niveau de connaissance élevé à la culture générale au DS influence positivement la disposition des étudiants à donner de leur sang. Mais, une connaissance élevée des risques liés au DS les rend rétif au DS. Par ailleurs, les variables issues de la théorie du comportement planifié ont été déterminantes pour disposer les étudiants à offrir du sang.

Mots clés: offre de sang; indice connaissance don de sang; disposition au don de sang.

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Niveau de Connaissance du Don De Sang et Disposition au Don de Sang Des Etudiants au Cameroun

Njianga Mbeyap Benjamin [α] & Fomba Kamga Benjamin [σ]

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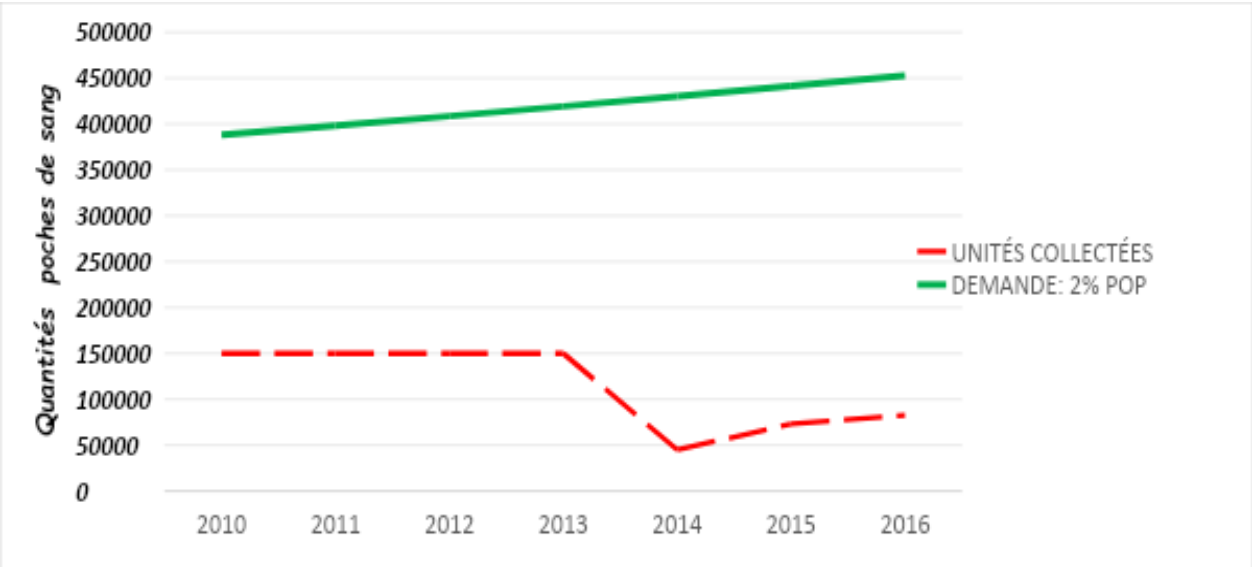
Conclusion et recommandations: Nous recommandons que pour préparer les individus à se projeter en donneur de sang demain, les questions portant sur celles admises sans ambiguïtés comme culture générale aux questions de DS devraient être vulgarisées auprès des populations. Pour celles liées aux risques du DS, nous préconisons de ne pas en faire fi mais plutôt d'en parler dans l'optique de les rassurer car 78% sont convaincus qu'il y a des risques. Aussi, l'effet des variables issues des théories de la psychologie confirme la nécessité d'associer les autres sciences sociales au cas sanguin camerounais longtemps considéré comme relevant uniquement de la médecine.

Mots clés: offre de sang; indice connaissance don de sang; disposition au don de sang.

I. Introduction

La problématique relative à la disponibilité du sang en quantité et en qualité s'apparente de nos jours à un idéal du fait du faible nombre de donneurs de sang que l'on enregistre dans la plus part des pays. Si cette situation semble nettement maitrisée dans les pays développées, l'Afrique de façon générale peine à ajuster ses quantités de demande et d'offre de sang et, cette situation de pénurie est d'autant plus accentuée au Cameroun tel qu'illustré par le *graphique 0* ci-dessous.



Source: Auteur à Partir des données de l'OMS 2017 et Minsanté

Graphique 0: Gap entre l'offre et la demande de sang au Cameroun de 2010 à 2016

Auteur Correspondant α: Ph.D Student University Yaoundé 2 Soa. e-mail: bnjianga@yahoo.fr
Co-Auteur σ: Full professor, University of Yaoundé 2 Soa. e-mail: fomba1@yahoo.fr

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Il apparait au regard de la courbe d'offre du *graphique 0* qu'il existe un réel problème au niveau des offreurs de sang au Cameroun. Sa régression tant à conforter la difficulté de fidélisation des donneurs assez avancée par les autorités sanitaires mais encore l'évidence d'une réticence des individus à donner de leur sang. En admettant donc qu'il s'agit bien d'une situation critique qui ferait de la pénurie de sang un problème de santé publique, il urge de lutter contre cette pénurie de sang. Pour ce faire, nous pensons que le travail devrait partir de la préparation des individus à envisager l'offre de sang jusqu'au suivie d'après le don en passant par l'offre proprement dite. Un tel travail exige donc la maîtrise des caractéristiques susceptibles d'agir sur les individus selon ces différentes étapes.

Ce travail s'inscrit donc dans la compréhension de l'étape de la préparation de l'individu pour l'adoption d'un comportement future d'offre de sang. D'où l'objectif de ce travail qui se propose d'*Apprécier le niveau de Connaissance du don de sang des étudiants et son effet sur la disposition à donner du sang des étudiants au Cameroun*.

Si plusieurs travaux ont assez argumenté sur des variables qui préparent un individu à donner de son sang, aucune à notre connaissance n'a encore cherché à apprécier la relation qui existerait entre le niveau de connaissance et le comportement d'offre de sang des individus. Cette variable (le niveau de connaissance) est assez prisée dans la plupart des travaux économiques qui (en majorité) établissent une relation positive et significative du niveau de connaissance sur les phénomènes étudiés. Seulement à contrario, nous pensons plutôt qu'il existe une relation inverse entre le niveau de connaissance et la disposition à donner du sang. Cette idée nait de l'observation et des entretiens que nous avons fait durant le stage de neuf (9) mois de collecte de sang avec la fédération camerounaise pour le don bénévole de sang (FECADOBES). D'où notre hypothèse: *un niveau de connaissance élevé du don de sang influence négativement la disposition à donner du sang.*

Pour atteindre notre objectif, nous passons en revue la relation qui existerait entre le niveau de connaissance et la disposition à donner du sang ainsi que le profil des donneurs selon la littérature (2), puis tout en présentant la méthodologie utilisée, nous déterminerons d'abord le niveau de connaissance du don de sang des étudiants des universités du Cameroun (3) ensuite, suivra l'analyse de l'effet de ce niveau de connaissance sur la disposition des étudiants à offrir de leur sang (4). Enfin, nous présenterons une conclusion assortie de quelques recommandations (5).

II. Cadre Theorique et Relation Entre le Niveau de Connaissance et la Disposition au DS

a) *Relation entre le niveau de connaissance et la disposition au DS*

A priori, on peut penser qu'il est important et nécessaire que les populations soient assez édifiées sur les pratiques et conditions périphériques liées au don du sang. Car, plus elles en sauront, plus elles feront des dons de sang. Cette présomption se justifie d'ailleurs lorsque l'on fait une réflexion par analogie des thématiques abordées dans d'autres domaines. Par exemple, *Ait Bouchrim S.A et al (2019)* ont estimé que le niveau de connaissance médicale en transfusion des internes en médecine a une influence positive sur l'utilisation des produits sanguins et plus globalement la sécurité du patient. Dans le même ordre d'idée *Dvorak T et Hanley H (2010), Huston S.J (2010) ou Lusardi (2008),* estiment qu'un niveau de connaissance financière élevée a un effet positif aussi bien sur la productivité de la main d'œuvre des structures financières que sur l'offre des services financiers.

Cependant, s'il est louable d'éduquer les populations sur le don de sang, plus important encore est de s'assurer de la pertinence d'une telle politique. Nous voulons parler ici de l'effet d'un niveau de connaissance élevé des populations sur l'offre de sang. Car, au regard de ce que nous avons observé sur le terrain, une position sceptique quant à l'effet du niveau de connaissance au DS et la disposition à donner du sang serait justifiée. Et, cette réserve repose sur quelques éléments observés.

D'abord, nous avons observé une déception de plusieurs donneurs de sang après qu'on leur ait expliqué certaines conditions à respecter suite à leur don de sang. Ensuite, nous avons l'existence des risques liés au don du sang. En effet, le DS n'est pas sans conséquence car, plusieurs problèmes sont identifiés dont on peut citer : le malaise vagal, les hématomes aux points de ponction, trois (3) dons de sang chez la femme correspondant à une perte en fer équivalent à une grossesse ou encore la perte de poids à l'instant du don qui peut être compensé entre 6 ou 8 heures. Enfin nous avons aussi constaté une certaine réserve du personnel médical qui semble peu enclin à offrir du sang. Comme quoi, si les individus peuvent avoir une excellente opinion au don du sang, ils ne se projettent pas toujours comme des donneurs *(Godin 2012).* Ainsi donc, s'il existe assez d'éléments susceptibles d'agir sur la disposition au DS, nous pensons que le niveau de connaissance quant à lui, influence négativement la disposition au DS.

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b) Les raisons à la disposition à donner du sang selon la littérature

La littérature distingue les éléments qui expliquent l'inclinaison à donner son sang et ceux expliquant le mobile ou la motivation à le faire réellement. Cette littérature est pluridisciplinaire avec une prédominance des travaux sociologiques, psychologiques et quelques travaux économiques.

En psychologie, la disposition d'un individu à donner de son sang pourrait être cernée par les théories dites prédictives. Elles sont nombreuses mais, les plus en vue dans le domaine de la santé et spécifiquement du don de sang sont la théorie de l'action raisonnée (TAR) de *Ajzen et Fishbein (1977)*, la théorie des comportements interpersonnels (TCI) de *Trandis (1977)* ou la théorie du comportement planifié (TCP) de *Ajzen (1985).* Cette dernière est la plus utilisé et, elle a donné des résultats très utiles. Elle postule que le comportement de l'humain, pour être effectif, doit d'abord être décidé/planifié. Ainsi, pour être décidé, trois (3) types de facteurs sont pris en compte: *l'attitude vis-à-vis du comportement* (il s'agit des jugements sur la désirabilité du comportement et de ses conséquences); *les normes sociales* (ce sont celles qui renseignent sur l'opinion des proches et leur influence sur le comportement visé). Par exemple, si la communauté religieuse de l'individu est sceptique quant à la question de l'offre du sang, l'individu peut être réfractaire à intégrer la chose afin de ne pas être en marge à sa communauté; et enfin *l'auto-efficacité* (Il s'agit des informations sur les capacités du sujet à réussir le comportement).

Les travaux empiriques recensés ont en effet confirmé que la théorie du comportement planifié explique 31% de la variance du comportement des individus liés au don du sang et 50% de la variance de l'intention au don du sang *(Charbonneau 2015)* ainsi que la nécessité du passage par l'intention pour entreprendre une action *(Clowes et Masser, 2012; France et al, 2007; McMahon et Byrne, 2008; Armitage et Conners 2001; Giles et Cairns 1995; Giles et all 2004).* Elles ont particulièrement mis en valeur l'influence du sentiment d'auto-efficacité. Le rôle des normes personnelles ou des normes morales n'est pas aussi précis. La norme morale paraît influencer davantage le comportement de ceux qui ont déjà donné du sang. Ces derniers sont aussi très influencés par l'impression qu'ont laissées les expériences de don déjà vécues. Une meilleure satisfaction à l'égard de cette expérience encourage les donneurs à revenir.

III. Methodologie et Construction de L'indice du Niveau de Connaissance du Don de Sang

Le niveau de connaissance des étudiants relatif au don de sang (DS) est un indicateur qui mesure le degré d'expérience, d'acquis et de culture d'un individu relativement à la pratique du DS. En tant qu'indice et au regard des travaux de *Ki. J.B et al (2005),* nous avons choisi de l'appréhender par l'approche d'inertie. C'est une approche qui repose sur des techniques d'analyses de données multidimensionnelles *(Meulman 1992, Bry 1996, Volle 1993, Escofier et Pagès 1990 et Asselin. L. M 2002).* La construction d'un indice synthétique passe par un long processus dont la littérature le subdivise en un certain nombre d'étapes *(Ki et al, 2005 ; Dialga et Le, 2014 ; ISQ, 2015).* Mais de manière générale, nous l'avons résumé comme suit:

a) La construction du cadre théorique et le choix des dimensions (variables) qui composent l'indice synthétique

A travers une base théorique relative au domaine sanguin et surtout de notre expérience vécue du terrain, nous avons mis en place les dimensions qui composent le concept étudié. Ainsi, pour sortir notre *Indice du Niveau de Connaissance du Don de Sang* (*INC_DS*), nous avons utilisé les variables introduites à l'effet dans notre questionnaire. Celles-ci étaient concentrées dans la section 4 du questionnaire et sont présentées sous forme de QCM (*voir tableau 1 ci-dessous*). Elles sont inspirées de l'entretien qui se passe souvent entre le personnel médical et le donneur de sang mais aussi des questions relatives à la préparation des individus à faire un don de sang. C'est ainsi qu'on a eu 12 variables réparties en 3 dimensions tel que nous le présente le *tableau 1* plus bas.

b) Le traitement des données manquantes et première analyse exploratoire

D'après *Dialga et Le (2014),* l'imputation des données manquantes se fait essentiellement de deux manières suivant le type de données en présence. Dans notre cas, les données manquantes que nous avons eu étaient du type « *Missing Completely at Random* ». Il est dit que pour ces cas *(Dialga et Le, 2014),* on peut supprimer celles-ci sans affecter la qualité de l'indicateur composite. C'est ainsi que nous nous sommes retrouvé avec *951* individus sur *954* de départ.

Puis nous avons fait une AMC sur nos 12 variables de départ (du fait de leur nature qualitative) dans le but de les recoder de façon à donner un sens ordinal à notre indice composite mais également de voir s'il y avait des variables à retirer de l'analyse. Partant, nous avons attribué des modalités allant de 1 à 3 pour 1 si la réponse donnée par l'enquêté est juste, 2 si elle est fausse et 3 si l'enquêté n'a aucune idée sur la question. Au sortir également, une des variables a été retirée de l'analyse du fait du lien élevé avec une autre. Nous quittions ainsi de 12 variables pour 11 variables retenues pour le reste de l'analyse. Par la suite, un test de cohérence interne (*test de l'alpha de krombash*) a également été effectué sur l'ensemble des variables

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retenues afin de s'assurer que celles-ci concourent bien à la mesure d'une seule et même réalité (*le niveau de connaissance du DS*). Le test s'est avéré concluant (Scale reliability coefficient: 0.7740), les variables retenues à cette étape étaient donc cohérentes entre elles et donc pertinentes pour la construction de notre indice. Au finish, il a été retenu pour l'analyse, les variables suivantes:

Tableau 1: liste des variables utilisées pour la construction de l'Indice du Niveau de Connaissance du Don de Sang (INC_DS)

Indice Principal	Sous-groupe Indice principal	Code	libellé	Bonne réponse (1=bonne rep; 2=mauvaise rép; 3=aucun avis)
Indice du Niveau de Connaissance du Don de Sang (INC_DS)	Connaissance Générale sur le don du sang	S4Q1	L'âge minimum pour faire un don de sang est	Dix-huit (18) ans
		S4Q2	L'âge maximum pour faire un don de sang est	Soixante-cinq (65) ans
		S4Q5	Quel est le groupe donneur de sang universel d'après-vous?	O-
		S4Q6	Quel est le groupe receveur de sang universel d'après-vous?	AB-
		S4Q7	A votre avis, quel est le poids minimum requis pour faire un don de sang ?	50 Kg
		S4Q9	Après un don de sang, combien de temps devrais-je attendre pour pratiquer une activité physique intense ?	3 jours
	Connaissance des mécanismes du don de sang	S4Q3	Selon les spécialistes de la santé, Le nombre maximum de don par an/personne varie selon le sexe : chez l'homme ?chez la femme ?	Quatre dons/an
		S4Q4	Quelle est la contenance d'une poche de sang que l'on prélève souvent ?	Il y a 450ml et 480m
		S4Q8	Lorsque nous donnons de notre sang, combien de temps faut-il en moyenne pour que notre sang se régénère ?	Huit semaines
		S4Q10	Après un don de sang, il est important de consommer les aliments riches en fer afin de permettre au sang de se régénérer dans les délais. Quels sont d'après-vous les aliments riches en fer ?	Les légumes verts (feuilles de manioc, de macabo, de Zoum
	Connaissance des Risques liés au don de sang	S4Q11	A votre avis existe-t-il des risques liés au don de son sang ?	Oui: malaise vagal, hématome au point de ponction, perte volume de poids qui peut être compensé entre 6 ou 8 hrs…

Source: Auteur

On constate que notre indice composite *INC_DS* est constitué de 3 sous-groupes. En premier, nous avons *la connaissance générale de l'individu sur le don de sang*. Il s'agit des éléments permettant d'apprécier le niveau de culture générale des individus relativement à la chose sanguine. Ce sont des éléments qui devraient être connus même si l'individu n'est pas un donneur de sang. Un très faible niveau de cet indicateur ne serait pas de bon augure tout de même pour le domaine sanguin camerounais car traduirait soit la désinvolture des individus à la chose soit la nécessité des autorités compétentes de réajuster les stratégies de sensibilisation et d'éducation des populations. Le second groupe concerne *les connaissances des mécanismes du don de sang*. Il s'agit des questions plus ou moins techniques relatives au comportement pendant et après le don de sang d'un individu. Le troisième groupe quant à lui concerne *la connaissance des risques liés au don du sang*. Ici, et en rapport avec ce que nous avons vu sur le terrain, le personnel lors des collectes a tendance à minimiser, ignorer ou même dire qu'il n'existe pas de risques pour le don de sang. Il s'agit donc dans ce sous-groupe de voir si effectivement, les populations sont en symbiose avec les discours tenu par le personnel pour les encourager à donner le sang. Nous pensons qu'un niveau de connaissance élevé des risques influencera négativement la disposition à l'offre de sang de l'enquêté.

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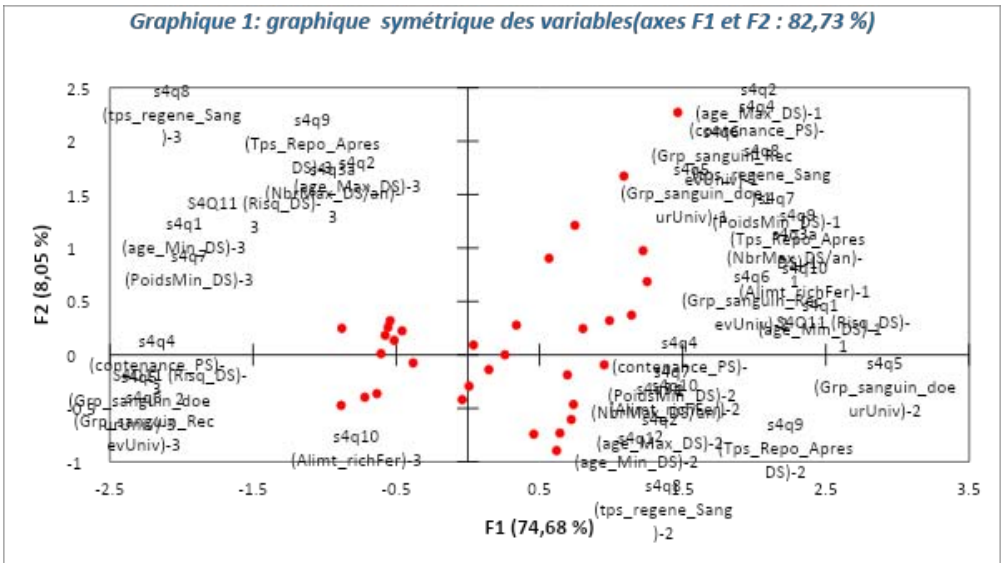
c) *La construction de l'indice synthétique proprement dit.*

A partir de ces variables, des ACM ont donc été réalisées. L'une pour l'indice composite principal (*INC_DS*) qui utilise toutes les variables, et deux autres sur les sous-groupes *Connaissance Générale sur le Don de Sang* (*ICG_DS*) et *Connaissance des Mécanismes du Don de Sang (ICM_DS)*. Le 3ième sous-groupe (*Connaissance des Risques liés au DS*) n'ayant qu'une seule variable, nous n'avons pas fait d'ACM sur ce sous-groupe.

✓ *ACM pour la construction d'INC_DS*

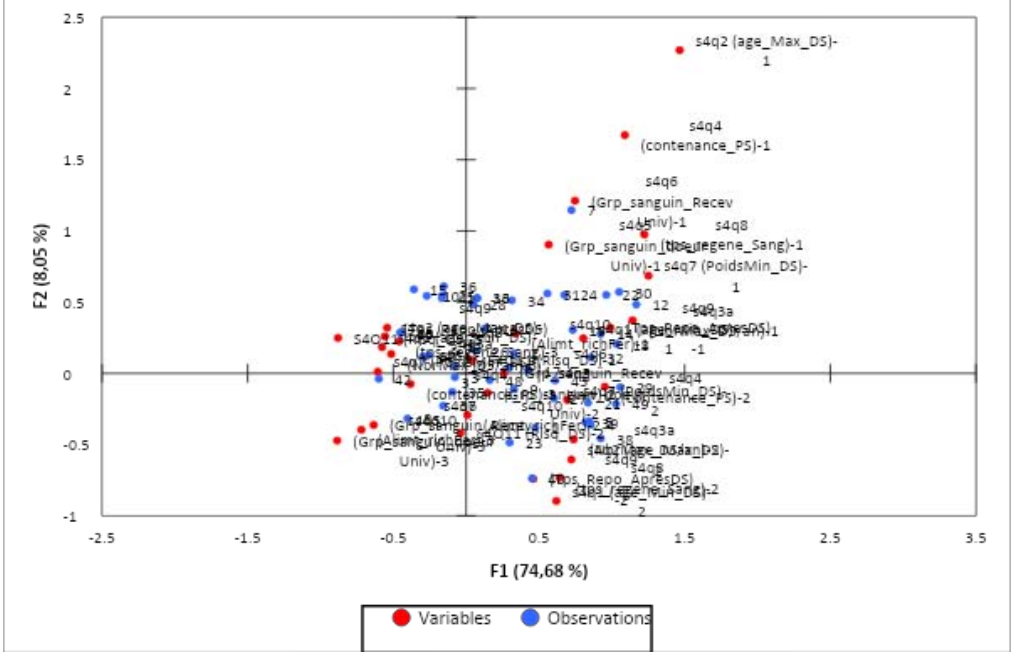
Le *graphique 1* ci-dessous issu de l'ACM effectuée sur les 11 variables pour la détermination de notre *indice du Niveau de Connaissance du Don de Sang* (*INC_DS*) montre que, les deux (2) premier axes portent *82,726%* de l'information avec *74,677%* contenue dans le premier axe. L'examen du *scree plot* met en exergue le décrochement de ce premier axe factoriel. Cette distinction du premier axe nous amène à conclure que puisque la majorité de l'information est concentrée sur cet axe, nous pouvons nous intéresser uniquement à cet axe pour construire notre indicateur du niveau de connaissance global des étudiants relativement à la question sanguine.

Graphique 1: graphique symétrique des variables(axes F1 et F2 : 82,73 %)



Source: Auteur à partir des données d'enquête et le logiciel Xlstat

Graphique 2: représentation des variables utilisées pour la construction de l'indice et des individus enquêtés axes F1 et F2 : 82,73 %)



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Le *graphique 1* montre que nos variables (à partir de leurs poids dans l'ACM préliminaire) ont été bien regroupées. En effet, lorsque l'on se déplace de la gauche vers la droite on part des réponses fausses vers les réponses justes. Lorsque nous associons les observations au graphique obtenu à la figure 1 (*voir graphique 2*), nous constatons que les individus sont quasiment tous concentrés vers l'origine du repère avec des écarts plutôt restreints entre eux. Cela donne lieu d'une présomption d'un faible niveau de connaissance de la population étudiée sur la chose sanguine. Le calcul de l'indice nous permettra de confirmer cette présomption.

✓ *Coefficients de pondération de l'INC_DS*

Grace à la forme fonctionnelle[1] nous avons obtenu les coefficients de pondération de *l'INC_DS* donné par le *tableau 2* ci-dessous :

Tableau 2: Score, qualité de représentation et contribution des variables à la construction de l'ICN_DS

Variables/modalités	Score 1er axe	Contribution	Cosinus Carrés	Effectifs N: 951	Poids relatif et effectif relatif
Age minimum pour faire un DS (s4q1)				N : 951	
1 (réponse juste)	0,07843761	0,045	0,224	245 (25,762)	0,023 (22)
2 (réponse fausse)	0,03346415	0,019	0,087	176 (18,507)	0,017 (16)
3 (aucune idée)	0,08751782	0,051	0,420	530 (55,731)	0,051 (48)
Age maximum pour faire un DS (s4q2)				N : 951	
1 (réponse juste)	0,0351452	0,020	0,077	33 (3,470)	0,003 (3)
2 (réponse fausse)	0,09361	0,054	0,321	362 (38,065)	0,035 (33)
3 (aucune idée)	0,0855842	0,049	0,437	556 (58,465)	0,053(50)
Nombre Max de DS/an (s4q3a)				N : 951	
1 (réponse juste)	0,06599857	0,038	0,157	102 (10,726)	0,010 (9)
2 (réponse fausse)	0,06893164	0,040	0,200	256 (26,919)	0,024 (23)
3 (aucune idée)	0,07786991	0,045	0,439	593 (62,355)	0,057 (54)
Contenance une poche de sang (s4q4)	0,02527818	0,015	0,056	N : 951 43 (4,522)	0,004 (4)
1 (réponse juste)	0,10104664	0,058	0,281	225 (23,659)	0,022 (20)
2 (réponse fausse)	0,04943603	0,029	0,372	683 (71,819)	0,065 (62)
3 (aucune idée)					
Groupe sanguin donneur universel (s4q5)	0,03085299	0,018	0,082	N : 951 194 (20,400	0,019 (18)
1 (réponse juste)	0,00577285	0,003	0,029	543 (57,098	0,052 (49)
2 (réponse fausse)	0,08309934	0,048	0,228	214 (22,503)	0,020 (19)
3 (aucune idée)					
Groupe sanguin receveur universel (s4q6)	0,02711173	0,016	0,064	N : 951 98 (10,305)	
1 (réponse juste)	0,01740858	0,010	0,082	524 (55,100)	0,009 (9)
2 (réponse fausse)	0,06573026	0,038	0,213	329 (34,595)	0,050 (48)
3 (aucune idée)					0,031 (30)
Poids Minimum pour faire un DS (s4q7)	0,06208417	0,036	0,144	N : 951 80 (8,412)	
1 (réponse juste)	0,07876905	0,046	0,256	329 (34,595)	0,008 (7)
2 (réponse fausse)	0,09884151	0,057	0,488	542 (56,993)	0,031 (30)
3 (aucune idée)					0,052 (49)
Temps requis pour la régénération du Sang après un DS (s4q8)	0,05561111	0,032	0,128	N : 951 75 (7,886)	0,007 (7)
1 (réponse juste)	0,05773631	0,033	0,174	282 (29,653)	0,027 (26)
2 (réponse fausse)	0,062178	0,036	0,352	594 (62,461)	0,057 (54)
3 (aucune idée)					
Temps requis pour le Repos Apres DS (s4q9)	*0,0722406*	0,042	0,182	N : 951 149 (15,668)	
1 (réponse juste)	0,03007887	0,017	0,091	287 (30,179)	0,014 (13)
2 (réponse fausse)	0,07509812	0,043	0,348	515 (54,154)	0,027 (26)
3 (aucune idée)					0,049 (47)

[1] INC-DSi=1K(W1li1+W2li2+…+Wplip) où toutes les modalités des variables ont été transformées en indicateurs polytomiques prenant la modalité 1 pour les réponses justes ; la modalité 2 pour les réponses fausses et la modalité 3 pour ceux qui n'arrivaient pas à donner une réponse malgré leur effort cognitif à la question et Wp les pondérations renvoyant aux score normalisé sur le 1er axe score1 et i la 1ère valeur propre.

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				N : 951	
	0,03033341	0,018	0,147	533 (56,046)	
	5,7467E-06	0,000	0,000	165 (17,350)	
Aliments riches en Fer (s4q10)	0,06488652	0,037	0,188	253 (26,604)	
1 (réponse juste)					0,051 (48)
2 (réponse fausse)					0,016 (15)
3 (aucune idée)					0,024 (23)
Risques liés au DS				N : 951	
1 (réponse juste)	0,00056351	0,000	0,006	746 (78,444)	0,071 (68)
2 (réponse fausse)	0,00014002	0,000	0,000	180 (18,927)	0,017 (16)
3 (aucune idée)	0,00958863	0,006	0,021	25 (2,629)	0,002 (2)

Source: Auteur à partir de données d'enquête et du logiciel Xlstat

En observant le tableau ci-dessus, on peut noter que les scores des modalités sont extrêmement bas (proche de 0) et, cela tend à conforter la présomption (précédemment observée sur les *graphiques 1 et 2*) relative à un faible niveau de connaissance de la chose sanguine par la population étudiée.

Il apparait que de tous ceux qui ont donnés des réponses justes, les questions portants sur *l'âge minimum pour faire un DS* et celle relative au *temps de repos requis après avoir fait un DS* enregistrent les plus grands scores (respectivement 0,07843761; 0,0722406). En d'autres termes, il s'agit là des questions les plus connues de tout l'échantillon (951 individus). Mais lorsqu'on observe leur poids et effectif relatif, il apparait que sur 951 individus interrogés, seulement 22 individus (soit 2,3%) ont donné la réponse juste à la question relative à *l'âge minimum pour faire un DS* et 13 individus (1,4%) pour la question sur le *temps requis pour le repos après le DS*. Si ces questions sont comme l'indique notre tableau, les plus représentatives en termes de réponses trouvées par toute la population interrogée, il y a lieu de penser à des politiques éducatives de masse dans l'idée qu'il existe tout de même un niveau de connaissance acceptable pour une population sur des questions aussi importantes touchant la santé publique.

Aussi, si dans l'ensemble les individus ont eu du mal à répondre aux questions (réponses fausses et non réponse), les questions qui semblent avoir posé assez de problèmes aux enquêtés, sont celles relative à la maitrise *des mécanismes du DS* notamment les questions *temps requis pour la régénération du sang après un DS (54 soit 5,7% des interrogés n'ayant pas répondu) ; la contenance d'une poche de sang (62 soit 6,5% n'ayant pas répondu) et nombre maximum de DS à faire /an (54 soit 5,7% n'ayant pas répondu).* Ce sont les questions qui enregistrent les forts effectifs d'abandon (par rapport aux autres modalités des variables de l'étude). Donc, malgré des efforts cognitifs, les enquêtés n'ont pas pu répondre à celles-là. On peut supposer que cela serait le fait d'un relâchement des répondants (car épuisé par les questions précédentes) ou simplement accepter qu'ils n'avaient vraiment pas d'idées sur ces questions.

✓ *Calcul de l'indice composite du niveau de connaissance du don de sang (INC_DS)*

Pour le calcul proprement dit de l'indice composite du *niveau de connaissance du DS*, nous nous sommes servi de la formule de Asselin (2001), donnée par:

$$Ic_i = \frac{\sum_{j=1}^{J}\sum_{k=1}^{K} w_j I_j}{K}$$

Où Ic_i représente l'indice composite de niveau de connaissance du DS pour l'individu i, K le nombre de variables qui composent l'indice, w_j le poids normalisé sur le premier axe ($\frac{score}{\sqrt{\lambda_1}}$) de la modalité *j* de la variable *k* et *I* une variable binaire prenant la valeur 1 lorsque l'individu *i* concerné présente la modalité *j* de la variable *k* et *0* sinon.

Une fois l'indice ainsi calculé, il convient de le normaliser afin de le rendre comparable pour différents individus. Il existe plusieurs méthodes pour le faire, mais nous avons opté pour la *méthode min-max*. En effet, celle-ci est la plus utilisée et permet de centrer l'indice entre les valeurs extrêmes de l'échantillon *(Dialga et Le, 2014).*

$$Icn_i = \frac{Ic - Ic}{Ic - Ic}$$

Où Ic est la valeur minimum de l'indice composite dans l'échantillon et $max\ Ic$ sa valeur maximale. Le résultat est ainsi compris entre *0* (*parfaite ignorance du DS*) et *1* (*parfaite connaissance du DS*), ce qui permet de comparer plusieurs individus en fonction de leur position entre ces deux extrêmes. Le résultat obtenu est donné par le tableau suivant:

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Tableau 3: Présentation de l'indice composite et des indices des sous-groupes du niveau de connaissance du don de sang des étudiants au Cameroun

N: 951		Quartiles			Moyenne	Ecart-type	Min	Max
		Q1	Q2	Q3				
Indice composite du Niveau de Connaissance du Don de sang	INC_DS	.3657	.447	.6008	.4860	.1927	0	1
Indice par sous-groupe du Niveau de connaissance di don de sang	INC_Gén	.3921	.494	.679	.5424678	.227	0	1
	INC_Mécanisme DS	.4164	.508	.659	.5412135	.177	0	1
	Risque DS							

Source: Auteur à partir de Xlstat et Stata 14

Il apparait du tableau ci-dessus que globalement, le niveau moyen de connaissance du don de sang des étudiants au Cameroun est bas. Il est de 0.*4860.* Aussi, les résultats du 1er et 2nd quartile de *l'INC_DS* disent que *50%* de la population estudiantine ont un niveau de connaissance du don de sang inférieur à cette moyenne.

Cependant, si le niveau de connaissance du don de sang est dans l'ensemble faible pour la population étudiée, il serait important de ressortir le niveau de connaissance par question et selon l'évolution de l'indice du niveau de connaissance du DS (en d'autres termes, quelles sont les questions pour lesquelles les étudiants affichent un niveau de connaissance bas ou élevé ?). Cela nous permettra de voir les questions les plus assimilées par les étudiants et par conséquent, une accentuation au besoin sur celles les moins saisies par ceux-ci. Pour cela, nous dressons un tableau de centile de *l'INC_DS*. Il nous permettra de voir à partir de quel niveau, *l'INC_DS* devient appréciable.

Tableau 4: Centile de l'INC_DS

Variable	Obs	Percentile	Centile	Interval confiance	
INC_DS	951	15	.2956358	.27449	.3139094
		30	.3823928	.368717	.3948169
		45	.4410675	.4301784	.4474338
		60	.5033891	.4884277	.5155752
		75	.6008529	.5779966	.6258422

Source: Auteur à partir de Stata 14

D'après le *tableau 4* ci-dessus, on constate que le niveau de connaissance évolue graduellement et que, c'est à partir du 4ème quintile (*Q4)* que le niveau de connaissance devient appréciable. On peut ressortir le niveau de connaissance par question et selon l'évolution de notre indice. Sachant que *l'INC_DS* est compris entre 0 et 1 et qu'à partir de .*5033891*, on tend vers un niveau de connaissance élevé, nous obtenons dans le tableau suivant, la fréquence des bonnes réponses par question.

Tableau 5: Pourcentage des étudiants ayant donné de bonnes réponses selon l'évolution de l'INC_DS

Variables	Quintile INC_DS de référence (Q4)	
	(faible niveau)	(niveau élevé)
Connaissance ou culture Générale sur le don du sang (%)		
Age minimum pour faire un DS (18 ans)	28.77	21.26
Age maximum pour faire un DS (65 ans)	4.04	2.62
Poids minimum requis pour faire un DS (50 Kg)	8.77	7.89
Temps requis pour des activités après un DS (3 jrs)	16.55	14.47
Groupe donneur de sang universel (O-)	22.11	17.85
Groupe receveur de sang universel (AB-)	12.11	7.65
Moyenne connaissance du groupe	15,39166667	11,9566667
Connaissance des mécanismes du don de sang		
Nbre maximum de DS/an chez l'homme (4 DS/an)	13.68	6.30
Temps requis pour la régénérescence du sang après DS (Huit semaines)	7.91	7.89

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Contenance d'une poche de sang que l'on prélève (Il y a 450ml et 480m)		5.46	3.15
Aliments riche en fer pour faciliter la régénération sang (Les légumes verts)		55.89	56.58
Moyenne connaissance du groupe		19,66633333	17,1753333
Connaissance des Risques liés au don de sang			
Existence des risques liés au DS	Oui	78,30%	
	Non	18,87%	
	Aucun avis	2,83%	

*Source: Auteur à partir de Stata 14. **les données entre parenthèse sont les bonnes réponses des questions*

Il apparait du *tableau 5* ci-dessus que les étudiants ont en fait un niveau de connaissance assez élevé en considérant les questions portant sur l'existence des risques liés au DS ainsi que des aliments à consommer après un DS. 78% ont déclaré être convaincus que le DS a des risques (même s'ils ont eu des difficultés à en citer quelques-uns) contrairement au message tenu par les personnels lors des collectes. Ceci n'est pas de bon augure pour leur disposition à offrir de leur sang.

Par ailleurs, les groupes qui enregistrent les niveaux de connaissance faible sont la connaissance ou culture générale sur le DS et la connaissance des mécanismes du DS avec respectivement *15,39%* et *19,66%*. De ces 2 groupes, les questions qui tirent le niveau de connaissance à la baisse sont «*Aliments riche en fer pour faciliter la régénération sang (55,89%), Age minimum pour faire un DS (28,77%), Groupe donneur de sang universel (22%) et Temps requis pour des activités après un DS (16,55%) ».*

IV. Niveau de Connaissance du Don de Sang et Disposition a Offrir le Sang Des Etudiants au Cameroun

Il est question dans cette deuxième partie d'analyser l'effet de l'indice du niveau de connaissance précédemment calculé sur la disposition des étudiants à faire un don (offrir) du sang. Nous présenterons donc succinctement la méthodologie de l'analyse puis les résultats obtenus.

a) Méthodologie de l'analyse

i. *Source de données de l'étude et variables de l'étude*

Les données utilisées ici proviennent essentiellement de notre base obtenue par enquête sur le terrain. Un total de 951 étudiants a été retenu. Notre variable dépendante est captée par la question *« serez-vous disposé à faire un don de sang si on définit une politique qui vous arrange ?* ». Elle est polytomique (3 modalités). A sa suite, 14 autres variables ont été utilisées comme variables explicatives parmi lesquelles l'indice du niveau de connaissance précédemment calculé représentant notre variable d'intérêt. L'ensemble de ces variables est contenu dans *le tableau 6* ci-dessous.

Tableau 6: Description des variables de l'étude

Variables	Type	N	Min	Max
Variable dépendante Disposition à faire un DS (0=Oui; 1=Non; 2= indécis)	Polytomique	954	0	2
Variables explicatives				
Indice du Niveau de connaissance du DS (INC_DS)	Quantitative	951	0	1
Indice du Niveau de culture générale sur le DS	Quantitative	951	0	1
Indice du Niveau de connaissance des mécanismes du DS	Quantitative	951	0	1
Existence risques liés au DS (1=Oui; 2=Non; 3= aucun avis)	polytomique	951	1	3
Canal d'information de l'enquêté sur le DS (1=mécanismes contrôlés; 0= mécanismes non contrôlés)	dichotomique	954	0	1
l'enquêté a déjà été transfusé (0=Non; 1=Oui)	dichotomique	954	0	1
Impression enquêté sur la TS (0=utile mais risqué; 1=Nécessaire)	dichotomique	954	0	1

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l'enquêté a déjà fait un DS (0=Non; 1=Oui)	dichotomique	954	0	1
Sexe de l'enquêté (1=Masculin; 0=Féminin)	dichotomique	954	0	1
Religion de l'enquêté (1=Catholique; 2=protestant; 3= Témoin de Jéhova; 4=Église de reveil; 5=Musulman; 6=Autres)	polytomique	954	1	6
l'enquêté appartient à une association (1=Oui; 0=Non)	dichotomique	954	0	1
Revenu 2 avec transfert de l'enquêté (0=Moins de 26000F; 1=26000F et plus)	dichotomique	954	0	1
Région la plus habitée de enquêté (1=grand Centre; 2=Grand Nord; 3= Ouest; 4=NOSO)	polytomique	913	1	4
Age de l'enquêté (0=23ans et plus; 1=moins de 23 ans)	dichotomique	954	0	1
Présence dans le ménage de malades ayant un besoin constant de sang (0=Non; 1=Oui)	dichotomique	954	0	1
Enquêté disposé à recevoir une incitation monétaire (1=Oui; 0=Non)	dichotomique	720	0	1
Enquêté disposé à recevoir une incitation non monétaire (1=Oui; 0=Non)	dichotomique	717	0	1

Source: Auteur, à partir des données issues de notre enquête

ii. *Présentation du modèle d'analyse: le Logit multinomial non ordonné*

Pour apprécier l'effet du niveau de connaissance sur la disposition des étudiants à donner de leur sang, nous avons utilisé le Logit multinomial non ordonné. Sa formalisation en fonction de nos différentes variables de l'étude est la suivante:

$$Dispo_faire_DS_i = \beta_0 + \beta_1 INC_DS_i + \beta_2 Déjà_transf_i + \beta_3 Impresn_TS_i + \beta_4 Déjà_fait_DS_i + \beta_5 Sexe_i + \beta_6 religion_i + \beta_7 Appart_assotn_i + \beta_8 Revenu_avectransf_i + \beta_{10} Région_hab_i + \beta_{11} Prsn_malad_i + \beta_{12} Canal_infoDS_i + \beta_{13} Age_i + \beta_{14} Prsn_incitMo_i + \beta_{15} Prsn_incitNoMo_i + \varepsilon_i$$

Où les β_i représentent les paramètres, INC_DS_i l'Indice du Niveau de connaissance du DS de l'individu *i*, $Déjà_transf_i$ l'enquêté a déjà été transfusé, $Impresn_TS_i$ l'impression de l'enquêté sur la Transfusion Sanguine, $Déjà_fait_DS_i$ l'enquêté a déjà fait un DS, $Sexe_i$ le sexe de l'enquêté, $religion_i$ la Religion de l'enquêté, $Appart_assotn_i$ l'enquêté appartient à une association, $Revenu_avectransf_i$ le revenu avec transfert de l'enquêté, $Région_hab_i$ la région la plus habitée de enquêté, $Prsn_malad_i$ la présence dans le ménage d'un malade ayant un besoin constant de sang, $Canal_infoDS_i$ le canal d'information de l'enquêté sur le DS, Age_i l' âge de l'enquêté, $Prsn_incitMo_i$ l'enquêté disposé à recevoir une incitation monétaire, $Prsn_incitNoMo_i$ l'enquêté disposé à recevoir une incitation non monétaire et ε_i le terme d'erreur.

b) Résultats de l'analyse

Le *tableau 7*a ci-dessous met en évidence la statistique descriptive de l'ensemble des variables de notre étude. Concernant notre variable dépendante, il apparait que 54,19% des enquêtés ont déclaré être disposés à donner de leur sang contre 20,55% d'individus indécis et 25,26% de ceux n'étant pas disposés à faire un DS. *Le tableau 7b* présente les différentes raisons évoquées par les enquêtés ayant déclaré ne pas être disposés à faire un DS. Parmi ces raisons, 47,44% ont peur des conséquences futures, 36,9% pointent leur problème de santé, 18,9% pointent leur religion et 2,94% leur tradition. Aussi, 36,9% ont émis le fait qu'ils ne le veulent tout simplement pas, 10,08% remettent en cause la politique actuelle (la gratuité), 22,68% et 15,12% concernant respectivement le fait de n'y avoir jamais pensé et le fait de n'avoir jamais été abordé pour la chose.

Concernant notre variable d'intérêt (l'indice du niveau de connaissance du Don de Sang), sa moyenne est de 0,48. Etant compris entre 0 et 1, on note que la moyenne est plus proche de 0 et donc assez faible pour l'ensemble de l'échantillon. Pour les autres variables de contrôle, on note que 49,69% des enquêtés ont entendu parlés du DS via les mécanismes d'information contrôlables (TV, Hôpital) et donc près de 51% s'informant à partir des mécanismes non contrôlables (réseaux sociaux, entourage…). Seulement 5,66% ont

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déjà été transfusés et 11,43 ayant déjà fait un DS. 53,46% de l'échantillon sont de sexe masculin et 44,23% de l'échantillon sont d'obédience catholique, 29,14% protestante, 1,89% de Témoin de Jéhovah, 8,49% appartenant aux églises dites de réveils, 8,28% de musulmans et 7,97% issus des autres franges de croyances (animiste, sans religion…). 65,26% vivent avec des transferts reçus de plus de 26000 Fcfa par mois, 21,58% appartiennent à des associations et 64,26% sont âgés de moins de 23 ans. Pour ce qui est de la région la plus habitée par les enquêtés, 73,49% habitent fréquemment les régions du Centre, Sud, Est et Littoral, 1,53% le grand Nord, 19,72% l'Ouest et 5,26% le Nord-Ouest et Sud-Ouest. 7,02% déclarent avoir au sein de leur famille, un malade en besoin constant de sang et 37,64% des enquêtés déclarent être disposés à recevoir une incitation monétaire et 62,34% pour une incitation non monétaire.

Tableau 7a: Statistique descriptive des variables de l'étude

Variables	Proportion/Moyenne	Min	Max
Variable dépendante			
Disposition à faire un DS			
0=Oui	54.19		
1=Non	25.26		
2= indécis	20.55		
Variables explicatives			
Indice du Niveau de connaissance du DS (INC_DS)	.4860876	0	1
Indice du Niveau de culture générale sur le DS	.5424678	0	1
Indice du Niveau de connaissance des mécanismes du DS	.5412135	0	1
Existence risques liés au DS		1	3
1=Oui	78.44		
2=Non	18.93		
3= aucun avis	2.63		
Canal d'information de l'enquêté sur le DS (1=mécanismes contrôlés)	49.69	0	1
l'enquêté a déjà été transfusé (1=Oui)	5.66	0	1
Impression enquêté sur la TS (1=Nécessaire)	40.15	0	1
l'enquêté a déjà fait un DS (1=Oui)	11.43	0	1
Sexe de l'enquêté (1=Masculin)	53.46	0	1
Religion de l'enquêté		1	6
1=Catholique;	44.23		
2=protestant;	29.14		
3= Témoin de Jéhova;	1.89		
4=Église de reveil;	8.49		
5=Musulman;	8.28		
6=Autres)	7.97		
l'enquêté appartient à une association (1=Oui)	21.58	0	1
Revenu avec transfert de l'enquêté (1=26000F et plus)	65.62	0	1
Région la plus habitée de enquêté		1	6
1=grand Centre	73.49		
2=Grand Nord	1.53		
3= Ouest	19.72		
4=NOSO	5.26		
Age de l'enquêté (1=moins de 23 ans)	64.26	0	1
Présence dans le ménage de malades ayant un besoin constant de sang (1=Oui)	7.02	0	1
Enquêté disposé à recevoir une incitation monétaire (1=Oui)	37.64	0	1
Enquêté disposé à recevoir une incitation non monétaire (1=Oui)	62.34	0	1

Source: Auteur à partir des données d'enquête

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Tableau 7b: Raison non disposition à faire un DS

Raisons évoquées	Non Disposition à faire un Don de sang (N=238)
Peur des conséquences futures	113 (47,44%)
Religieuses	45 (18,9%)
Santé	88 (36,9%)
Manque de temps	53 (22,26%)
Je n'en veux pas simplement	88 (36,9%)
Je ne sais pas où on donne le sang	33 (13,86%)
C'est gratuit	24 (10,08)
Je n'y ai jamais pensé	54 (22,68%)
On ne me l'a jamais demandé	36 (15,12%)
Tradition	7 (2,94%)
Autres raisons	*i'm risking my live, ils vendent le sang, je dois donner à ma fille qui est SS, parcequ'on vend au malade, pas confiance aux hôpitaux*

Source: Auteur à partir des données d'enquête

i. *Résultat de l'analyse économétrique: effet du niveau de connaissance du DS sur la disposition des étudiants à offrir de leur sang*

Le *tableau 8* ci-dessous nous donne l'effet du niveau de connaissance précédemment calculé, sur la disposition à offrir du sang des étudiants des universités du Cameroun.

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Tableau 8: Résultat de l'estimation

	M1		M2		M3		M4		M5			
VARIABLE dépendante : Disposition à offrir du sang	**Oui**	**Indécis**	**Oui**	**Indécis**	**Oui**	**Indécis**	**Oui**	**Indécis**	**Oui**	**Effets marginaux**	***indécis***	***Effets marginaux***
Niveau de connaissance du DS												
Indice du Niveau de connaissance du DS	-.1892082	.3027436	4.161305**	4.614072**	3.876101*	4.331543*	5.959692**	6.3836**	7.263**	-.0341027	7.607**	.0745744
									(3.067)		(3.091)	
Variables économiques												
Enquêté disposé à recevoir une incitation monétaire			-.1936855	-.8565899	.026973	-.6311851	.2897137	-.3968015	0.11	.1281071	-0.584	-.1285563
									(0.735)		(0.752)	
Enquêté disposé à recevoir une incitation non monétaire			2.237779**	1.907486**	2.276185*	1.939889*	3.615326***	3.327***	4.13***	.0657933	3.866***	-.0434607
									(1.002)		(1.009)	
Variables d'auto-efficacité												
l'enquêté a déjà été transfusé					11.37205***	10.6388***	12.434***	11.91***	13.05***	.1431152	12.55***	-.072091
									(1.062)		(1.197)	
Présence dans le ménage de malades ayant un besoin constant de sang					-2.525757**	-2.5322***	-3.89***	-4.07***	-5.077***	.0083712	-5.232***	-.0365302
									(1.065)		(1.091)	
l'enquêté a déjà fait un DS					2.495966**	1.757972*			-0.330	.1686389	-1.258	-.1718788
									(0.967)		(0.991)	
Variables liées aux normes sociales												
Religion de l'enquêté (Catholique)												
Protestant							-2.13244	-1.81451	-1.916	-.0643659	-1.606	.0543033
									(1.616)		(1.621)	
Témoin Jéhovah							13.27666***	-2.266172	12.26***	2.9579	-3.636**	-2.914913
									(1.776)		(1.796)	
Église de reveil							-2.982127**	-2.893031*	-3.148**	-.0263873	-3.072*	.0091906
									(1.569)		(1.603)	
Musulmane							12.8395***	12.62998***	13.86***	.1135171	13.54***	-.03778
									(2.243)		(2.264)	
Autres							14.69985***	14.80987***	17.05***	.0530535	17.13***	.0408498
									(2.704)		(2.703)	
l'enquêté appartient à une association							15.7194***	15.41401***	16.61***	.1146785	16.34***	-.0237486
									(1.318)		(1.322)	
Région la plus habitée de enquêté (Grand_Sud)												
Grand Nord							13.4028***	12.96137***	15.87***	.1370404	15.46***	-.0504057
									(2.366)		(2.426)	
Ouest							.661725	.7703641	0.932	-.0129222	1.023	.0181893
									(1.155)		(1.168)	
NOSO							14.06637***	14.72999***	14.56***	-.0470129	15.13***	.1279489
									(1.682)		(1.668)	
Variables sociodémographiques												
Sexe de l'enquêté									0.371	.014073	0.302	-.0121377
									(1.683)		(1.690)	
Age de l'enquêté									0.870	-.0303922	1.055	.0354625
									(0.872)		(0.883)	
Revenu 2 avec transfert de l'enquêté									-1.750	-.0586235	-1.468	.0494337
									(1.784)		(1.789)	
Canal d'information de l'enquêté sur le DS									-1.833	.0259157	-2.014	-.0362722
									(1.429)		(1.431)	
Impression enquêté sur la TS									-1.062	-.030155	-0.921	.0245308
									(1.212)		(1.220)	
Constant									8.132***		6.290***	
									(1.809)		(1.822)	
Observations									672		672	

Source: Auteur à partir des données d'enquêtes et Stata 14. Robust standard errors in parentheses
**** p<0.01, ** p<0.05, * p<0.1*

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Notre modèle estimé nous permet d'analyser les facteurs explicatifs des individus ayant déclaré *Oui* ou *Indécis* à faire le DS comparativement à ceux ayant déclaré *Non* c'est-à-dire ne sont pas disposé à le faire. *M1* représente l'estimation faite avec uniquement le niveau de connaissance du DS. A partir de *M2*, nous avons ajouté les variables économiques pour voir comment se comporte le modèle; de *M3 à M4*, nous avons introduit les variables socio-psychologiques de la TCP de *Ajzen (1985) ;* à M5, nous avons notre modèle complet avec leurs effets marginaux.

Il apparait donc que, concernant les individus ayant déclaré être disponibles à offrir du sang, 11 variables se sont avérées avoir un effet significatif. Nous avons distingué celles ayant un effet positif de celles ayant un effet négatif.

Ainsi, nous notons que les variables ayant un effet positif sur la *disposition à offrir du sang* des étudiants sont l'indice du niveau de connaissance du DS (*INC_DS*), le fait pour un individu d'avoir déjà été transfusé, les individus appartenant à une association, ceux résident dans les régions du Grand-Nord et NOSO (Nord-Ouest, Sud –Ouest), la présence d'une incitation non monétaire et enfin le fait d'appartenir aux religions Témoin de Jéhovah, Musulmanes ou encore les sans religion, animiste. Les résultats présentés par certaines de ces variables sont pour le plus paradoxaux. En effet :

Pour *l'INC_DS*, nos résultats montrent que, comparativement aux étudiants n'étant pas disposés à offrir de leur sang, une augmentation de 1% du niveau de connaissance de ceux ayant déclaré être disposés à donner de leur sang, conduit à un penchant positif de l'étudiant à vouloir donner de son sang de 0,03 point. Cette variation est certes très faible mais, ceci reste un résultat contraire à notre hypothèse de départ car, nous pensions à une relation inverse entre ces deux variables. Ceci peut s'expliquer par deux choses: soit nos enquêtés sont des riscophiles, soit la présence d'une incitation est assez suffisante pour modifier leur orientation. En effet, le fait que dans notre étude les enquêtés savent qu'il y a une incitation qui leur est proposé s'ils étaient donneurs de sang aurait contrebalancé l'effet escompté du niveau de connaissance car cet indice prend tout de même en compte l'existence des risques liés au DS largement connus par la cible et donc tout naturellement devraient faire peur aux potentiels donneurs. Alors, si nous nous limitons à ceci, ce résultat se justifierait par le comportement riscophile de notre échantillon. Une autre régression avec cette fois-ci les composantes de *l'INC_DS* urge afin de mieux cerner l'effet de *l'INC_DS*.

Aussi, un autre résultat peu commun est celui donné par la religion. En effet, nous voyons que comparativement aux étudiants n'étant pas disposés à offrir de leur sang, le fait d'être Témoin de Jéhovah augmente la probabilité d'être disposé à donner du sang de *2,95*; de *0,11* lorsque l'étudiant est d'obédience musulmane et de *0,05* s'il est dans d'autres franges telles que les animistes ou les sans religions. Evidemment, la significativité de la religion ainsi que son effet positif ne sont pas si surprenant si ce n'est celle des Témoin de Jéhovah car, d'après *Copeman (2011)* l'essor effroyable de l'offre de sang en Inde serait dû à l'utilisation de la religion comme mécanisme par excellence d'incitation à l'offre de sang. Selon lui, les gourous des différentes sectes ont réussi à montrer à leurs adeptes le gain divin et spirituel qu'ils gagnent à participer à la chose. Mais chez les individus appartenant à la communauté de foi des Témoin de Jéhovah, il est assez connu qu'ils sont opposés à la pratique du don de sang. Par conséquent, nous nous attendions à avoir une relation inverse avec la disposition à donner du sang. Cependant, nous pensons que la particularité de l'échantillon à savoir des étudiants peut justifier ce changement. En effet, un étudiant est celui qui a un capital humain assez louable. Il n'est donc pas exclu que le niveau d'étude ait pu avoir le dessus sur des principes dogmatiques surtout que le refus de donner du sang peut s'assimiler à l'approbation de laisser un individu mourir.

Par ailleurs, nos résultats ont aussi montré que comparativement aux étudiants n'étant pas disposés à offrir de leur sang, le fait d'appartenir à une association augmente la probabilité d'être disposé à donner du sang de *0,11.* Et sur un tout autre plan, la présence d'une incitation non monétaire augmente la probabilité d'être disposé à donner du sang de *4,13.* Ce résultat nous dit que, l'incitation non monétaire est nécessaire pour la préparation des individus à devenir des donneurs effectifs. La non significativité de l'incitation monétaire se justifie car la littérature estime que cette variable a un effet plutôt sur l'offre effective de sang. Or il y a une grande différence entre être disposé à donner (qui reste hypothétique) et l'offre effective.

Enfin, il apparait aussi que comparativement aux étudiants n'étant pas disposés à offrir de leur sang, le fait pour un individu d'avoir déjà été transfusé augmente la probabilité d'être disposé à donner du sang de *0,14.* Ce résultat corrobore ceux trouvés par *Clowes et Masser, (2012); France et al., (2007); McMahon et Byrne, (2008)* qui ont estimé que l'expérience vécue qu'elle soit négative ou positive a un impact certain sur l'intention de revenir faire un don de sang. Et concernant la région la plus habitée par l'étudiant, la probabilité d'être disposé à donner du sang augmente de *0,13* si sa région la plus habité est le grand Nord et de *0,04* si la région est le Nord-Ouest ou le Sud-Ouest. On peut penser qu'il s'agisse des zones un peu ancrées dans les principes religieux. Et comme la religion a un effet positif pour certaines obédiences (qui sont d'ailleurs assez représentative dans ces zones), il est tout logique d'avoir un tel résultat.

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Quant aux variables ayant un effet négatif sur la *disposition à donner du sang* des étudiants, ce sont les étudiants appartenant aux églises dites réveillées et ceux dont il existe dans la famille un malade ayant un besoin constant de sang.

Pour les étudiants appartenant aux églises dites réveillées, nos résultats montrent que, comparativement aux étudiants n'étant pas disposés à offrir de leur sang, le fait d'appartenir à une église dite de réveil diminue la probabilité d'être disposé à donner du sang de *0,026.* Également que, le fait d'avoir un malade qui aurait un besoin constant de sang dans la famille diminue la probabilité d'être disposé à l'offre de sang de *0,008.* Ces résultats se justifient dans la mesure où, concernant les églises dites de réveil, il y a une hétérogénéité de comportement dû à une multitude de fragments de cette communauté de foi. Ceci étant, des positions relatives à la question sanguine peuvent varier selon l'entendement du leader d'une communauté spécifique. Ceci s'assimile à la théorie de la tyrannie des forces sociales de *Becker et Murphy (2000)* qui estime que le comportement moyen d'un groupe social donné agit comme une norme autour de laquelle se conforment les comportements des membres du groupe. Enfin, la relation inverse entre la disposition à donner du sang et un étudiant appartenant à une famille dans laquelle se trouve un malade ayant un besoin constant en sang se comprend dans la mesure où soit il voudrait se constituer en réservoir d'approvisionnement de leur proche soit ayant été exposé à la gestion du sang, il s'en est fait une idée de réclusion à la participation au DS.

Concernant les individus ayant déclarés être indécis à faire un DS, 11 variables se sont également avérées avoir un effet significatif sur la disposition de ces étudiants à se prêter au DS comparativement à ceux ayant déclaré ne pas être disposé à le faire. Ces variables étant quasiment les mêmes (à quelques différences seulement) que celles obtenues par les étudiants ayant déclaré être disposés à faire un DS, ce sont pour celles ayant un effet positif : *l'indice du niveau de connaissance du DS (INC_DS), le fait pour un individu d'avoir déjà été transfusé, les individus appartenant à une association, ceux résident dans les régions du Grand-Nord et NOSO (Nord-Ouest, Sud – Ouest) et enfin le fait d'appartenir à la religion Musulmane ou encore les sans religion, animiste*. Quant aux les variables ayant un effet négatif sur leur *disposition à donner du sang*, ce sont les étudiants appartenant aux communautés de foi des Témoins de Jéhovah et ceux des églises dites réveillées ; les étudiants dont il existe dans la famille un malade ayant un besoin constant de sang.

ii. *Robustesse de l'analyse*

Les contradictions apparentes des résultats obtenus ci-dessus concernant notamment notre variable d'intérêt a nécessité une analyse plus approfondie afin de dégager avec plus de précision l'effet de la connaissance du DS sur la disposition à donner le sang. Pour ce faire, nous avons réalisé une nouvelle estimation en substituant *l'INC_DS* par ses différentes composantes. Le *tableau 9* ci-dessous en présente les résultats.

Tableau 9: Estimation de la disposition à donner du sang selon les différentes composantes de l'INC_DS

Variables	Oui	Effet Marginaux	Indécis	Effet Marginaux
Composante INC_DS				
indiceNivo_Conn_Gne_DS	4.954*	-.0463062	5.300*	.0709286
	(2.883)		(2.890)	
IndiceNivo_Conn_Mecanism_DS	4.808	.0528428	4.611	-.0296902
	(3.077)		(3.089)	
Risq_ds	-4.036***	-.021051	-3.998***	.0014389
	(0.953)		(0.972)	
Variables économiques				
Enquêté disposé à recevoir une incitation monétaire	-1.120	.1240856	-1.818**	-.1305238
	(0.737)		(0.749)	
Enquêté disposé à recevoir une incitation non monétaire	7.147***	.0738543	6.879***	-.0394071
	(1.256)		(1.260)	
Variables d'auto-efficacité				
l'enquêté a déjà été transfusé	10.40***	.1291103	9.890***	-.0791625
	(1.857)		(1.928)	
Présence dans le ménage de malades ayant un besoin constant de sang	- 6.934***	.0071387	-7.103***	-.0411614
	(1.513)		(1.541)	

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l'enquêté a déjà fait un DS	-0.747	.1665363	-1.668	-.1714694
	(1.169)		(1.182)	
Variables liées aux normes sociales				
Religion de l'enquêté (Catholique)				
Protestant	-1.212	-.0589497	-0.914	.0534616
	(1.677)		(1.683)	
Témoin Jéhovah	10.59***	2.987722	-5.492***	-2.958718
	(1.737)		(1.741)	
Église de reveil	-5.082***	-.0341726	-4.992***	.0095374
	(1.915)		(1.925)	
Musulmane	10.58***	.0868016	10.31***	-.0356392
	(2.166)		(2.175)	
Autres	17.39***	.0446913	17.48***	.0401826
	(1.128)		(1.130)	
l'enquêté appartient à une association	20.91***	.1195663	20.65***	-.0180594
	(2.129)		(2.132)	
Région la plus habitée de enquêté (Grand_Sud)				
Grand Nord	11.12***	.1099642	10.73***	-.0563163
	(1.965)		(2.077)	
Ouest	-1.373	-.0250328	-1.262	.0184997
	(1.684)		(1.698)	
NOSO	10.45***	-.0743139	11.05***	.1260619
	(1.656)		(1.653)	
Variables sociodémographiques				
Revenu avec transfert de l'enquêté	-3.469***	-.0620559	-3.197**	.0455334
	(1.306)		(1.313)	
Age de l'enquêté	2.533***	-.0256386	2.721***	.0382452
	(0.689)		(0.702)	
Constant	9.155***		8.234***	
	(2.572)		(2.616)	
Observations	672	672	672	

Source: Auteur à partir des données d'enquêtes et Stata 14. Robust standard errors in parentheses
**** p<0.01, ** p<0.05, * p<0.1*

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Après décomposition de *l'INC_DS*, nos résultats montrent que seule deux composantes sur 3 ont un effet significatif sur la disposition à donner du sang avec des divergences de signes. Il apparait en effet que, comparativement aux étudiants n'étant pas disposés à offrir de leur sang, une augmentation de *1%* du niveau de connaissance de culture générale augmente la probabilité à une inclinaison à vouloir donner de sang de *0,04* chez les étudiants qui étaient déjà disposé à le faire et, de *0.07* chez ceux qui étaient indécis à la disposition à donner du sang. Par contre, une augmentation de 1% de leur connaissance des risques liés au DS, diminue la probabilité d'être disposé à donner du sang de *0.02* chez les étudiants qui étaient déjà disposés à le faire et de *0.001* chez ceux qui étaient indécis. Ce résultat est plus affiné et nous permet de mieux statuer sur notre hypothèse de départ. On peut donc dire qu'un niveau de connaissance élevé des questions relatives à la culture générale au DS est de bon augure pour une pulsion positive des étudiants à donner de leur sang. Mais, une connaissance élevée des questions concernant les risques liés au DS les rendra rétif au DS.

La non significativité de l'autre composante de l'indice du niveau de connaissance (celle relative aux connaissances liées aux mécanismes du DS), n'est pas surprenant dans la mesure où il s'agit des connaissances techniques beaucoup plus nécessaire aux personnels de la santé. Cependant son coefficient positif renseigne sur le fait qu'il peut être considéré comme un plus jouant en faveur de l'effet déjà produit par le niveau de connaissance de culture générale du DS de l'étudiant.

Par ailleurs, cette estimation confirme les résultats précédemment obtenus au *tableau 8* concernant la significativité et le sens de variation de toutes les autres variables (« l'individu a déjà fait un DS, les étudiants appartenant aux communautés de foi musulmanes, Témoin de Jéhova et les sans religions ou animistes, appartenance à une association, étudiants habitant les régions du NOSO et grand Nord, ainsi que la présence d'une incitation non monétaire) avec un ajout de nouvelles variables significatives.

Il apparait que l'âge a un effet positif et significatif dès lors. C'est-à-dire que, comparativement aux étudiants n'étant pas disposés à offrir de leur sang, le fait d'être âgé de moins de 23 ans augmente la probabilité d'être disposé à donner du sang de 0.02 chez ceux qui étaient déjà disposé à donner du sang et de *0.038* chez les indécis.

V. Conclusion

En somme, nous cherchions dans ce chapitre à apprécier le niveau de connaissance du don de sang des étudiants au Cameroun et son effet sur la disposition à donner du sang. Nous avons fait une hypothèse selon laquelle, le niveau de connaissance du DS influençait négativement la disposition à donner du sang.

Nos résultats ont montré que, les étudiants avaient un niveau de connaissance du DS assez bas donné par un indice de niveau de connaissance moyen de 0,48. Un logit multinomial a confirmé que le niveau de connaissance avait effectivement un effet significatif sur la disposition des étudiants à donner de leur sang. Seulement, cet effet diffère selon le type de connaissance acquis par l'étudiant. Il s'avère que les connaissances relatives à la culture générale du DS sont favorables à disposer l'étudiant à offrir de son sang mais, une connaissance élevée des risques liés au DS de ceux-ci tendrait à annihiler leur pulsion à une offre future de sang. On peut dire que notre hypothèse de départ se vérifie partiellement.

VI. Recommandations

Il serait donc important que pour les sensibilisations où lors des opérations de collectes de sang, une batterie des questions portant uniquement sur celles considérées et admises sans ambiguïtés comme culture générale aux questions de DS soient vulgarisées aussi bien auprès de ceux qui sont venus faire le don qu'auprès de ceux qui les accompagnent. Concernant les questions liées aux risques du DS, nous préconisons de ne pas en faire fi mais plutôt d'en parler dans l'optique de les rassurer car *78%* sont convaincus qu'il y a des risques. Au lieu de leur laisser la latitude de s'en faire une idée, il vaut mieux débattre d'un sujet sans le traiter que de le traiter sans en débattre.

Par ailleurs, nous avons noté qu'en majorité, les variables qui expliquent la disposition des étudiants à donner de leur sang sont celles prédites par la théorie du comportement planifié (TCP) de *Ajzen (1985).* Il s'agit principalement des normes sociales (religion et le fait pour un étudiant d'appartenir à une association) et le sentiment d'auto-efficacité (le fait pour un individu d'avoir déjà été transfusé). Quant aux variables issues de la littérature économique (incitation monétaire et non monétaire), leur effet reste mitigé par rapport à leur aptitude à agir sur la disposition des étudiants à offrir de leur sang. Comme recommandation, nous pensons que pour un travail en amont à la préparation des individus pour leur participation future à l'offre de sang, les théories issues de la psychologie et la sociologie seraient plus appropriées d'où la nécessité d'associer les autres sciences sociales au cas sanguin camerounais longtemps considéré comme relevant uniquement de la médecine.

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Déclaration de Conflits D'intérêts

Les auteurs n'ont déclaré aucun conflit d'intérêt potentiel en ce qui concerne la recherche, la rédaction et/ou la publication de cet article.

Déclaration Ethique

Cette étude s'inscrit dans le cadre de notre travail de thèse intitulé "*Le marché des organes humains: Essai sur les mécanismes d'offre et de demande de sang des étudiants au Cameroun*". Elle ne comporte pas de tests sur les humains ou les animaux. Cependant, nous avons eu des recommandations et des autorisations pour la réalisation de cette étude.

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Creation of Logistics Clusters for the Revolution of the Mobility of Public Electric Transport to Promote a Greener Panama

By Yovani Barría
Universidad de Panamá

Abstract- Referring to the fact that a logistics cluster consists of a group of companies within the same sector with the main objective of improving their competitiveness due to the cooperation between those who form it. Logistics is a very important section mainly in many companies dedicated to the transport of goods and, that is why, why many are opting for this option that allows them to reduce costs and, therefore, be more competitive. In freight transport, the logistics cluster is especially important, mainly due to the saturation of infrastructures. For this reason, certain mechanisms are needed to support the organization of the means available to companies in the sector. Thus, a logistics cluster ensures that the supply chain is not broken at any time and delivery times are respected at all times. In this sense, the methodology used in this article was of a qualitative documentary and bibliographic type with the application of a brief interview where the analysis of selected ones with reference to the creation of logistics clusters for the revolution and mobility of electric public transport will be reflected. The statistical data will be obtained from the repositories and selected articles to provide a better understanding of the results, in turn, it will have their respective conclusions and bibliographic references.

Keywords: *clusters, electronic, mobility, transport, logistics.*

GJHSS-E Classification: *DDC Code: 658.5 LCC Code: HD38.5*



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Creation of Logistics Clusters for the Revolution of the Mobility of Public Electric Transport to Promote a Greener Panama

Creación de Clústeres Logísticos Para la Revolución de la Movilidad de Transporte Publico Eléctrico Para Impulsar un Panamá Más Verde

Yovani Barría

Resumen- Haciendo referencia en que un clúster logístico consiste en una agrupación de empresas dentro del mismo sector con el principal objetivo de mejorar su competitividad debido a la cooperación entre los que lo forman. La logística es un apartado muy importante principalmente en muchas empresas dedicadas al transporte de mercancías y, es por eso, por lo que muchas están optando por esta opción que les permita reducir costes y, por tanto, ser más competitivo. En el transporte de mercancías el clúster logístico es especialmente importante, debido, principalmente, a la saturación de infraestructuras. Por ello, se necesitan determinados mecanismos que den soporte a la organización de los medios disponibles para las empresas del sector. Así, un clúster logístico permite asegurar que no se rompa la cadena de suministro en ningún momento y los plazos de entrega se respeten en cada momento. En este sentido, la metodología utilizada en el presente artículo fue de tipo cualitativo documental y bibliográfico con la aplicación de una breve entrevista donde se reflejará el análisis de estudios seleccionados con referencia a la creación de clústeres logísticos para la revolución y la movilidad del transporte público eléctrico. Los datos estadísticos serán obtenidos de los repositorio y artículos seleccionados para brindar una mayor comprensión de los resultados a su vez contará con sus respectivas conclusiones y referencias bibliográficas.

Palabras clave: clústeres, electrónico, movilidad, transporté, logística.

Abstract- Referring to the fact that a logistics cluster consists of a group of companies within the same sector with the main objective of improving their competitiveness due to the cooperation between those who form it. Logistics is a very important section mainly in many companies dedicated to the transport of goods and, that is why, why many are opting for this option that allows them to reduce costs and, therefore, be more competitive. In freight transport, the logistics cluster is especially important, mainly due to the saturation of infrastructures. For this reason, certain mechanisms are needed to support the organization of the means available to companies in the sector. Thus, a logistics cluster ensures that the supply chain is not broken at any time and delivery times are respected at all times. In this sense, the methodology used in this article was of a qualitative documentary and bibliographic type with the application of a brief interview where the analysis of selected ones with reference to the creation of logistics clusters for the revolution and mobility of electric public transport will be reflected. The statistical data will be obtained from the repositories and selected articles to provide a better understanding of the results, in turn, it will have their respective conclusions and bibliographic references.

Keywords: clusters, electronic, mobility, transport, logistics.

Author: Universidad de Panamá, Panamá. Facultad de Administración de Empresas y Contabilidad. e-mail: yovani.barria@up.ac.pa

I. Introducción

Primeramente, es importante decir que la electrificación de los sistemas de transporte se presenta como una acción contundente para transformar nuestra movilidad y a la vez, mejorar nuestra calidad de vida. Sin duda, el paso a la movilidad eléctrica es una de las mayores revoluciones que están sucediendo en muchos países. "Por lo cual, América Latina y el Caribe deben continuar fortaleciendo sus esfuerzos para ser parte de este cambio transformador" (Gomez, 2015). Este breve recuento regional confirma que la movilidad eléctrica avanza en América Latina y el Caribe asi como también en Panama. Cabe destacar los principales hallazgos:

> En primer lugar, a medida que una mayoría de los países de la región incursiona en la movilidad eléctrica, se ponen a prueba tecnologías, incentivos básicos, así como la primera ronda de infraestructura de recarga predominantemente centros de carga lenta.

Segundo, los países están avanzando a su propio ritmo. Algunos lideran la transición a la movilidad eléctrica, otros avanzan con precaución. Mientras que un grupo más pequeño todavía se encuentra en una fase de espera.

Tercero, los países que avanzan más rápido han creado estrategias nacionales que involucran a varios entes públicos y, de manera critica, al sector privado. Han entendido la visión de ir más allá de un ministerio y del gobierno nacional. Donde aún existe una brecha, es en el involucramiento de los usuarios, lo cual podrían venir más adelante. Cuarto, los esfuerzos

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críticos están surgiendo no solo a nivel de los gobiernos nacionales, sino también en los gobiernos locales. Algunos municipios han optado por acciones más rápidas y sustanciales que los gobiernos nacionales, con un fuerte enfoque en los autobuses y taxis eléctricos.

Ahora bien, a nivel de Panamá se puede decir que de acuerdo con información de registro de automóviles proporcionada por la Asociación de Distribuidores de Automóviles de Panamá (ADAP), se estima que, desde el 2011 a marzo de 2019, se han registrado 218 vehículos eléctricos en Panamá, 48 vehículos eléctricos de baterías y 170 híbridos enchufables. Si incluimos los híbridos convencionales dentro del análisis obtenemos una cifra total de 1,961 autos eléctricos e híbridos con un porcentaje de participación de 0.83% del total (11,292) de vehículos registrados en el año 2019, entre enero y marzo.

Las emisiones provenientes del subsector de fuentes de combustión móvil son el 26% del total de emisiones del país y el 46% de las emisiones del sector energía[ii]. Esto indica que la descarbonización del transporte terrestre debe ser uno de los ejes principales para las políticas de reducción de emisión ante el cambio climático para Panamá.

Panamá está en proceso de reportar avances y ampliar la ambición de sus acciones climáticas o NDC, en donde busca incluir compromisos en materia de transporte; las metas del NDC actual, en el sector energía, son para el año 2030, por lo cual se ha establecido el 2030 como el año meta para el aporte estimado por parte de esta estrategia de movilidad eléctrica. La movilidad eléctrica es clave para lograr la mitigación de emisiones en el sector transporte, por lo que su aporte podría ser incluido en los NDC's y ser presentado como una acción de mitigación apropiadas para Panamá o NAMA. Implementar esta estrategia de movilidad eléctrica requerirá una cantidad importante de recursos financieros, los cuales podrían ser movilizados al establecer metas claras para el sector transporte que ayudaría a dar forma las posibles contribuciones en la mitigación de GEI.

Este escenario nos obliga a prepararnos para una transformación del sector transporte y la introducción de vehículos más eficientes, la tecnología que mayor eficiencia brinda ante los vehículos con motor de combustión interna son los vehículos eléctricos. Panamá ha sido activo en la implementación de pilotos de movilidad eléctrica y el desarrollo de un incentivo de importación. Sin embargo, se requerirá de impulsos adicionales para alcanzar las metas propuestas.

Los vehículos eléctricos presentan una interesante oportunidad para el país y el mundo para alcanzar las metas descritas, en un corto periodo la movilidad eléctrica presenta cada vez una mayor eficiencia ambiental y económica, lo cual ayudaría a reducir la emisión de GEI, especialmente, al obtener su energía de una matriz energética con creciente participación de fuentes renovables.

Por lo tanto, se requiere la creación de condiciones propicias y la coordinación entre políticas públicas, para que el desarrollo de la movilidad eléctrica ocurra de forma tal que se aprovechen por completo sus beneficios. "El impacto de una adopción masiva de la movilidad eléctrica abarca principalmente a los sectores de energía, medioambiente y transporte" (Castillero, 2015). Además de la posible contribución al alcance de las metas de consumo energético y emisiones ya mencionadas, los impactos en movilidad también son relevantes en temas de salud pública. El desarrollo de los vehículos eléctricos viene aparejado con una serie de adelantos como los vehículos autónomos conectados, el internet de las cosas, y en la forma en que las personas viajan, temas que son de importancia hoy en día y tendrán mayor auge en los próximos años.

Pese a su eficiencia energética y ambiental, los automóviles eléctricos ocupan espacio vial igual que los convencionales, por lo que es importante que el desarrollo de esta tecnología venga acompañado de otros esfuerzos que ayuden a hacer el transporte más eficiente de forma conjunta. En este sentido los buses eléctricos son una alternativa interesante que también se contempla en esta estrategia y que se alinean con los esfuerzos en materia de transporte masivo como las líneas del Metro, la recuperación de espacios públicos entre otras, que buscan maximizar la eficiencia y lograr una movilidad sostenible.

II. Métodos

El área metodológica estuvo configurada mediante una investigación tipo cualitativo. Por lo tanto, se puede decir qué la investigación cualitativa, conocida también con el nombre de metodología cualitativa, es un método de estudio que se propone evaluar, ponderar e interpretar información obtenida a través de recursos como entrevistas, conversaciones, registros, memorias, entre otros, con el propósito de indagar en su significado profundo.

Se trata de un modelo de investigación de uso extendido en las ciencias sociales, basado en la apreciación e interpretación de las cosas en su contexto natural. Se utilizo la aplicación del instrumento del cuestionario con 4 preguntas y como técnica una breve entrevista a 10 personas en el área de medio ambiente y la Secretaría Nacional de Energía.

En este sentido el desarrollo de las preguntas quedo estipulado de la siguiente manera:

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Tabla Nº 1: Desarrollo de cuestionario

Nº de Pregunta	Descripción de la pregunta
Ítems 1.	¿Es beneficioso el servicio del transporte eléctrico para Panamá?
Ítems 2	¿Existe desventajas económicas a la hora de desarrollar una innovación con el transporte eléctrico en panamá?
Ítems 3.	¿Es importante la existencia de una estrategia de Movilidad Eléctrica para el cuidado del medio ambiente?
Ítems 4.	¿Existirá un impacto positivo en la concientización del cuidado del ambiente en la población panameña con el trasporte eléctrico?

III. Resultados

Para poder llevar a cabo los resultados de este estudio se hicieron algunos análisis de estudios en referencia al tema los cuales se reflejarán a continuación:

Según el autor Ramírez (2020) en su estudio titulado; "Modernizar el transporte público" señala que:

> [a]Las ciudades en la región han experimentado una rápida urbanización una tasa de crecimiento urbano de 93% desde los años cincuenta que la ha llevado a tener uno de los crecimientos en urbanización más altos del planeta. En la actualidad, el 80% de la población vive en ciudades (comparado con 40% en la década de los cincuenta). El crecimiento y mejora del transporte público no ha ido al mismo ritmo y esto ha generado altos niveles de congestión vial, resultando en una demanda cada vez más evidente por servicios de transporte público de calidad y menos contaminantes"(pag23).

Por lo cual se puede dcir que estos cambios requieren reformas estructurales, la modernización de los buses (medio de transporte terrestre más utilizado en la región) ofrece un punto de partida pragmático hacia una transformación que podría mejorar la vida cotidiana de millones personas. La electrificación, como un medio para modernizar las flotas de buses está ocurriendo a un ritmo sin precedentes.

En este sentido, según Ortos (2019) en su estudio titulado "Gestar ecosistemas de innovació" manifiesta que:

> "El mundo atraviesa una transformación tecnológica en muchos sectores – algunos hablan de una "cuarta revolución industrial" [20]. Hay por tanto una oportunidad de crear condiciones habilitantes para que las economías de la región aprovechen los cambios y construyan a partir de los mismos. Como es el caso de la gestación de nuevos sistemas de innovación alrededor no solo de tecnologías limpias sino también de tecnologías de digitalización" (pag 57.).

Basado en lo dicho con anterioridad se puede decir que la movilidad eléctrica crea un espacio para explorar nuevas industrias, servicios y por tanto nuevos empleos. A la vez, la innovación puede estimular sinergias entre el esfuerzo por modernizar el transporte público. Por ejemplo, en la región existen grandes necesidades de innovar para mejorar la calidad del servicio y seguridad de los usuarios, así como integrar la dimensión de género. La combinación de tecnologías digitales y movilidad eléctrica puede proporcionar beneficios positivos en la creación de nuevos negocios y servicios. Tal es el caso en países pioneros en movilidad eléctrica, donde comienzan a aparecer nuevos negocios. Por ejemplo, aplicaciones de software para servicios de car sharing o redes de carga de vehículos eléctricos, por nombrar algunos.

Ahora bien, a contiuacion se presenta los resultados de la entrevista emitida. La cual la cual fue de manera dicotomica respondiendo mediante un Si/ No, la repuesta de su preferencia.

Items 1: ¿Es beneficioso el servicio del transporte eléctrico para Panamá?

Cuadro Nº1: Servicio del transporte

Descripcion	Cantidad	Porcentaje
SI	10	100%
NO	0	0%
TOTAL	10	100%

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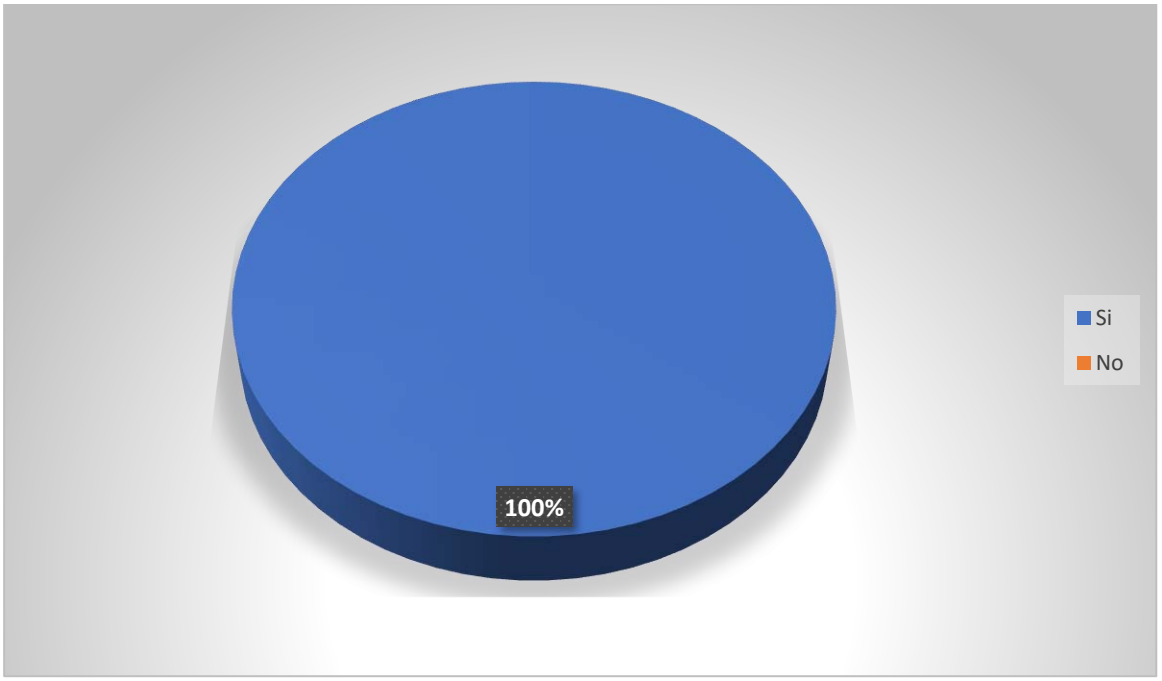

Fuente: Personal entrevistado

Analisis

A través de la presente gráfica se logró evidenciar que la mayoría de los entrevistados con el 100% de 10 personas total identificaron que obtener o implementar un servicio de transporte electrónico para Panama es supremamente beneficioso para el ambiente y para el país como tal.

Items 2: ¿Existe desventajas ambientales a la hora de desarrollar una innovación con el transporte eléctrico en Panamá?

Cuadro Nº2: Desventajas ambientales

Descripcion	Cantidad	Porcentaje
SI	0	0%
NO	10	100%
TOTAL	10	100%

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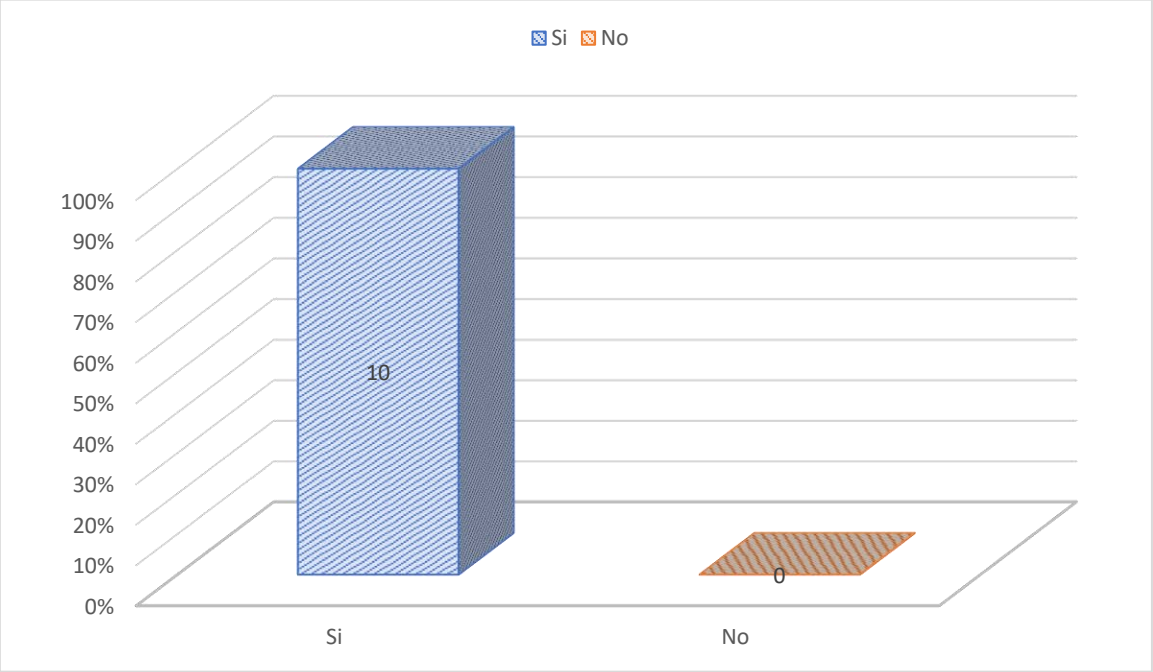

Fuente: Personal entrevistado

Análisis

A través de la presente gráfica se puede observar que el 100% de los entrevistados indicaron que no existe ningún tipo de desventaja al nivel del medio ambiente a la hora de desarrollar una innovación con el transporte eléctrico en Panamá.

Ítems 3: ¿Es importante la existencia de una estrategia de Movilidad Eléctrica para el cuidado del medio ambiente?

Cuadro Nº3: Estrategia de Movilidad

Descripcion	Cantidad	Porcentaje
SI	9	90%
NO	1	10%
TOTAL	10	100%

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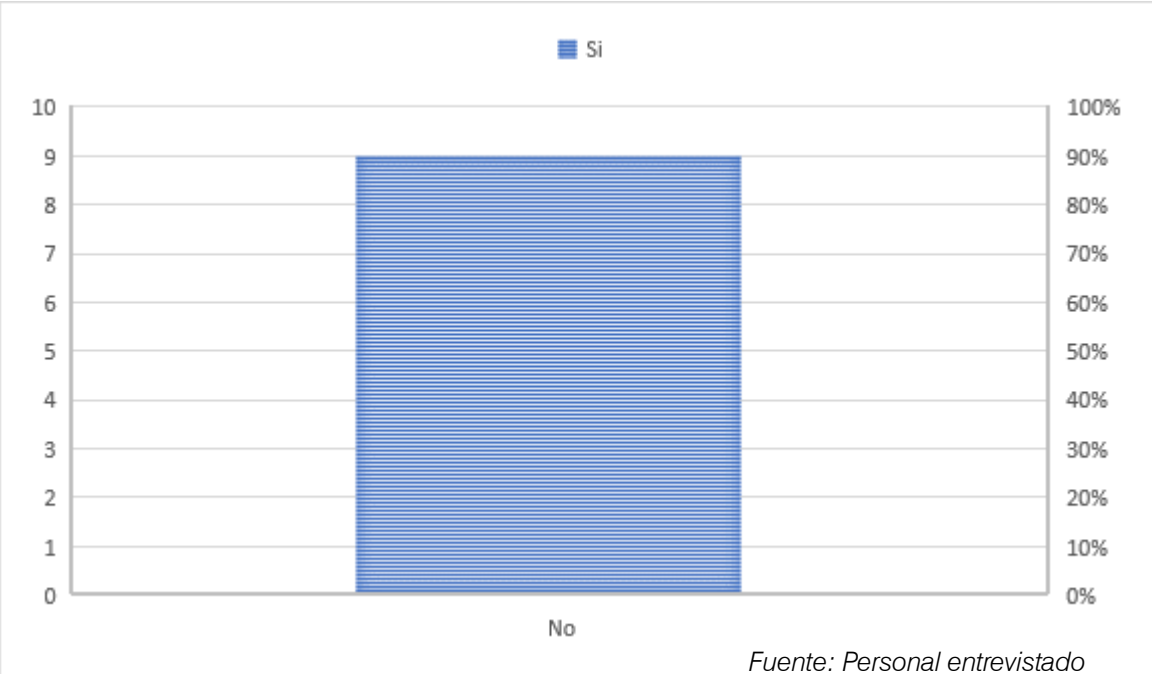

Fuente: Personal entrevistado

Análisis

A través de la presente gráfica se puede observar que el 90% de los encuestados indicaron que es importante la existencia de una estrategia de innovación acerca de la movilidad eléctrica para el cuidado del medio ambiente en el país panameño.

Ítems 4: ¿Existirá un impacto positivo en la concientización del cuidado del ambiente en la población panameña con el trasporte eléctrico?

Cuadro Nº4: Concientización del cuidado

Descripcion	Cantidad	Porcentaje
SI	10	100%
NO	0	0%
TOTAL	10	100%

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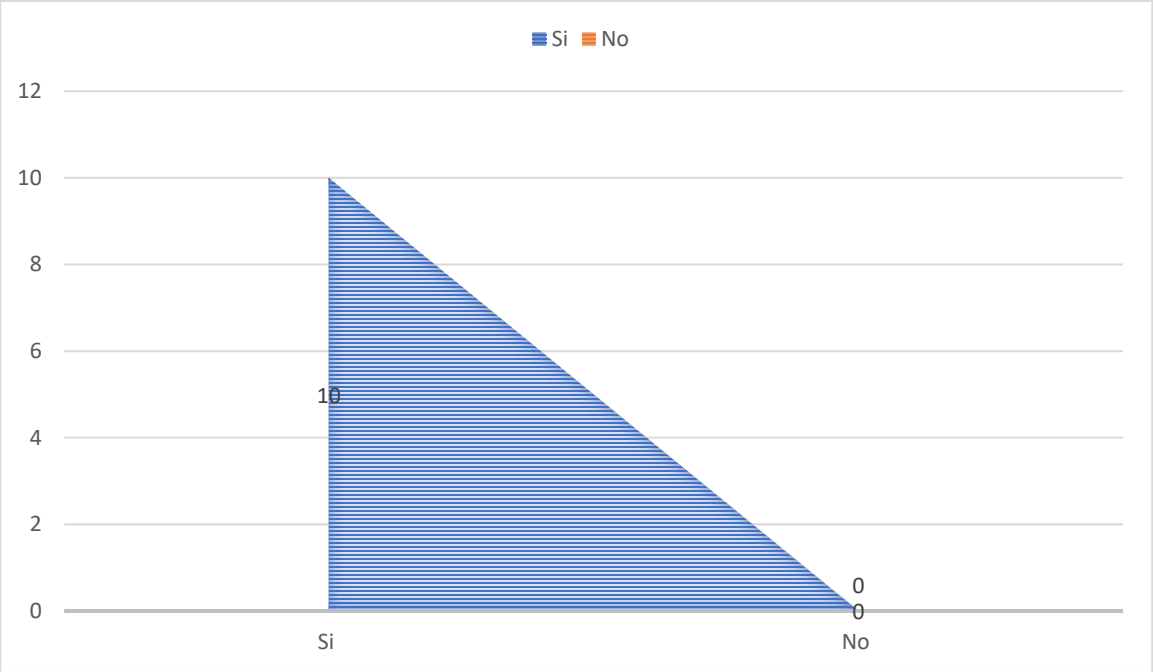

Fuente: Personal entrevistado

Análisis

Pues de la presente gráfica se puede observar que la mayoría indicó con un 100% que existirá un impacto positivo en la concientización del cuidado del ambiente en la población panameña con el trasporte eléctrico.

IV. Discusión

Una vez evidenciado con anterioridad los resultados emitidos por los análisis de los estudios seleccionados y la pequeña entrevista aplicada se puede decir como análisis de discusión final la importancia que tienen implementar la movilidad eléctrica para el transporte público dentro de Panamá tanto para el medio ambiente como la concientización a la población panameña del cuidado del ambiente para reducción inclusive de costos económicos beneficiando en todas las maneras al país.

V. Conclusión

Para poder ejecutar la estrategia se debe tener una estructura institucional capaz de coordinar la ejecución de esta. Este grupo debería estar dotado de recursos humanos y financieros, acompañado de la capacidad de convocatoria de otras instancias del gobierno para poder llevar a cabo los puntos clave de la estrategia. Es por ello que, la implementación de esta Estrategia Nacional de Movilidad Eléctrica requiere la participación activa del sector privado, el gobierno debe promover y facilitar el desarrollo de iniciativas privadas en materia de movilidad eléctrica y dar señales que guíen estas iniciativas de forma tal que estén alineadas con la Estrategia Nacional y que esta a su vez se retroalimente del sector privado para robustecerla y unificar los esfuerzos públicos y privados, logrando sinergias, que faciliten el despliegue de la tecnología de vehículos eléctricos en el país.

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Does the Academic Performance of the Francophone Education Subsystem Exceed that of the Anglophone Education Subsystem at Primary Level? Evidence from Cameroon

By Mafang Lionie, Fomba Kamga Benjamin & Tafah Edokat Oki Edward

University of Yaoundé 2-Soa

Abstract- This paper aims to implement the differences in academic performance between students in the francophone and anglophone education subsystems at primary level in Cameroon. Using data from the Programme d'Analyse des Systèmes Educatifs de la Confemen organised in 2014, the study employs a two-stage modelling approach. Firstly, the estimation of educational production functions by OLS shows that student characteristics and school context are important determinants of students achievement in the anglophone and francophone subsystems. Second, the Oaxaca-Blinder (1973) decomposition method showed that at the end of the primary school year, students in the francophone education subsystem perform better than those in the anglophone subsystem. The share of explained factors contributes to increase this differential to more than 100% in both mathematics and language, therefore, it does not matter how much the unexplained share is given, it does not suggest the existence of discrimination in school performance towards the anglophone subsystem.

Keywords: student achievement, francophone subsystem, anglophone subsystem, primary, cameroon, oaxaca and blinder.

GJHSS-E Classification: DDC Code: 966.0097541 LCC Code: DT532.5



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Does the Academic Performance of the Francophone Education Subsystem Exceed that of the Anglophone Education Subsystem at Primary Level? Evidence from Cameroon

Mafang Lionie [α], Fomba Kamga Benjamin [σ] & Tafah Edokat Oki Edward [ρ]

Abstract- This paper aims to implement the differences in academic performance between students in the francophone and anglophone education subsystems at primary level in Cameroon. Using data from the Programme d'Analyse des Systèmes Educatifs de la Confemen organised in 2014, the study employs a two-stage modelling approach. Firstly, the estimation of educational production functions by OLS shows that student characteristics and school context are important determinants of students achievement in the anglophone and francophone subsystems. Second, the Oaxaca-Blinder (1973) decomposition method showed that at the end of the primary school year, students in the francophone education subsystem perform better than those in the anglophone subsystem. The share of explained factors contributes to increase this differential to more than 100% in both mathematics and language, therefore, it does not matter how much the unexplained share is given, it does not suggest the existence of discrimination in school performance towards the anglophone subsystem. This calls for policy makers to consider their role in reducing the various sources of inequality among students of all kinds, particularly that focused on the linguistic-educational subsystem.

Keywords: student achievement, francophone subsystem, anglophone subsystem, primary, cameroon, oaxaca and blinder.

I. Introduction

Studies on the comparison of student outcomes are widespread in the field of economics of education. However, research on comparative studies that index the language criterion is more focused on bilingual or multilingual countries. Depending on the level of development, the issue is addressed according to the status of language in the country. Indeed, in developed countries, more specifically in Europe or America, the work discussed compares student outcomes according to ethnicity, community or language region (Sibano & Agasisti, 2013; Edgerton & al., 2008; Vandenberghe, 2011; Tomul, 2009; Hirt, 2008; Ning & al., 2016). One of the issues addressed in this comparison universe is that of examining the factors that contribute to the difference in educational outcomes between students according to any of the above-mentioned comparison criteria.

In the context of developing countries, particularly those in sub-Saharan Africa, most of which have been marked by colonial history, the language of education is a criterion for differentiating pupils. Depending on the language of the colonising country, these countries have adopted foreign languages as a means of teaching and learning in their education systems. A distinction is made between countries that use a foreign language in parallel with a local language as a medium of instruction (the case of most East and West African countries) and countries that use only one or two foreign languages as a medium of instruction. In the light of these different classifications, there are countries with unilingual systems and countries with bilingual education systems.

Cameroon presents a rather particular context insofar as bilingualism refers to the coexistence of two distinct educational subsystems, one French-speaking and the other English-speaking. The Cameroonian education system is therefore the consequence of the dual French and British colonial heritage. Indeed, Cameroon has been under German protectorate since 1884 and the fact that the latter lost the First World War in 1916 led to the retrocession of Cameroon to the two victors of this war, thus causing the splitting of Cameroon into two parts, namely an eastern part, administered by France and a western part, administered by Great Britain. The two powers had very disparate modes of administration and their respective languages (french and english) were used in each of their territories.

After the proclamation of the independence of African countries in the 1960s, Cameroon was obliged to review its educational policy, and this change required both a new orientation in education and a reorganisation of the school system that had been put in place during the colonial era. Following the reunification of 1st October 1961, the country proposed a policy based on bilingualism in an effective way; and it was at this time that the problem of compatibility of the educational subsystems in the country arose.

Author α σ: University of Yaoundé 2-Soa, Faculty of Economics and Management. e-mails: maflionie@yahoo.fr, fomba1@yahoo.fr
Author ρ: University of Bamenda, Faculty of Economics and Management. e-mail: edokat@yahoo.fr

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During all the periods that the form of the state of Cameroon has gone through, starting with the federal period and moving on to the unitary state, the educational structures have been modified to adapt to the different realities of the country. For example, during the federal state, there were two ministries of basic education in the two federated states (French-speaking Cameroon and English-speaking Cameroon), which were headed at the federal administration level by a national ministry of education. Federal law n°63/13 of 16 June 1963, which prefigured the structures of education at that time, regulated primary and secondary education according to more or less different dimensions (e.g. the duration of schooling, its distribution according to cycles as well as the organisation of schooling[1], etc.). This organisation is inspired by past experiences in each state during the colonial period and also reflects the country's desire to preserve the national unity of each linguistic entity. Thus, structural unification with a view to identical primary education for all does not seem to be a priority (Njiale, 2006) insofar as French and English are adopted as languages of instruction.

The proclamation of the unitary state in 1972 thus gave rise to a single education system composed of two education subsystems, one french-speaking and the other English-speaking. In relation to the various commitments that Cameroon has made at the international level through the declaration of the objectives of education for all (universal education for all, reduction of inequalities of all kinds), as well as the objectives of sustainable development, the authorities steering the education sector are directing their actions in terms of educational policy both towards improving the performance or efficiency of its education system and the harmonisation of these funds. Particular emphasis is placed on bilingualism, which is seen here as an optimal instrument for dealing with the dual choice of the Cameroonian education system through the creation of 'bilingual' establishments. However, it is clear that these schools do not follow a common curriculum for all students. On the contrary, the Cameroonian education system is organised around an Anglophone and a Francophone sub-system, each of which has its own specificities that set it apart from the other (Atangana, 2009). Also, the school orientation law of 15 April 1998, which definitively establishes the harmonisation of the two education sub-systems, is quite explicit in its article 15, although it promotes the harmonisation of education cycles at the primary level, it establishes that harmonisation does not strictly mean unification.

Thus, statistics on indicators of school performance between pupils in the two education subsystems suggest differences in performance. For example, if we look at the success rate in the end-of-primary cycle exams, it appears that pupils in the Anglophone education subsystem obtain on average success rates for the First School Certificate (FSLC) that are always higher than the success rate for the Primary School Certificate (CEP) for pupils in the Francophone subsystem (MINEDUB, 2012, 2013, 2014, 2015, 2016). Even though this type of certification is not based on standardised assessment criteria, PASEC statistics that take these elements into account also show a gap in levels of academic achievement between pupils in the Anglophone and Francophone subsystems. Indeed, at the end of schooling, standardised scores on the basis of 100 show that in mathematics, pupils in the francophone subsystem have an overall average score of 49.2 points compared to those in the anglophone subsystem, which was 46.2 points in 2004/2005 (PASEC, 2007). Also, according to the PASEC report (2016), in 2014[2], students in the francophone subsystem had an overall average score in language of 516.96 points compared to 534 points in the anglophone subsystem. In mathematics, although the average scores of students in both subsystems are below the minimum threshold of 500 points, those of the Anglophone subsystem remain higher than those of the Francophone subsystem (498.1 points against 483.80 points).

Despite the considerable attention given to educational achievement, little work has been done to elucidate the factors that explain differences in educational performance along linguistic lines in sub-Saharan Africa in general and in Cameroon in particular. Most of the studies that have been done focus on developed countries. This study therefore aims to fill the gap in the literature concerning the factors that explain the difference in school achievement of pupils at the end of primary school in Cameroon according to another comparison criterion that is less discussed.

The remainder of this paper is organised as follows: section 2 presents the contextual framework of the education system in Cameroon, section 3 reviews the literature, section 4 presents the methodology, section 5 presents the variables and their statistical description, section 6 discusses the results and section 7 concludes.

[1] At primary level, there were two parallel cycles of six and seven years for the Francophone and Anglophone subsystems respectively. The secondary level of general education lasted seven years in both states, but was distributed differently between the cycles. At secondary level, for example, in the Francophone subsystem, the duration of the first and second cycles was 4 years and 3 years respectively. In the Anglophone sub-system, the first cycle lasted 5 years and the second cycle 2 years.

[2] The evaluation standards of the PASEC survey carried out in 2014 were different from those of 2005.

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II. Contextual Framework of the Anglophone and Francophone Education Subsystems in Cameroon in Primary Education: Interferences and Differences

The educational subsystems which, despite the elements of convergence, are also characterised by aspects of divergence. The latter attempt to maintain, rather than diminish over time, both in terms of the organisation of schooling, the duration of teaching, the content of school curricula, teaching practices, etc.

After the ministerial reshuffle of 2002, the Ministry of Basic Education is responsible for the administrative and pedagogical management of public and private primary schools in the two education subsystems at primary and nursery levels. Thus, the State provides funding for public schools, while public schools are financed from the promoter's own funds. The Francophone subsystem is applied in the predominantly Francophone regions, but it should be noted that it is not exclusive, i.e. some schools in these regions also apply the Anglophone subsystem. Similarly, the Anglophone subsystem applies in predominantly Anglophone regions, and is not exempt from the fact that there are some schools that apply the Francophone educational model.

From the point of view of structure, primary education in the two linguistic-educational sub-systems caters for children from 6 to 11 years of age and is divided into three levels, namely level one, which includes the language initiation section (SIL) or Class One, the preparatory course (CP) or Class Two, the second level is also spread over two years and includes the elementary course or Class Three; and the elementary course two or Class Four. The last level includes class five and class six. At the end of primary school, pupils take the Certificat d'Etude Primaire (CEP) for the Francophone subsystem and the First School Living Certificate (FSLC) for the anglophone subsystem.

As far as the curriculum is concerned, the subjects taught are specific to each sub-system and the teaching contents are more or less the same in both educational sub-systems. Table A1 in the appendix shows in detail the school contents of the primary cycle (class CP/class 2) according to the two sub-systems in mathematics.

III. Review of the Literature

Like Hanushek (2002) in his comparative study of private and public school performance, we will ask two basic questions: first, is the academic performance of students in the Anglophone subsystem superior to that of the Francophone subsystem, all other things being equal; second, if so, is this due to the best schools or the best students?

First of all, before knowing the factors that explain the differences in school performance between students of the linguistic-educational subsystems, it would be interesting to first question the literature on the factors of school performance. To this end, there are groups of factors in the literature which explain school performance and which can be grouped into two main groups of factors, namely school-based factors and non-school-based factors. It is from the pioneering work of Coleman et al (1966) that research on the determinants of school performance has been deeply enriched. The authors concluded that factors related to student characteristics are more important in explaining differences in student performance than school-related factors. Also, not all research results from each group of factors are unanimous in their influence on student academic performance.

Apart from research that has aimed to examine the factors traditionally recognised as determinants of school performance, a vast field of comparative education research has developed that aims to compare student performance along specific dimensions, both at the student level (e.g. student gender) and at the school level (public/private), while identifying the contribution of each factor or group of factors in explaining the achievement gap. As regards the language criterion, a limited literature has been developed in bilingual or multilingual countries. In industrialised countries, the education system is highly decentralised, granting management of the education sector to each language community. The languages of schooling are used in the same way as the mother tongues used within the community. In contrast, in developing countries, particularly in Africa, comparative education research focuses on education systems where the criterion for differentiation is the language used in the learning/teaching process. It is in this logic that the performance of students is compared according to the language subsystem in which they are taught.

In countries characterised by linguistic diversity resulting in a multitude of education systems, comparative research on student performance according to linguistic, ethnic or linguistic-educational community membership is not only under-documented, but also not consensual. Indeed, Hirtt (2008), uses school data from Belgium, notably those from PISA in 2006, to see the contribution of both school and non-school factors in explaining the performance differential between students from the two linguistic communities, Flemish and French. The author concludes that although there is a difference in educational outcomes between students of the two language communities, part of the performance differential remains unexplained. The explained part of the difference can be attributed to both school and non-school variables such as social origin, migration, school delays as well as stream dispersion.

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Tood and Wolpin (2003) compared the educational achievements of pupils taking into account the specificities of each ethnicity in terms of Italian, German and French speakers. Their analyses lead to the results that socio-economic and cultural status together explain 60% of the variation in performance between schools, and that headmaster and teacher autonomy explain much of the variation in performance between language communities.

In the same vein, Perelman & al., (2009), following a comparison of Flemish, French-speaking students, find that the factors that contribute to the explanation of performance between students from these three communities are attributable to personal characteristics and family environment. However, much of the unexplained gap persists between students.

Felouzis & al., (2011) show from Belgian data that the most structuring principle of educational inequalities is the socio-economic background of pupils and that these inequalities do not have the same magnitude in each linguistic educational community. Moreover, the differences in average scores between pupils from different language communities are largely related to the age of the pupils. In addition, educational inequalities are strongly correlated with the extent of social segregation in the streams of each language educational community.

IV. Methodology

In line with the work of Meunier (2005), this paper uses in a first step the educational production function to estimate students' test scores in mathematics and language. This model postulates that a student's performance i is dependent on a set of factors and can be formalised as follows:

$$S_i = \beta X_i + \varepsilon_i \quad (1)$$

Where S_i is the student's average score and X_i is the set of variables that affect the student's test score. It includes two types of variables, namely the variable of interest, which is a binary variable reflecting the choice of the linguistic-educational subsystem, and the set of control variables relating to the characteristics of the student and his/her family, as well as those relating to the characteristics of the school and those of the community. ε_i represents the error term.

If we wish to test the hypothesis that the two linguistic-educational subsystems are assessed differently, it is necessary to make separate estimates of equation (1) for each group, i.e. one for the anglophone subsystem and another for the francophone subsystem. The performance equation for students in the Francophone subsystem is therefore one, and the performance equation for students in the Anglophone subsystem is another, and is formulated as follows:

$$\begin{cases} S_i^F = X_i^F \beta^F + \varepsilon^F & (2) \\ S_i^A = X_i^A \beta^A + \varepsilon^A & (3) \end{cases}$$

Where the exponents F and A represent the Francophone and Anglophone subsystems respectively. By estimating equations (2) and (3) by the ordinary least squares method, it is possible to identify the determinants of students' academic performance for each linguistic-educational subsystem.

a) Decomposition of the academic achievement gap between students: Oaxaca and Blinder's method (1973)

In a first step, the Oaxaca-Blinder (1973) decomposition technique is used to examine the educational achievement differential between the two groups (Francophone and Anglophone subsystems). Although this method is much more popular in the field of the labour market with wage differentials by gender or race, this technique has been little studied in the field of the economics of education. In this article we will examine this language-based educational outcome differential that is attributable to the educational subsystem.

After having determined for each educational subsystem the explanatory factors of the pupils' school performance, the current question will be to know what are the explanatory factors of this gap, so the formalisation is such that :

$$R = E\left(S^F\right) - E\left(S^A\right) \quad (4)$$

Where R is the difference in estimated score means between each group, accounted for from the predicted variables of the different groups from the linear models (2) and (3). To determine the contribution of group differences in predicted values to the total difference in scores from equation (4) as

$$R = \left[E\left(X^F\right) - E\left(X^A\right)\right]' \beta^F + E\left(X^F\right)' \left(\beta^F - \beta^A\right) + \left[E\left(X^F\right) - E\left(X^A\right)\right]' \left(\beta^F - \beta^A\right) \quad (5)$$

Where β^F and β^A are estimated parameters obtained from the previously specified test score equations. $E\left(X^F\right)$ and $E\left(X^A\right)$ are the average characteristics of groups F and A.

This equation corresponds to the three-term decomposition equation. The first term measures the share of the observed test score gap attributable to the difference between the characteristics and the second term is the contribution to the observed score gap

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attributable to the differences in the performance of the characteristics

The Blinder-Oaxaca (1973) decomposition technique will be used to decompose student test scores by educational subsystem. Indeed, it is one of many techniques used to study labour market outcomes by groups (e.g. by gender, race and educational level). Although most applications of this method are in the labour market, the technique has also been explored in other areas such as the economics of education. Group 1 of the study will include students from the English-speaking education subsystem and group 2 is composed of students from the French-speaking education subsystem. The variables used in the equation for this decomposition are the variables previously presented.

V. Data and Variables

a) Data source

The data for this study come from the survey of the Programme d'Analyse des Systèmes Educatifs de la Confemen (PASEC), which aims to evaluate the performance of education systems in French-speaking sub-Saharan African countries, by testing the skills of primary school pupils in two areas, language and mathematics (PASEC, 2016). This programme covers ten sub-Saharan African countries including Benin, Burundi, Burkina Faso, Cameroon, Chad, Congo, Cote d'Ivoire, Gabon, Senegal, Togo and the Central African Republic. To obtain quality data for each country, PASEC uses a two-stage stratified sampling strategy for schools and then for students. In the first stratum and based on the school mapping data for each country, schools with primary school pupils are sampled with a probability proportional to the number of eligible pupils. In the second stage, i.e. the second stratification stage, according to the grades, pupils are selected with equal probabilities from each school. In the second year, for schools with at least 10 pupils, all pupils are selected.

In addition, PASEC collects information on the characteristics of pupils, teachers, classes and schools, which makes it possible to assess the level of distribution of resources, to understand school practices and to relate them to the performance of pupils. It should be noted that the calculation of the scores, an indicator for measuring student performance, followed a different methodology from previous surveys (1996, 2004), in order to comply with other international programmes such as PISA. This survey implements a new methodology called "plausible values[3]" in the calculation of scores. The interpretation of scores was facilitated by the introduction of competency scales of scores by reporting students' results on a scale with a mean of 500 and a standard deviation of 100. In the end, a total of 280 schools with 10 or more students per school were selected in each country.

In Cameroon, based on a sample of schools and pupils in the Francophone and Anglophone education subsystems during the 2014/2015 school year, nearly 140 schools were surveyed in grade 2 and 180 schools were surveyed in grade 6 , and tests in French and English (i.e., the two languages of instruction) and mathematics were administered to a maximum of 10 and 20 pupils per primary school class for grades 2 and 6 respectively.

In the end, in 2nd year, the survey resulted in a total of 1071 pupils in 134 schools. In the Francophone system, there were 614 pupils in 84 schools and in the Anglophone subsystem, there were 457 pupils in 50 schools. In 6th year, the survey led to a total of 3817 pupils in 266 schools, of which 167 schools and 2186 pupils were in the Francophone subsystem; 99 schools and 1631 pupils in the Anglophone subsystem. After removing the missing observations from the database, we were left with a total sample of 3817 pupils, of which 1465 pupils for the anglophone subsystem and 2021 pupils for the francophone subsystem.

b) Variables and descriptive statistics

The variables used in this article are of two types, namely the explanatory variables and the dependent variable. The choice of variables is inspired by the work of Ning & al., (2016) and Thapa (2015). The dependent variable corresponds to the student's level of acquisition captured by the standardized score of the students' tests in language and mathematics measured at the end of the year (6th year). Indeed, in order to be in line with international standards, recent surveys have implemented the notion of plausible values for each student, but in the framework of this work, the scores will be captured by generating the averages of these five plausible values scores. In the end, we will have two dependent variables, namely, one in language and one in mathematics.

The comparison of the average levels of pupil acquisition according to the francophone and anglophone subsystems will be explained according to a set of explanatory variables classified into individual and family characteristics of the child, school characteristics (class/school) and geographical characteristics. As personal characteristics of the student, gender is taken into account insofar as families have more ambition for boys than for girls and this gender differentiation in developing countries is due to

[3] They were drawn for each subdomain of the different subjects (language and mathematics). Based on the students' scores, the difficulty of the items and the ability of the students were calculated simultaneously using a method called the Rasch model or item response model. As only an incomplete item subsample is administered, scores were calculated with relative uncertainty. For this reason, PASEC did not provide a single estimate of student performance, but five plausible values for each of the subjects (language and mathematics), which represent the different abilities a student might have. For more details see Wu (2005).

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socio-cultural considerations (Kantabaze, 2010), which consequently predisposes boys to obtain better scores than girls. To this end, a positive sign is expected. Age is also important, as it has been shown in the literature that the delay in schooling, caused by late entry to school, could be attributed to a greater maturity of older pupils compared to younger ones (Schwille, 1991). Pre-school attendance guarantees a better continuation of primary schooling and therefore improves the child's school performance. A positive sign would be expected. Repetition is a factor in poor performance and pupil progression. A positive sign is expected.

As regards characteristics related to the child's family environment, having at least one literate parent makes it easier for pupils to do their homework (Meunier, 2005). A positive sign is also expected. The standard of living of a household can provide the pupil with a favourable environment for learning at home in view of the different resources that the household provides.

Variables specific to school characteristics such as the teacher's level of education are important in that teachers who have not attained a certain level of education or training will find it difficult to make progress with their students (Thapa, 2015). Also, that Class size is justified by the fact that small classes are easier to manage and more suitable for students (Verspoor, 2005). The age of the teacher is explained by the fact that older teachers have more experience in pedagogy and teaching practices than younger ones (Verspoor, 2005).

Teachers who have more experience in terms of years of teaching have good techniques to impart knowledge to their students, so a positive sign is expected (Chowa et al., 2015). The level of equipment in the classroom is a predictor of the student's level of academic performance. The type of school is ultimate for this work because public schools are characterised by school conditions (better resources in terms of multiform school equipment) that predispose the student to better learning than public schools (Thapa, 2015).

Finally, children who attend schools in urban areas have all the necessary equipment to support their learning, compared to pupils in rural areas, so a positive sign would be expected (Mourji & Abbaia, 2013).

Table 1 below shows the statistics for these variables by language use subsystem.

The analyses in Table 1 show that the average age of students in the francophone subsystem is higher than in the anglophone subsystem (i.e. 12 years, compared to 11 years). Also, there are more girls than boys in the anglophone subsystem. In addition, our sample shows that more than half of the students in the francophone subsystem are exposed to repetition, compared to 46.41% for their anglophone counterpart. Also, 55.69% of students in the anglophone subsystem attended preschool and 44.08% did so in the Francophone subsystem.

With regard to variables related to the family environment, the statistics show that most children in the anglophone subsystem come from households with a medium standard of living (51.60%), while 49.48% of children live in a family with a comparable standard of living.

Table 1: Description of variables by educational subsystem.

Independent variables	Education subsystem	
	Anglophone	Francophone
Student characteristics		
Student age (in years)	11.46 (1.33)	12.25 (1.6865)
Boy	0.5037 (0.0130)	0.5398 (0.0110)
Preschool	0.5569 (0.0129)	0.4408 (0.0110)
Repetition	0.4641 (0.0130)	0 .5650 (0.0110)
Low socio-economic level of the household	0.1679 (0.0097)	0.3275 (0.0104)
Socio-economic level of the average household	0.5160 (0.0130)	0.4948 (0.0111)
High socio-economic level of the household	0.3160 (0.0121)	0.1776 (0.0085)
Parent literacy	0.7799 (0.0124)	0.8011 (0.0091)
School characteristics		
Age of teacher (in years)	38.92 (7.2497)	38.85 (7.5958)
Gender of teacher (ref. male)	0.6539 (0.0124)	0.8055 (0.0088)
Experience of the teacher (in years)	11.07 (7.5117)	11.20 (7.8443)
Diploma at least equal to the baccalaureate	0.7529 (0.0112)	0.5200 (0.0111)
Vocational training of teacher	0.8873 (0.0082)	0.7699 (0.0093)
Low level of equipment in the class	0.2327 (0.0110)	0.2038 (0.0089)
Middle level of equipment in class	0.4621 (0.0130)	0.5398 (0.0110)

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High level of equipment in the class	0.3051 (0.0120)	0.2563 (0.0097)
Private school	0.4614 (0.0130)	0.3102 (0.0102)
School location (ref. urban area)	0.4204 (0.0129)	0.3285 (0.0104)
Number of observations	1465	2021

Source: Authors, based on PASEC 2014 data. Note: standard deviations in parenthesis.

With regard to the variables relating to school characteristics, the analyses show that in both the anglophone and francophone subsystems, the average age of teachers is 38 years. In addition, the proportion of male teachers is higher in the francophone subsystem than in the anglophone subsystem (80.55% for the francophone subsystem and 65.39% for the anglophone subsystem). 75.29% of teachers have at least a baccalaureate degree in the anglophone subsystem compared to 52% in the francophone subsystem. The statistics further show that less than half of the schools are private, but that there are more public schools in the anglophone subsystem than in the francophone. Also, more schools in the anglophone subsystem are located in urban areas than in the francophone subsystem (38.85%).

VI. Econometric Results

The first section will focus on the results of the estimation of the academic performance of students in each of the educational subsystems and the second section will present the results of the decomposition of the academic performance gap.

a) Results of the estimation of students achievements in the francophone and anglophone sub-systems

Although this is not the focus of this article, it is interesting to identify in advance the factors that contribute to students' academic performance in each subsystem. Table 2 summarises these results for mathematics (columns 1 and 2) and language (columns 3 and 4).

➢ In mathematics

The results in columns (1) and (2) of this table show that most of the variables show expected signs and are relevant to explain the academic performance of students in mathematics for both the anglophone and francophone education subsystems. With regard to the individual characteristics of the child, the related factors explain to different degrees the level of school performance of the child according to the school attendance sub-system. Specifically, increasing age decreases with the student's end-of-year mathematics score, but significantly so at the one percent threshold in the francophone education subsystem. Compared to girls, being a boy increases the mathematics score by 11.9% in the francophone subsystem; the effect of gender is nul when attending the anglophone subsystem.

Analyses of the same table also show that characteristics related to the student's family characteristics contribute to the academic performance of students in the francophone and Anglophone subsystems. However, this category of factors contributes more to student performance in mathematics in the Francophone subsystem than in the anglophone subsystem. In particular, compared to students from families with a low standard of living, children from households with a low standard of living saw their performance decrease by 42.3% and 28.8% respectively in the anglophone and francophone subsystems. Also, in both the anglophone and francophone sub-systems, academic performance increases by 12.8% and 17.7% respectively when they live in a household with a high standard of living.

With regard to the characteristics specific to school conditions, the table reveals that a class taught by a teacher who has at least a baccalaureate increases the academic success of pupils by 27.3% and 20.9% in the Anglophone and Francophone subsystems respectively. While the teacher's professional training has no effect on the level of student achievement in the Anglophone subsystem, it is associated with an academic performance advantage for students in the francophone subsystem and increases the latter's level of achievement by 27.8%. Also, a classroom with a low level of equipment significantly decreases the child's academic performance only in the francophone subsystem. However, when the classroom is equipped with a high level of equipment, it increases students academic success in both systems, by 14.3% in the anglophone subsystem and up to 23.9% in the francophone subsystem. Compared to public schools, private schools in the francophone subsystem perform better than those in the anglophone subsystem, increasing student performance in mathematics by 30.1%. Compared to schools located in rural areas, schools located in urban areas increase student performance in mathematics by 56.6% and 72.5% in the anglophone and francophone subsystems respectively.

➢ In language

Columns (3) and (4) of table 3 highlight the results of the OLS estimation of school performance by language education sub-system. It appears that student characteristics and household environment, school conditions influence the academic achievement of students in the educational subsystems. In relation to the characteristics of the pupil and his or her family environment, the results for the Anglophone subsystem show that factors such as age, sex of the pupil, low household standard of living and high household standard of living play a major role in the success of

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children at the end of the primary language cycle. While among these variables, pre-school attendance and having a literate parent, low household standard of living and high household standard of living are the variables with more weight in determining students' test scores in language. For example, the standard of living in both the anglophone and francophone subsystems has an important influence on the language achievement of children, but this effect is more important for students who attend school in the anglophone subsystem, insofar as for a student attending school in the anglophone subsystem, the language score increases by 25.6% when he or she lives in a household with good living conditions and by 14.3% for a student attending school in the francophone subsystem.

Concerning the characteristics of the school, it appears that the academic performance of the students in language in the french-speaking subsystem is more explained by this group of variables, compared to the English-speaking subsystem. Indeed, in the anglophone subsystem, all the variables show expected signs except for the teacher's professional training. Pupils taught by a teacher with at least a bachelor's degree have school performance premiums of 16.1% and 23.7% in the anglophone and francophone subsystems respectively. Also, compared to a pupil living in a low-income household, the school performance of a child in a language increases by 12.4% in the anglophone subsystem and by 10.5% in the francophone subsystem. Vocational training has a differentiated effect on the level of student achievement depending on the subsystem. While it significantly reduces the test score by 11.9% in the anglophone subsystem, it increases the same score by 18.9% in the Francophone education system. In terms of geographical or community characteristics, the academic performance of students attending schools in urban areas increases by 55.8% and 73.4% in the anglophone and francophone subsystems respectively.

b) Results of the decomposition of student achievement gaps

The aim here is to identify the factors that explain the difference in children's school performance according to whether they belong to the Anglophone or Francophone education system in mathematics and language. The results obtained from the decomposition are summarised in Table 3. Since not all variables are significant, it seems appropriate to limit the analysis only to those variables that are significantly different.

Table 2: Estimates of the determinants of students' school performance according to the anglophone and francophone subsystems

	Mathematics		Language	
	(1)	(2)	(3)	(4)
Variables	Anglophone	Francophone	Anglophone	Francophone
Students Characteristics				
Age of the student	-0.0583	-0.196*	-0.294**	-0.101
	(0.137)	(0.114)	(0.122)	(0.107)
Age of the student^2 /100	-0.238	0.396	0.621	-0.00664
	(0.568)	(0.446)	(0.500)	(0.421)
Gender of the student	-0.0339	0.119***	-0.109***	-0.0102
	(0.0404)	(0.0346)	(0.0393)	(0.0325)
Pre-school attendance	-0.0620	0.136***	0.0234	0.177***
	(0.0434)	(0.0417)	(0.0427)	(0.0391)
Low household standard of living	-0.423***	-0.288***	-0.445***	-0.265***
	(0.0561)	(0.0428)	(0.0550)	(0.0413)
High household standard of living	0.128***	0.177***	0.256***	0.143***
	(0.0477)	(0.0524)	(0.0467)	(0.0473)
Literacy of parents	-0.0182	0.0583	-0.0231	0.202***
	(0.0476)	(0.0472)	(0.0468)	(0.0455)
Schools Characteristics				
Gender of the teacher	-0.0659	-0.0641	-0.0759	-0.145***
	(0.0467)	(0.0517)	(0.0470)	(0.0464)
Diploma at least equal to the bacc	0.273***	0.209***	0.161***	0.237***
	(0.0539)	(0.0386)	(0.0566)	(0.0358)
Professional training of teacer	-0.299***	0.278***	-0.119*	0.189***
	(0.0671)	(0.0619)	(0.0654)	(0.0592)
Professional experience of the teacher	-0.00231	-0.00356	-0.00500	-0.00222
	(0.00323)	(0.00248)	(0.00308)	(0.00235)
Equipment level low class	-0.0415	-0.113**	0.0101	-0.177***
	(0.0521)	(0.0494)	(0.0519)	(0.0472)

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High class equipment level	0.143***	0.239***	0.124**	0.105**
	(0.0510)	(0.0456)	(0.0486)	(0.0416)
Private school	0.0664	0.301***	0.00297	0.300***
	(0.0491)	(0.0626)	(0.0488)	(0.0597)
Urban school	0.566***	0.725***	0.558***	0.734***
	(0.0484)	(0.0509)	(0.0490)	(0.0474)
Constant	1.007	1.018	2.524***	0.536
	(0.829)	(0.736)	(0.750)	(0.693)
Sample	1,465	2,041	1,465	2,041
R-squared	0.347	0.449	0.378	0.512

*Source: Authors, based on PASEC 2014 data. Standard deviations are in brackets. *** p<0.01, ** p<0.05, * p<0.1*

➢ In mathematics

For pupils at the end of the primary school year, the analysis of the difference in language average between pupils in the French and English sub-systems reveals that observable factors increase the gap in school performance while unobservable factors reduce this gap. Thus, the share explained by observable factors is more than 100% (166.86%). If we go into the details of the decomposition, it emerges from the table that it is the variables specific to the characteristics linked to the family environment and to school conditions that are at the origin of this explained difference. For example, the low and high standard of living of the household, the fact that the teacher is male, the level of education and the low level of equipment in the classroom exacerbate the differences in school performance between the anglophone and francophone subsystems. On the other hand, the professional training of the teacher helps to reduce this difference.

Looking at the unexplained share, it appears that all groups of variables influence the unexplained gap. Specifically, the fact that a pupil is a boy, pre-school attendance, low household standard of living, the teacher's professional training, the school's home network, and the school's location all contribute to the narrowing of the performance or achievement gap between pupils in the two subsystems in Cameroon.

➢ In language

In contrast to the academic performance gap that may exist between primary school leavers in mathematics, the language gap is larger between students in the anglophone and francophone subsystems. The results of the Oaxaca and Blinder decomposition show that more than 100% of the gap can be attributed to explained factors. While the unobservable part, due to discrimination, reduces this difference. In more detail, the age of the child, the low and high household standard of living, the level of education, the high level of classroom equipment and the location of the school increase the school achievement gap and vocational training reduces the school achievement gap. On the unexplained side, the results in the table show that gender, pre-school attendance, low household standard of living, having at least one literate parent, type of school and school location further widen the gap in school performance between the two groups.

Table 3: Oaxaca and Blinder decomposition

	(1)	(2)
Variables	Mathematics	Language
Francophone subsystem	0.0982***	0.109***
	(0.0235)	(0.0243)
Anglophone subsystem	-0.0673***	-0.0758***
	(0.0208)	(0.0207)
difference	0.166***	0.185***
	(0.0270)	(0.0343)
Difference explained	0.277***	0.313***
	166.867%	169.189%
	(0.0345)	(0.0355)
Unexplained difference	-0.111***	-0.128***
	-66.867%	-69.189%
	(0.0373)	(0.0332)
Sample	3506	3506

*Source: Authors, based on PASEC 2014 data. Standard deviations in brackets. *** p<0.01, ** p<0.05, * p<0.1.*

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VII. Conclusion

The reunification of Cameroon in 1961 brought about profound reforms within its school system, the most striking of which is the organisation of the latter according to two educational subsystems which coexist despite their specificities. Attempts to harmonise these two educational subsystems have always ended in failure, and this has had repercussions on the performance of the education system in general and on pupils in particular. In this context, this article has set out to compare the academic performance of students in the francophone and anglophone education subsystems and to identify the factors that may explain this gap in academic performance.

Using data from Programme d'Analyse des Systèmes Educatifs de la Confemen (PASEC 2014), the two-step econometric strategy first shed light on the factors that determine students school performance according to language attendance subsystems; and secondly, decompose the school performance gap using the Oaxaca and Blinder (1973) decomposition method.

With regard to the estimation of the educational production function, the results show that at the end of primary schooling in mathematics, the environmental characteristics of the household in which the child lives, and the school conditions are both considered to be more important factors in determining the academic performance of pupils in Cameroon in mathematics.

Subsequently, the decomposition of the difference in school performance made it possible to identify the factors that are responsible for this gap. The results showed that more than 100% of this gap is due to observable factors attributable to both the out-of-school and in-school environment, notably, the household's standard of living, the teacher's level of education, vocational training and the level of equipment in the classroom, for mathematics. For language performance, these same factors explain the differential explained in addition to age and location of the school.

Policy recommendations can be made to education policy makers on the basis of the results obtained. Emphasise the policy of distributing school equipment both at the level of classes and at the level of geographical areas of schools by providing schools in rural areas with various forms of school support to guarantee a favourable school learning environment for pupils. Also, strategies to fight inequalities must be based on the policy of improving the living conditions of households. For example, by providing support to households that live in poorer conditions. In order to reduce socio-economic inequalities between pupils according to the socio-economic status of the household.

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Annex 1: Curriculum content in mathematics by learning area for grade 2 (CP/Class 2)

Francophone subsystem	Anglophone sub-system
CP	Class 2
– *Preliminaries:* Comparison of quantities (more than...than and as many...as; etc.) – *Numbers and Numeration:* Numbers from 10 to 20; ordering numbers (ascending and descending); – *Operation:* Practice of addition and subtraction (with and without a carry) and multiplication operations, numerical operators, mental calculations; etc. – *Measurement:* Telling the time of day and half-hour; use of the calendar; comparison of quantities (length, mass and time measurements) – *Geometry:* Identification of simple geometric solids; the square, the rectangle, the triangle; the circle; folding, overlapping, moving, superimposing; etc. – *Problems:* Problems involving the sum of one or more numbers (result less than 100) or the difference of two numbers; problems involving a quantity; activities related to rhythm and periodicity.	– *Preliminary:* Review of the previous class (class one) – *Numbers and Numeration:* Counting, reading and writing numbers from 0-100: decomposing numbers from hundreds, tens and units; comparing numbers (with symbols .....); etc. – *Operation:* Practice of addition and subtraction operations (with and without a carry); recognition and illustration of the commutative properties of addition and multiplication; division without remainder of numbers less than 100 by 2, 5 and 10; etc. – *Measurement:* Drawing and labelling of the clock; use of the calendar; recognition and use of coins under 100fr; use of quantities (length, capacity and mass measurements) – *Geometry:* Identification of geometric figures (circle, square, rectangle, triangle) – *Problems:* Formulate real-life problems in mathematical form; problems involving addition, subtraction, multiplication and division – *Logic and Sets:* Use of 'union' and 'inter' symbols to combine two sets; identify common objects in two sets – *Graphs and Statistics:* Locating points on the line in relation to the reference point; drawing line segments to scale; etc.

Source: Authors, based on official primary school curricula/national syllabuses for English speaking primary schools in Cameroon, MINEDUB, 2014.

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Storage and Logistics Distribution of Vaccination in Panama

By Yovani Barria
Universidad de Panamá

Abstract- We understand distribution as the function that allows the transfer of products and services from their final state of production to that of acquisition and consumption, encompassing the set of activities or flows necessary to place the goods and services produced at the disposal of the final buyer (individuals or organizations). in the conditions of place, time, form and adequate quantity. It is the part of logistics, the commercial one, which refers to the external movement of finished products (or semi-finished products in the case of industrial products) from the seller (origin) to the client or buyer (destination), with the distribution channel being the that will allow such a connection. Indeed, physical distribution includes planning and controlling the physical movement of products from the factory to the final consumer. That is why logistics includes the planning and control of the relationships between the management of raw materials and the distribution of the finished product. Following this orientation, it seems clear that the concept of logistics is broader than that of physical distribution, and the latter would be an important part of logistics. By virtue of this, a distribution channel is the path followed by a product or service to go from the production phase to the acquisition and consumption phase.

Keywords: *distribution, logistics, warehousing, distribution.*

GJHSS-E Classification: *DDC Code: 658.162 LCC Code: HD58.8*



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Storage and Logistics Distribution of Vaccination in Panama

Almacenaje y Distribución Logística de Vacunación en Panamá

Yovani Barria

Resumen- Entendemos por distribución la función que permite el traslado de productos y servicios desde su estado final de producción al de adquisición y consumo, abarcando el conjunto de actividades o flujos necesarios para situar los bienes y servicios producidos a disposición del comprador final (individuos u organizaciones) en las condiciones de lugar, tiempo, forma y cantidad adecuados. Es la parte de la logística, la comercial, que hace referencia al movimiento externo de los productos terminados (o semielaborados para el caso de productos industriales) desde el vendedor (origen) al cliente o comprador (destino), siendo el canal de distribución el que va a permitir tal conexión. En efecto, la distribución física incluye la planificación y el control del movimiento fi- sico de productos desde la fábrica hasta el consumidor final. Es por ello, que la logística incluye la planificación y el control de las relaciones entre la gestión de materias primas y la distribución de producto terminado. Siguiendo esta orientación, parece evidente que el concepto de logística es más amplio que el de distribución física, y esta ultima seria una parte importante de la logística. En virtud de ello, Un canal de distribución es el camino seguido por un producto o servicio para ir desde la fase de producción a la de adquisición y consumo. El camino de un canal esta formado por un número variable de organizaciones más o menos autónomas, internas y/o externas a la empresa, que mantienen estructuras, comportamientos y relaciones sociales en general, que dan como resultado la realización, con mayor o menor éxito, de las diversas funciones de distribución. Las organizaciones que forman el canal se denominan intermediarias, siendo empresas de distribución situadas entre el productor y el consumidor final. En este sentido, la metodología utilizada en el presente artículo se basará en análisis teóricos de repositorios e información documental que hace referencia al tema.

Palabras clave: distribución, logística, almacenaje, distribución.

Abstract- We understand distribution as the function that allows the transfer of products and services from their final state of production to that of acquisition and consumption, encompassing the set of activities or flows necessary to place the goods and services produced at the disposal of the final buyer (individuals or organizations). in the conditions of place, time, form and adequate quantity. It is the part of logistics, the commercial one, which refers to the external movement of finished products (or semi-finished products in the case of industrial products) from the seller (origin) to the client or buyer (destination), with the distribution channel being the that will allow such a connection. Indeed, physical distribution includes planning and controlling the physical movement of products from the factory to the final consumer. That is why logistics includes the planning and control of the relationships between the management of raw materials and the distribution of the finished product. Following this orientation, it seems clear that the concept of logistics is broader than that of physical distribution, and the latter would be an important part of logistics. By virtue of this, a distribution channel is the path followed by a product or service to go from the production phase to the acquisition and consumption phase. The path of a channel is formed by a variable number of more or less autonomous organizations, internal and/or external to the company, which maintain structures, behaviors and social relations in general, which result in the realization, with greater or lesser success., of the various distribution functions. The organizations that make up the channel are called intermediaries, being distribution companies located between the producer and the final consumer. In this sense, the methodology used in this article will be based on theoretical analysis of repositories and documentary information that refers to the subject.

Keywords: distribution, logistics, warehousing, distribution.

Author: Universidad de Panamá. e-mails: yovanibarria01@gmail.com, yovani.barria@up.ac.pa

I. Introducción

El ciclo de distribución comercial, es el entorno en el cual se mueven los negocios y todos los actores que entran a ser organizados por la disciplina logística. Es un intermediario quien amplifica el dinamismo del mercado, recibiendo los productos y llevándolos en el tiempo adecuado a los consumidores. s utilizado para el traslado de productos físicos desde el productor a los consumidores finales, pudiéndose emplear distintas alternativas. Una primera alternativa es la venta directa del fabricante o productor al consumidor, siendo frecuente en algunos productos agrícolas o por parte de empresas como Avon. Una segunda alternativa es vender a través de minoristas, como ocurre normalmente en el sector del automóvil (concesionarios), o en el caso del sector alimentario con la venta a través de grandes superficies, principalmente hipermercados y algunas cadenas de supermercados. Una tercera alternativa es emplear el denominado canal clásico, en el que están presentes instituciones mayoristas y minoristas. "Finalmente, otra posibilidad es que el contacto entre fabricante y mayorista requiera de la intermediación de los

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denominados agentes intermediarios, como ocurre en el caso de los productos de importación". (Alcalá, 2020, pág. 34)

En este también se produce traslado de productos físicos, pero con el objeto de que sean incorporados al proceso productivo de otra organización o al desarrollo de tareas industriales. No se actúa, por tanto, en el mercado de consumo, sino en el organizacional. Aquí también es posible el desarrollo de varias alternativas. En primer lugar, una venta directa entre el fabricante y el denominado usuario industrial, como ocurre en el caso de la maquinaria pesada, grandes equipos etc. Una segunda posibilidad es que intermedie entre ambas organizaciones un distribuidor, cumpliendo un papel equivalente al de mayorista o minorista en el caso de bienes de consumo. "Así, ocurre con productos tales como pintura, pequeñas maquinas, herramientas etc.". (Anaya, 2021, pág. 11) Finalmente, también el agente puede intervenir poniendo en contacto a oferentes y demandantes, como ocurre para determinados productos agrarios, como el aceite.

En este sentido, en la actualidad las organizaciones están en la búsqueda de ventaja competitiva que les permita poder competir y estar a la vanguardia; esto debido a la competitividad y al mundo globalizado en el que vivimos "La logística empresarial es el referente más importante en el proceso de comercialización y distribución de productos en el mercado" (Armstrong, 2020, pág. 45), por cuanto organiza, planifica, controla y evalúa cada uno de los procesos de desarrollo logístico en la empresa, identificar la cadena de comercialización productiva sus indicadores, puntos fuertes y débil para saber que debemos comprar a los proveedores y que debemos entregar hacia los consumidores.

Desde otro ángulo en la distribución logística de productos es importante sistematizar cada proceso de preferencia con códigos y registros para controlar el stock de mercancía en almacén y bodega. Se verifica la mercancía que se encuentran en buen estado o descartar la mercancía dañada. Para ingresar a los mercados es necesario establecer estrategias que permiten distribuir los productos en el mercado de manera eficiente, además de determinar métodos adecuados para la distribución, generar estructuras verticales y horizo.

Ahora bien, la logística empresarial en las empresas permite articular de manera eficiente los procesos de gestión entre departamentos y funciones de cada talento humano responsable de su puesto de trabajo, según afirma Vigo (2007). Los productos y servicios en el sector empresarial obtienen mayor rentabilidad cuando se sustentan en la organización, planificación, control y dirección de los procesos listicos de manera coherente y eficaz, dirigido a obtener resultados eficaces. "La logística aborda el flujo de los materiales, los productos ter- minados y la información asociada a los mismos" (González, 2016, pág. 2). En este apartado se hace referencia a la necesidad de la logística empresarial desde el inicio de entrada de la mercadería hasta el final de la entrega de los procesos logísticos de los productos y servicios, hasta la satisfacción del cliente.

Desde este enfoque, la gestión de buenas prácticas en los procesos logísticos, depende de las técnicas, métodos y estrategias de planificación y organización empresarial, por tal razón la logística permiten a las empresas reglas para las buenas prácticas de dirección seguir, valorar, priorizar y controlar todos los distintos elementos de aprovisionamiento y distribución que inciden en la satisfacción del cliente, en los costes y beneficios. Los procesos logísticos en una empresa son relevantes para direccionarse de manera correcta a través de las reglas establecidas las cuales permiten una mejor organización en la empresa, ya sea en los factores de distribución o los beneficios al cliente.

Los procesos de gestión, organización, planificación, dirección, control y buenas práctica empresariales, permiten alcanzar las metas de entrada y salida de mercaderías en una empresa "La gestión logística de una organización es la acción del colectivo laboral dirigida a garantizar las actividades de diseño y dirección de los flujos materiales, informativo y financiero desde su fuente de origen hasta sus destinos finales" (Lao, Vega, Marrero, & Pérez, 2017, pág. 44). En este apartado se hace referencia la logística empresarial como un proceso operativo que articula a los recursos humanos, materiales y económicos, con fines de alcanzar ingresos para empresa y cooperar con responsabilidad en el contexto frente a sus necesidades.

En los procesos de la logística empresarial las mercancías asumen un rol importante en las entradas y salidas "el proveedor hasta el cliente, con la calidad requerida, en el lugar y momentos precisos, y con los mínimos costes" (González, 2016, pág. 3). El sector empresarial, entre los factores de satisfacción de los clientes que debe tomar en cuenta están: la oportuna entrega de la mercadería, la calidad de los pro- ductos y servicios, los precios. Por tal razón, los distribuido- res o vendedores deben generar una revisión organizada de inventarios de entrada de la mercadería que se encuentre en excelentes condiciones para la mejora continua de las ventas e ingresos de la empresa. Finalmente, la entrada de mercaderías es un proceso de movimiento físico o materiales en el almacén de la empresa.

El objetivo de esta planificación es simplificar y acelerar el pro- ceso de la entrada de mercancías y mejorar la organización de los trabajos en el lugar; por ejemplo, para evitar cuellos de botella. Además, si se planifican entradas de mercancía, la planificación de

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necesidades de insumos, puede controlar los stocks de materiales pedidos o manufacturados y llegar a un balance de inventario óptimo. También se hace referencia que a menos que las entradas se planifiquen, el sistema no puede encontrar los materiales que se han pedido. Por esta razón, las entradas planificadas son decisivas para la regulación del nivel del inventario en el almacén. Las entradas planificadas también tienen importancia para determinar si se recibieron materiales prometidos por proveedores o por la fabricación propia. Sin ellos, el sistema no puede establecer un enlace entre pedidos y materiales recibidos.

Además el proceso logistico en las empresas tiene actividades de entrada de mercadería y salida, lo cual determina "la atención en la distribución de mercancías, pilar esencial de la economía urbana, la distribución de mercancías resulta esencial para el desarrollo de la vida en las ciudades" (Muñu- zuri, Grosso, Escudero, & Cortés, 2017, pág. 36).

En este apartado se hace referencia que a la necesidad de una distribu- ción efectiva de las mercaderías hasta llegar en buen estado en los clientes referente a su calidad, precios y servicios. Para cumplir con ello, las empresas deben contar con procesos internos que garanticen las condiciones óptimas de los pro- ductos al ser entregado a clientes y consumidores finales, ello va depender de una buena gestión de almacenaje, embalaje, transporte, entrega oportuna y un servicio especial. Es así como se realiza la salida de la mercancía de la empresa al comprador. Además, debe apoyarse en una red de distribuidores que llenen los estándares de calidad exigidos, pues en todo momento cumplirán la labor de entrega de productos. Una buena distribución y entrega, puede resultar la diferencia entre empresas que compiten con productos similares en un mismo segmento de mercado, pudiendo llegar a convertirse en la ventaja competitiva que dé el liderazgo del mercado.

II. Materiales y Métodos

Se trata de un modelo de investigación cualitatitivo, se basará en análisis teóricos de repositorios e información documental que hace referencia al tema del articulo en estudio.

III. Resultados, Análisis y Discusión

La entrega de grandes cantidades de dosis de la vacuna está condicionada a la logística instalada en el país receptor. De no contar con la cadena de frío necesaria para la distribución, almacenamiento y manejo de la vacuna, las grandes farmacéuticas optan por abastecer antes a los países que cuentan con este tipo de infraestructuras. Esta ha sido la constante, según la experiencia de otras naciones, que ha primado en el proceso de inmunización contra la covid-19.

La logística no solo implica tener transporte con un monitoreo de la temperatura requerida y el manejo de las dosis, sino hombros que la reciban, lo que sintetiza la eficacia que se le dará a cada caja. Por tanto, este paso conlleva otro tipo de planificación, una específica sobre la población que recibirá la vacuna, de lo contrario se desperdician las dosis. Un punto que valora la farmacéutica a la hora de hacer las entregas.

El primer paso consiste en la recepción del embarque que será transportado en un avión de DHL, que aterrizará en la sección de carga del Aeropuerto Internacional de Tocumen. Posteriormente la carga será desplazada hacia el Centro Nacional de Bioseguridad, donde será recibida, se efectúa un inventario y verificación de la temperatura.

Un gran debate internacional consiste en determinar cómo usar las dosis. Algunos países emplean la totalidad recibida, mientras que otros reservan la mitad para la misma población, sin correr el riesgo de posibles demoras en la producción. (Baca, 2020, pág. 55)

Panamá optó por la segunda alternativa, lo que conlleva que, al momento del ingreso de las dosis, una mitad se congele en el depósito regional, y la otra parte, luego de permanecer congelada un día, continúa su trayecto hacia el centro de vacunación.

En la disertación se plantearon cinco etapas de la operación: la planificación logística; recepción, almacenamiento y distribución. En la tercera etapa, la colocación de la vacuna, luego el seguimiento a pacientes y la postorientación, como último paso.

Los 5,5 millones de dosis adquiridas serán distribuidas por tierra, mar y aire a todo el país. El mayor reto empieza en la distribución; ya se avanzó que se contemplan 1,101 centros de vacunación en todo el país.

Una base de datos priorizará las fases de administración de la vacuna, razón por la que animan a las personas a que se apunten en la lista de beneficiados y que sean notificados, a través de un registro de atención para trazabilidad, sobre la primera dosis y la fecha del refuerzo. Los mayores de 60 en adelante y con riesgo, que se encuentran en la primera fase de vacunación, se concentran en los circuitos 6-6, 8-7 y 8-8. No obstante lo anterior, y la organización anunciada para recibir el primer embarque, muchos se preguntan si el país está listo para recibir las vacunas, cuál es el fin de la adquisición de los equipos que lanzaron a licitación el Ministerio de Salud (Minsa) y la Caja de Seguro Social (CSS). Una compra millonaria de la que aún no se define a qué empresa y qué propuesta se tomará en consideración.

A través de esta compra, que consiste en 13 renglones, pretenden adquirir 50 congeladores de distintos tipos capaces de alcanzar ultra bajas temperaturas, además de cuatro cuartos fríos, 200 termos portátiles, máquinas para hacer hielo seco y dos

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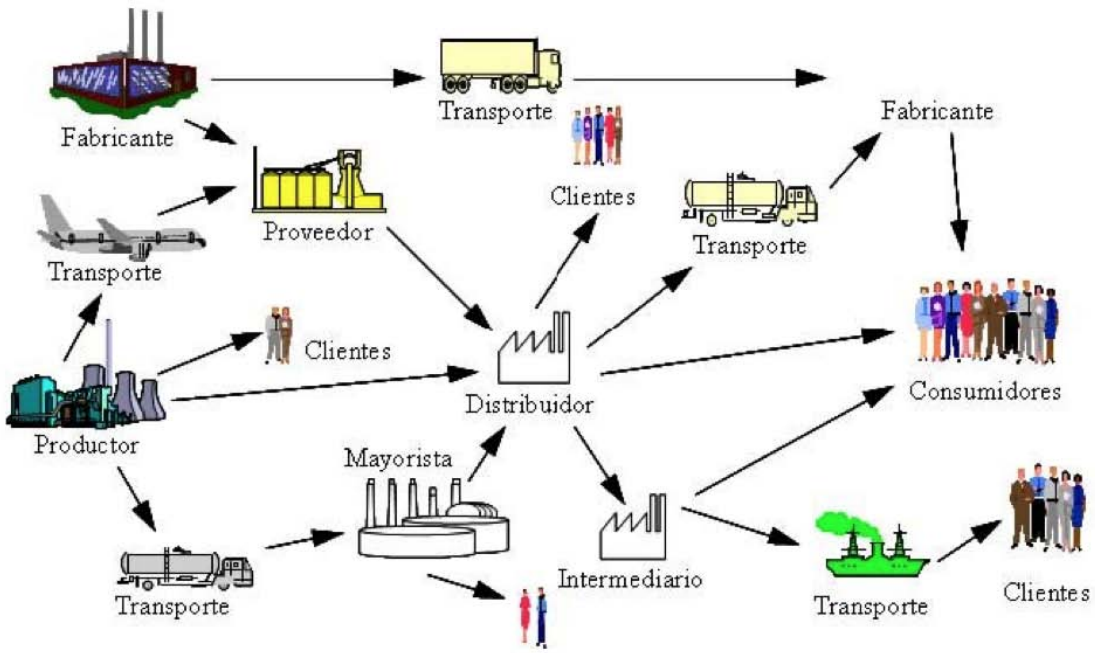
sistemas de monitoreo remoto de temperaturas. Esta licitación debe entregarse, según el pliego, en 80 días calendario. Lo que quiere decir, que hasta no decidir la compra, no se contará con una cadena de frío para el proceso de vacunación en las cuatro fases anunciadas.

Hasta el momento ninguna autoridad ha dado una explicación sobre el rol que tendrá la cadena de frío licitada, o por qué se efectuó el 5 de enero, a sabiendas que Panamá sería uno de los primeros países en recibir la vacuna. El gobierno aún no fija una fecha precisa del inicio para las cuatro fases de vacunación. Es muy probable que hasta no contar con la logística exigida no se inicie masivamente el programa de inmunización. Si tomamos en cuenta que el tiempo de entrega de los equipos solicitados es de 80 días hábiles, y suponiendo que las autoridades decidan esta semana la adquisición, no será hasta mediados de abril cuando se entregue e instale el equipo para esta tarea. (De Jaime, 2021, pág. 11)

Con la intención de dar continuidad al primer lote de 40 mil dosis, este medio envió un cuestionario a la farmacéutica Pfizer el pasado 4 de enero mediante el cual pretendía conocer los futuros embarques, además de la relación entre las fechas de pago y el envío de dosis, y si la empresa observaba con satisfacción el proceso existente para el recibimiento y la cadena de frío por licitar. En una nota fechada el 12 de enero la empresa respondió que "en el marco del convenio firmado con el Gobierno de Panamá, el 25 de noviembre de 2020, cabe destacar que, a solicitud del gobierno las entregas de los 3 millones de dosis de la vacuna se realizarán progresivamente durante el año, empezando el primer trimestre". Sobre las interioridades del convenio no se ofrecieron detalles, solo se respondió que: "con base en el acuerdo firmado, las entregas de las dosis de vacunas se realizarán progresivamente en 2021, empezando en el primer trimestre".



Fuente: Carro, (2020)

Ilustración 1: Ciclo de distribución comercial

Asher Salmon, director del Departamento de Asuntos Internacionales del Ministerio de Salud de Israel, país que avanza un pie adelante del resto en este procedimiento, aseguró en una conferencia virtual que para el traslado de las vacunas requirieron crear cajas con menor distribución para poder trasladar las dosis a otros centros de salud. La administración de estas vacunas se hace de forma digital completamente, para tener un control efectivo de a quién se administró la vacuna y la fecha del refuerzo.

El médico indicó que se tiene un cronometraje puntual del cargamento: una vez que las provisiones aterrizan, son trasladadas hacia un único centro de conservación que posee capacidades de ultracongelación. Ya fuera del búnker, los fármacos tienen 120 horas de vida útil para llegar a los beneficiados.

Se instalarán 1,101 centros de vacunación en todo el país. En efecto, la fase operación consiste en cuatro pasos: planificación y logística; recepción y almacenamiento; colocación de vacunas; seguimiento de pacientes y postorientación. Las dosis serán transportadas por aire, mar y tierra, y escoltadas por equipo de seguridad.

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IV. Conclusiones

Organizar todas las actividades logísticas de la empresa es una tarea complicada. Una herramienta que ayuda en esta labor es la que proporcionan los denominados organigramas. Un organigrama es una representación esquemática de los distintos departamentos, unidades de negocio, direcciones, etc., que componen la empresa, así como las relaciones de jerarquía que existen entre ellos. La función logística no actúa aislada del resto de funciones de la empresa, y por ello, se integra dentro del organigrama de la misma, bien como un departamento propio, bien como parte de otros departamentos

Los procesos de entrada y salida en la logística empresarial, destacan lo siguiente:

- La logística es la función de la empresa encargada de ofrecer el producto en la cantidad, momento y lugar en que lo solicita el cliente.
- Las actividades que integran la función logística dependen de la naturaleza industrial o comercial de la empresa.
- Las prioridades competitivas de las empresas tradicionales son: calidad, coste, tiempo y flexibilidad. La logísica ayuda a la obtención de ventajas competitivas en estas variables.
- Las redes logísticas son el soporte sobre el que el pro- ducto llega al consumidor.
- Las plataformas logísticas son grandes almacenes que ahorran costes de distribución y terreno, además de conseguir descuentos por volumen.
- A la hora de decidir los almacenes y transportes que existirán en una red logística, hay que tener en cuenta los costes de distribución, de instalación y de manteni- miento.

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Impact of E-Learning on Indian Students during Pandemic: A Conceptual Approach

By P. Divakar
Vellore Institute of Technology

Abstract- For the enhancement of distant education and learning through web, the practice of e-learning has initiated in late 1990s. Because of the significant growth of information and technology, the adoption of e-learning became famous globally in late 2000s. By the mid of 2010s utilization of electronic devices (computers, laptops, mobile phones and tablets) which supports internet connectivity were prominently used by Indian educational institutions to facilitate e-learning process to educate the students through online platforms. In the later part of 2010, Indian organizations in collaboration with foreign companies, developed their own "web-based" software and application in order to persuade the practice of e-learning for the students. With reference to traditional learning, e-learning was adopted in a few numbers. Since the outbreak of pandemic issue (Covid-19), lockdown and pandemic protocols leads to closure of schools and colleges across the country. As a result, educating the students through online (e-learning) served as the full time replacement for traditional learning. Although educating students through e-learning made an appropriate replacement for traditional learning, students across many parts of India subjected to confront certain issues as well as merits while learning through online.

Keywords: students' perception, e-learning, covid-19, digital platforms, learning attitude.

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Impact of E-Learning on Indian Students during Pandemic: A Conceptual Approach

P. Divakar

Abstract- For the enhancement of distant education and learning through web, the practice of e-learning has initiated in late 1990s. Because of the significant growth of information and technology, the adoption of e-learning became famous globally in late 2000s. By the mid of 2010s utilization of electronic devices (computers, laptops, mobile phones and tablets) which supports internet connectivity were prominently used by Indian educational institutions to facilitate e-learning process to educate the students through online platforms. In the later part of 2010, Indian organizations in collaboration with foreign companies, developed their own "web-based" software and application in order to persuade the practice of e-learning for the students. With reference to traditional learning, e-learning was adopted in a few numbers. Since the outbreak of pandemic issue (Covid-19), lockdown and pandemic protocols leads to closure of schools and colleges across the country. As a result, educating the students through online (e-learning) served as the full time replacement for traditional learning. Although educating students through e-learning made an appropriate replacement for traditional learning, students across many parts of India subjected to confront certain issues as well as merits while learning through online. On consideration with perception of students, the article is aimed at investigating the positive and negative attributes of e-learning among Indian students based on the existing literary works.

Keywords: students' perception, e-learning, covid-19, digital platforms, learning attitude.

I. Introduction

Since the mid of mid of 2000s, most of the schools and Universities in India made more emphasize on providing online education to students, in order to make them to be more aware of their subject. In the modern time, digital media plays a significant role in influencing the students to be very active in learning new things and communicating with each other, specifically regards to sharing educational contents. Rapid innovation in the area of information and technology have ensured numerous educational institutions to practice online education system for students. On the other hand, most of the students from schools and universities started utilizing digital platforms such as social media, e-learning websites, and web-based applications for education in their daily life. With the outbreak of coronavirus, schools and colleges were supposed to close completely for 21 days during March 2020. The government of India took the decision of closure of educational institutions with the concern of providing safety life to students. Soon after the closure of schools and colleges, the nation experienced a socio-economic problems in all the states of India. To enhance the students with effective learning, most of educational heads started conducting online classes for students. As a result the practice of e-learning through online session was implemented across the nation. It encouraged the students and teachers to accept the possibility of gaining sustained education through e-learning courses. *Suraksha Subedhi et al (2020),* stated that "E-learning tools are playing a crucial role during this pandemic but in developing countries in Asia, technological, education or literacy background and socio-economic challenges exist. These challenges might act as a hindrance to the e-learning process".

Based on the convenience of students and teachers, online courses were conducted in some of the reliable online tools such as Zoom, MS Teams, Google-meet, Whatsapp and other digital platform. The sessions were carried out by Power point presentation, PDF and word document. *Raj Kishor Bisht, Sanjay Jasola and Ila Pant Bisht (2020)* stated that "online sessions were scheduled according to time table using learning management systems like Moodle, Google classroom or directly shared on WhatsApp on day-to-day basis. This transition to online mode of teaching and learning not only keeps academic environment running but engaged students in learning, thus keeping them away from any adverse mental and physical effects of lockdown". The authors also summarized that using similar e-learning tools, students were supposed to do assignment submission by the means of e-materials and examinations in virtual mode. Even though the e-learning went in a successful way, some of the students from rural area faced certain issues like poor internet facilities, unavailability of resources and students' inefficiency to follow the instructions of tutor. Based on these facts, the conceptual study is about unveil the advantages and limitations of e-learning courses from the students' point of view.

II. Background of the Study

a) The Rise of Online Education System

The traditional education system has to face serious threats with the advancements in digital technology. In recent years, the practice of "face-to-face" classroom system of education has shifted towards the online system of education. With respect to

Author: Research Scholar, VIT Business School, Vellore Institute of Technology Chennai, India. e-mail: divaips@gmail.com

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the pandemic issue (Covid-19), the entire education system in India started to follow virtual learning (online education system). *Kearsley et al. (1995)* initially described both advantages and disadvantages of online education in the earlier days of internet. During early 2000s, the practice of e-learning was limited very few students of schools and universities in India. The adoption of online education system was considered as the new dimension of academic learning. *Harasim (2000)* on his work described that transformation of traditional education system to online mode will have an impact in the minds of tutors and students as well. As compared to traditional education system, Harasim also mentioned the influence of digital technology over education system will be a greater challenge for the teachers to adopt online sessions in a daily basis.

Wallace (2003), through a review work on online education system established that e-learning system need a strong interactions between teacher and students as there was an unavailability of the traditional way of having a face-to-face interaction. It was recommended that institutions need to adopt an effective strategy while carrying out online education system. The problems associated with e-learning and scheduling the classes for students became more prominent, according to *Jones and O'Shea (2004). Zapalska and Brozik (2006),* addressed that e-learning costs only single-way communication between teacher and students, whereas traditional learning system provided two-way communication. Through traditional way, a teacher able to identify the learnings of individuals which is not possible in e-learning.

b) Improvements in e-learning

In the mid of 2000s, considering the rapid growth of online education, a wide range of online courses has been implemented to facilitate the students to learn more and new things on the interested areas. *Rai. L (2019)* in his work demanded that "MOOC (Massive Open Online Course)", coined by *Dave Cormier* have received impressive response from students around the world. Through e-learning, students belongs to different nations were provided with an alternative of acquiring subject knowledge with respective course certificates. *O'Connor (2014)* on his analysis towards e-learning, suggested online courses ensured students a crucial opportunity of learning additional knowledge apart from traditional classroom learnings. Since the introduction of two-way communication specifications in online education, students have the options to clarify their doubts with the tutor.

O'Neill and Sai (2014) defined the students in the late 2000s preferred traditional education system instead of online classes as they emphasize more on face-to-face classes. With wide variety of online courses, MOOCS proved a digital revolution in the field of education, according to *Kaplan and Haenlein (2016). Ahmad et al. (2017)* statistically proved that some of the Indian educational institutions started offering the MOOCs as supplementary course to their students. The practice of online education have created a huge impact in the minds of the students as it provides number of valuable course as compared with the traditional education. E-learning also ensures the students to choose their best course based on their convenience.

c) E-learning system in India

Sheikh (2017) in his approach on "challenges and opportunity in Indian higher education", stated that Indian institutions, primarily after the initial lockdown in March 2020 decided to implement e-learning process across the nation. Due to large land diversity, some of the hilly states in India encountered certain challenges in bringing efficient e-learning practice among the students. To overcome the challenging task of providing online education throughout India, the government continuously took serious efforts to ensure the most of the students to utilize e-learning in an effective way.

Selvakumar (2019) discussed a comparison statement on the basis of past and present scenario of education on consideration with number of factors such as internet access and network availability, structure of online education, and e-learning schemes and polices for students offered by the government. On considering the situations of students in remote areas, the Indian government played an important role in providing those students with quality online education up to greater extent.

d) Practice of Online assessments

Sarrayrih and Ilyas (2013) strongly recommended the necessity of conducting assessment in the online mode order to evaluate the students' knowledge on their subject. The authors also revealed that carrying out assessments in online need to confront certain challenges such as connectivity of internet, type of device, use of software and hardware, type of web-based applications and so on. Since online assessment might be beneficial for students as they able to do the assessment works in quick period of time, there were certain issues such as descriptive questions, strategies for the subjects given to the students should be addressed. *Ozden et al. (2004)* enquired the perspectives of students towards online assessments and derived that students were found easier as well as struggles on answering the randomized questions, feedback about the tests and possibility of scoring marks for the respective subjects. While during online assessments students found to achieve number of benefits like improved commitment of students, quick response and feedback to the tutor. Such faster response from the students enhanced the e-learning process across the nation, according to *Baleni (2015).*

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e) Perception towards online education

During Covid-19, *Mishra et al. (2020)* focused on teachers' and students' perceptions of online teaching and learning approaches. The necessity for online teaching grew urgent, bringing both institutions and individuals out of the ice age. Due to the COVID-19 outbreak, keeping the rule of social separation makes it difficult to give classes in a regular style. Teachers are putting forth effort to effectively teach pupils online through the use of multimodal techniques. In the event of a pandemic, *Ray and Srivastava (2020)* recommended that students use the online study modality. Virtual laboratories, video demonstrations, and simulations were the subjects of this research. It would aid students in making effective use of e-resources while also encouraging critical thinking. Students favoured online courses during this outbreak, according to *Fatonia et al. (2020).* Despite the fact that online teaching-learning provides students with flexibility, convenience, a comfortable atmosphere, and recognized as a sustainable from the instructors, students prefer to return to normal classrooms following the epidemic.

f) Satisfaction of students on E-learning

Sameh Al Nator and Carson Woo (2020), examined the satisfaction level of students through online sessions. The authors derived that different presentations are delivered in sequence in traditional in-class presenting settings, with little ability to seek advantage of the favourable potential impacts of social comparison. Given the limited period between presentations, presenters are unlikely to make modifications to their own briefings based on what they see in others' work. When other people's work is exhibited before one's own, it might cause anxiety. This amplifies the negative impacts of comparison bias while ignoring any of its favourable effects. The digital presentation learning method, according to this study, minimises the urge to compare one's presentation to others. This diminution in comparison bias is defined as the amount to which students' propensity to assess their progress by comparisons with others is reduced when they use the internet streaming presentation approach.

g) Covid-19 and online education in India

Prior to pandemic, traditional education system was followed by most of the schools and universities of India. Therefore, online education system was not a major part in schools and colleges. Since the pandemic outbreak, e-learning became the most prominent amongst all the educational institutions of India. From the beginning both teachers and students encountered challenges and problems while handling the online sessions. *Ferrara et al. (2013), Lawrence and Abel (2012) and Moore (2005)* addressed that a "digitally literate" worker can be able to carry out the online session in an efficient manner. To conduct online sessions effectively, the teachers should possess definite experience on handling the students while practicing e-learning courses through digital medium.

With the midst of the COVID-19 outbreak, the Indian National Commission for Cooperation with UNESCO has published a list of numerous e-learning sites in India (INCCU, 2020). *Ray (2020)* also claimed that government should provide equal and quality online education to entire Indian students which includes students from villages and rural areas. As per the goals of United Nations on education to all students, the Indian government emerged effectively on achieving the goal by providing quality education through online during the pandemic days.

III. Conclusion

The current study strongly argue that shifting of regular sessions to online sessions was due to the safety concern of students, in order to stay away from the hazardable disease (Covid-19). Due to the sudden change of learning process, initially both teachers and students felt hard to be work with web-based learning on a daily basis. The study also revealed that students' preference on online education is positively related as it provides more facilities for students to develop their subject knowledge even without the guidance of the instructor. With the existing literature on e-learning, it has been analyzed that students feel more comfortable on online session rather than the regular classes. Since the assessments were held on online, students found easier to answer the questions without hesitations. Furthermore, studies claimed that e-learning practices made students to carry forward their academic progress even in the pandemic conditions. Most of the existing literature shows that poor internet connection and students' inability of having frequent interactions with the teacher and friends seems to be the crucial issue on practicing online education. Through this study, it is concluded that online education system is most welcomed by students and it is quite acceptable to encourage students on utilizing the standard applications for learning and career aspects also.

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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.

9. Produce good diagrams of your own: Always try to include good charts or diagrams in your paper to improve quality. Using several unnecessary diagrams will degrade the quality of your paper by creating a hodgepodge. So always try to include diagrams which were made by you to improve the readability of your paper. Use of direct quotes: When you do research relevant to literature, history, or current affairs, then use of quotes becomes essential, but if the study is relevant to science, use of quotes is not preferable.

10. Use proper verb tense: Use proper verb tenses in your paper. Use past tense to present those events that have happened. Use present tense to indicate events that are going on. Use future tense to indicate events that will happen in the future. Use of wrong tenses will confuse the evaluator. Avoid sentences that are incomplete.

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 though 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.



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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.



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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.

The Administration Rules

Administration Rules to Be Strictly Followed before Submitting Your Research Paper to Global Journals Inc.

Please read the following rules and regulations carefully before submitting your research paper to Global Journals Inc. to avoid rejection.

Segment draft and final research paper: You have to strictly follow the template of a research paper, failing which your paper may get rejected. You are expected to write each part of the paper wholly on your own. The peer reviewers need to identify your own perspective of the concepts in your own terms. Please do not extract straight from any other source, and do not rephrase someone else's analysis. Do not allow anyone else to proofread your manuscript.

Written material: You may discuss this with your guides and key sources. Do not copy anyone else's paper, even if this is only imitation, otherwise it will be rejected on the grounds of plagiarism, which is illegal. Various methods to avoid plagiarism are strictly applied by us to every paper, and, if found guilty, you may be blacklisted, which could affect your career adversely. To guard yourself and others from possible illegal use, please do not permit anyone to use or even read your paper and file.

Criterion for Grading a Research Paper (Compilation) by Global Journals

Please note that following table is only a Grading of "Paper Compilation" and not on "Performed/Stated Research" whose grading solely depends on Individual Assigned Peer Reviewer and Editorial Board Member. These can be available only on request and after decision of Paper. This report will be the property of Global Journals

Topics	Grades		
	A-B	**C-D**	**E-F**
Abstract	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
Introduction	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
Methods and Procedures	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
Result	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
Discussion	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
References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

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