



Impact of the Measures Adopted on the Activities of Economic Operators in the City of Bouake in the Context of a Global Pandemic Disease, 2022

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Abstract: *Background:* Since it was declared a global health emergency by the WHO, Covid 19 has cost the world economy almost \$90,000 billion. There was no standardized global response to the pandemic. Each country approached the crisis according to its possibilities, knowledge and the hypotheses raised by its epidemiological surveillance services. It has long been essential for decision-makers to consider the trade-off between mortality linked to COVID-19 and the economic costs generated by barrier measures. It was reported that, according to the reference scenario, the combined shocks of COVID-19 should have led to a 34%, 39.1% and 26.2% drop in employment in the informal, formal service and formal market sectors respectively by 2020. In Côte d'Ivoire, all sectors of activity suffered the negative effects of the COVID-19 crisis. The paucity of written information on the impact of COVID-19 on economic operators prompted us to carry out this study in order to fill the gap and improve resilience in the face of this health phenomenon. *Methods:* A cross-sectional study was conducted in the geographical area of the commune of Bouaké from January 15, 2022 to June 10, 2022. Bouaké plays an undeniable role in Côte d'Ivoire's GDP, as it is home to 10% of the country's industries. Any economic operator residing in Bouaké before the start of the pandemic and working in one of the following areas: Transport or Hotels or Catering or Commerce (supermarkets, appliance stores, etc.) or Maquis and bars or Crafts, was included in the study. *Results:* The subjects, mostly young and operating in the informal sector, had a good knowledge of COVID-19 and its preventive measures; however, the preventive measures decreed by the authorities led to a drop in their sales by half, three-quarters and the whole amount in 33.8%, 23.1% and 20% of cases respectively. No financial compensation was granted in 96.7% of cases. *Conclusion:* The resilience of economic operators should in no way obscure the difficulties they experienced during the covid19 pandemic.

Keywords: COVID-19, Prevention, Economic Operators, Bouaké

1. Introduction

After the serious global health crisis of Spanish flu in 1918, COVID-19 has cost the world the most in economic terms. Since it was declared a global health emergency by the WHO, it has cost the world economy almost \$90,000 billion [1]. To keep it at bay, countries have put in place various measures to interrupt person-to-person transmission of the virus and avoid overloading their health systems [2]. There was no standardized global response to the pandemic. Each country approached the crisis according to its possibilities, knowledge and the hypotheses raised by its epidemiological surveillance services [3]. Non-essential school and business closures, bans on mass gatherings, travel restrictions, national border closures and/or complete entry bans, and nationwide curfews reduced the peak of daily confirmed cases. Combinations of these measures reduced the daily growth rate by more than individual measures [4]. As in other countries, faced with this rapid evolution and the threat of large-scale contamination likely to paralyze the Ivorian economy, the Côte d'Ivoire government had to react quickly. Thus, on March 23, 2020, a state of health emergency was declared, with the introduction of a series of measures to combat the spread of the disease. As the situation evolved, these measures were adjusted. It has long been essential for decision-makers to consider the trade-off between mortality linked to COVID-19 and the economic costs generated by barrier measures [5]. These economic impacts may be related to the consequences of protective measures, or to the financial resources disbursed to care for people and manage the crisis itself. Containment led to a collapse in international trade [6]. The decline of the global economy is thought to have resulted from two main factors [7]. The first concerns the various forms of isolation imposed by governments, such as social distancing, closures of events and corporate offices, and confinements. The second is uncertainty about the seriousness of the situation [7]. According to information provided by the International Monetary Fund (IMF), world gross domestic product is estimated to have fallen by around 3.5%. Several researchers have provided the very first approximations of the global economic costs of the SARS-CoV-19 pandemic, which could total around 2,700 billion dollars [8].

Compared to the rest of the world, the COVID-19 pandemic has had fewer health effects than expected in Africa, despite fears that the continent is insufficiently prepared to contain the spread of the virus [9]. Thus, despite representing around 17% of the world's population, Africa accounted for just 3.3% of the total number of cases worldwide, 4% of deaths and 0.7% of active cases as of March 21, 2020. At the same time, it was reported that, according to the reference scenario, the combined shocks of COVID-19 should have led to a 34%, 39.1% and 26.2% drop in employment in the informal, formal service and formal market sectors respectively by 2020.. The

contraction is even greater in the worst-case scenario, with employment in the informal sector falling by almost 43.2%, in the formal non-market sector by 51.1% and in the formal market sector by 32.3%. The combination of these effects would lead to a 1.7% drop in GDP. It can also be said that the arrival of COVID-19 reinforced Africa's poverty, because in its absence, micro-simulation estimates showed that Africa's extreme poverty rates (share of people living on less than USD 1.90 per day) would have fallen from 32.89% in 2019 to 32.18% in 2020 and 31.52% in 2021. This represented a reduction in extreme poverty rates of 0.71% and 0.67% in 2020 and 2021 respectively. However, when the effect of the coronavirus pandemic is taken into account, extreme poverty increased in 2020 by 2.14% and 2.84% in the reference and worst-case scenarios, respectively. The effect of COVID-19 on poverty would increase further in 2021, reaching 2.51% and 3.63% in the baseline and worst-case scenarios respectively, according to the same source [10]. In Côte d'Ivoire, All sectors of activity suffered the negative effects of the COVID-19 crisis. However, the sectors most affected were transport, agriculture, accommodation and catering in terms of volume of activity [11]. The paucity of written information on the impact of COVID-19 on economic operators prompted us to carry out this study in order to fill the gap and improve resilience in the face of this health phenomenon.

2. Materials and Methods

A cross-sectional study was conducted in the geographical area of the commune of Bouaké from January 15, 2022 to June 10, 2022. With a population of 832,371 according to the 2021 general population and housing census (RGPH), it is the second most populous city in Côte d'Ivoire [12]. Bouaké plays an undeniable role in Côte d'Ivoire's GDP, as it is home to 10% of the country's industries. Bouaké is located in the center of Côte d'Ivoire. The city stands out for three main reasons: it's located on a crossroads, it's the second most populous city and it's the country's second industrial hub. [13]. The study population was made up of economic operators in the city of Bouaké.

Any economic operator residing in Bouaké before the start of the pandemic and working in one of the following areas: Transport or Hotels or Catering or Commerce (supermarkets, appliance stores, etc.) or Maquis and bars or Crafts, was included in the study.

The non-probabilistic method with a reasoned choice technique was used for sampling.

To determine the sample size, we applied Schwartz's formula:

$$n = z^2 pq / i^2$$

n = sample size;

p = average proportion of subjects with a positive

perception of preventive measures. (The assumption is made that no previous data on the target population are available.)

$$p = 50\% = 0.5;$$

$$q = 1-p=1-0.5=0.5;$$

z = reduced deviation=1.96 for a risk of error α of 0.5

i = statistical precision set at 0.05

Thus $n = (1.96)^2 \times (0.5 \times 0.5) / (0.05)^2 = 384$

Taking into account non-respondents estimated at 10% of the sample obtained, we added 38 people for a sample size of around 420.

The number of people to be interviewed by sector of activity was 70. To select the people to be interviewed, we started with one professional identified for each of the above-mentioned areas, and then identified the next one after the previous one had located him or her. We proceeded in this way until we had reached our target number of people per sector. The questionnaire method was used to collect data. We drew inspiration for the questionnaire from the KAP questionnaires on covid found in our literature search. We added specific questions on the effects of covid19 control measures on their business operations. A one-week pilot study enabled us to gain a better understanding of the conditions under which they carry out their activities.

2.1. Data Processing

Data were analyzed using Epi info.3.5.1 and SPSS 17.0.

2.2. Ethical Considerations

All research was conducted in accordance with the 2013 Declaration of Helsinki. Verbal consent was sought and obtained from all economic operators interviewed. Respondents' anonymity was respected by assigning a unique code to each survey file corresponding to an interviewed subject. The research was conducted after obtaining survey authorization from the health authorities of the Gbêkê region.

3. Results

3.1. Socio-Demographic Characteristics (Table 1)

The average age was 35.79 ± 10.74 years. The economic

operators surveyed were male in 74% of cases, i. e. a sex ratio of 2.84. Ivorian nationality was most represented (90%). Ivorian nationality was the most common (90%); 76.42% had attended a conventional school (inherited from the colonial system) and 59% were living with a partner (marriage or cohabitation). The number of employees per structure ranged from 1 to 10 in 82.57% of cases. Operators had been in business for at least 5 years in 78.4% of cases. Expenditure on monthly fixed costs was less than 500,000FCFA in 68% of cases.

3.2. About COVID-19 Disease (Tables 2 and 3)

The main modes of transmission reported were coughing (86.2%), sneezing (72.6%) and hand contact (72.6%). The main propagation factors reported were gatherings (81.4%) and travel (55.2%). The main avoidance measures reported were the wearing of masks (91.7%) and physical distancing (79.3%). The protective measures recommended by the State were all known in over 70% of cases, with the exception of the spraying of public places, which was known by 52.4% of operators. Among the measures recommended by the State, the closing of borders, curfew and compulsory wearing of masks were respected in over 80% of cases. The isolation of Greater Abidjan, the ban on gatherings and physical distancing were respected by 68%, 63.3% and 57.1% respectively.

3.3. Effects of Protection Measures on Business Activity (Tables 4, 5 and 6)

The protective measures recommended that had the most negative impact on business activity were the closure of business premises (81.7%), bans on gatherings (78.1%), curfews (70.7%) and the isolation of Greater Abidjan (61.7%). These measures are said to have reduced turnover by half, three-quarters or even the whole amount in 33.8%, 23.1% and 20% of cases respectively. No financial compensation from the state was obtained in 96.7% of cases. Faced with these difficulties, operators adopted the following main measures: cutting expenses (57.1%); temporary cessation of activities (55.4%); modification of working hours (49%).

Table 1. Socio-Demographic Characteristics.

Characteristics	Modalities	Number	Percentage (%)
Age group (years old)	15-19	2	0,5
	20-45	338	80,4
	46-72	80	19,1
Gender	Male	311	74
	Female	109	26
Type of school attended	Conventional	321	76,4
	Koranic or Franco-Arab	99	25,6
	Ivorian	378	90
Nationality	Non-Ivorian	42	10
	In couple	248	59
Marital status	Not in couple	172	41
	1 to 10	347	82,6
Number of employees by company	11 to 50	71	17

Characteristics	Modalities	Number	Percentage (%)
Duration of the activity	More than 50	2	0,4
	less than 5 years	91	21,6
	at least 5 years	329	78,4
Monthly expenses for fixed costs in FCFA*	≤500000	286	68
	>500000	134	32

1FCFA=0,0015 euros

Table 2. About COVID-19.

Variables	Modalities	Number	Percentage (%)
Mode of transmission	cough	362	86,2
	sneeze	305	72,6
	manual contact	305	72,6
	breathing	143	34
	Others	18	4,3
Propagation factors	Gathering	342	81,4
	Travels	232	55,2
	Closed environment	102	24,3
	Other	73	17,4
	Wearing a mask	335	91,7
Eviction measures	Physical distancing	333	79,3
	Eviction of gatherings	207	49,3
	Other	119	28,3

Table 3. About the measures recommended by the authorities.

MEASURES	Informed of the existence of these measures		Compliance with these measures	
	Number	Percentage (%)	Number	Percentage (%)
Regular hand washing	397	94,5		
Wearing a mask is mandatory	375	89,3	353	84
Closure of public places	375	89,3	189	44,8
Physical distancing	362	86,2	240	57,1
Prohibition of gatherings	349	83,1	266	63,3
Border closures	344	81,9	331	78,8
Curfew	335	79,8	354	84,3
Isolation of Greater Abidjan	299	71,2	286	68
Sneezing into the crease of the elbow	291	69,3		
Spraying of public places	220	52,4	101	24

Table 4. Effects of measures advocated by the government authorities.

Recommended measures	Impact			
	Negative		None	
	Number	Percentage (%)	Number	Percentage (%)
Mandatory wearing of face mask	55	13,1	365	86,9
Closure of activities centers	343	81,7	77	18,3
Physical distancing	152	36,2	268	63,8
Prohibition of Gatherings	328	78,1	92	21,9
Border Closure	205	48,9	215	51,1
Curfew	296	70,7	124	29,3
Isolation of Greater Abidjan	259	61,7	161	38,3
Spraying of public places	4	10	416	99

Table 5. Turnover consequences and financial compensation.

Decrease in actual turnover	Number	Percentage (%)
None	27	6,42
Quarter	21	5
Third party	37	8,8
Half	142	33,8
Three quarters	97	23,1
All	84	20
No answer	12	2,88
Financial compensation		
Yes	14	3,33
No	406	96,66

Table 6. Measures adopted to mitigate the negative effects of measures taken by the government authorities.

Measures	Number	Percentage (%)
Reduced expenses	240	57,1
Temporary cessation of activity	233	55,4
Modification of working hours	206	49
Supply reduction	202	48
Closure of points of sale	122	29
Reduction of staff	121	28,9
Video-conference	75	17,9
E-commerce	12	2,9

4. Discussion

4.1. Socio-Demographic Characteristics

The average age of 35.79 reflects the youthfulness of the study population. In China in 2022, Xiao D and al [14] found an average age of 31 among managers of small and medium-sized enterprises (SMEs). Zainal M and al, in Kuwait in 2022 [15], found that 59.2% of SME managers were under 45. The male predominance in our population can be explained by certain sectors of activity that are predominantly male-dominated. In fact, the management of certain sectors is locally dominated by men, as in the case of the hotel industry, transport and the craft sector. In their studies, Xiao [14], Nordhagen S [16] and Zainal [15] also found a male predominance among SME managers.

In contrast to developed countries, where there is a single school system that is compulsory for all, in underdeveloped areas it is not uncommon to find people who have not attended a conventional school (inherited from the colonial system). This situation is all the more frequent in underdeveloped countries, as it is not necessary to have a high level of schooling before working in certain fields of activity. This is the case in transport, catering and handicrafts, all of which are largely informal. In 59% of cases, economic operators were living as a couple (married or cohabiting). Having an income-generating activity confers a certain financial autonomy. This autonomy makes it easier to take on certain social responsibilities involved in married life. Zainal M [15] found 63.9% married people in their study. The predominance of microenterprises (<10 employees) in our study can be explained by the predominantly informal nature of the activities carried out. Indeed, managing a large number of employees would require larger funds. These funds are difficult to access, especially as government support is virtually non-existent in underdeveloped areas. Zainal M [15] found 53.1% small businesses in their study, whereas in the study by Brizek, M in the USA [17], businesses employing between 10 and 50 people accounted for 64.2%. The high proportion of micro-businesses in our study could explain the low monthly fixed costs (<500000FCFA, i. e. around 764 euros).

4.2. About the COVID-19 Disease

The media hype surrounding covid19 has left no social stratum indifferent, and has had the advantage of making

people aware of the modes of transmission, the signs and the avoidance measures. Not surprisingly, the economic operators interviewed were relatively well informed. In the sub-Saharan region, numerous studies have been carried out to assess people's knowledge of COVID-19. Studies by Adela et al in Cameroon in 2020 and by Iradukunda and Al in Rwanda in 2020 found that patients had good knowledge of covid19 in 84.19% and 97% of cases respectively. However, Haftom et al and 2020 in Ethiopia (42.9%) and Carsi et al and in the Democratic Republic of Congo 2020 found that their study populations had good knowledge in 42.9% and 30% of cases respectively. The fear generated by COVID-19, which was always accompanied by the same media hype, could explain the authorities' compliance with the control measures recommended. With a few exceptions, the control measures adopted by different nations, derived from WHO recommendations, were similar almost everywhere in the world. Adela et al and Iradukunda et al found that patients had good preventive practices against covid19 in 60.8% and 90% of cases respectively. Carsi et al found that most of those surveyed did not observe hand-washing, mask-wearing or social distancing [18].

4.3. Effect of Measures Introduced on Activities

Our operators need to work with a large number of people to achieve their objectives. It seems understandable that the closure of business premises and bans on gatherings should be the measures with the greatest impact on their activities.

Abidjan is Côte d'Ivoire's main economic hub, and all economic operators, regardless of their geographical location or field of activity, use this city to order and deliver goods and inputs. Its isolation, due to the health crisis at covid19, has inevitably led to a break in this process. The consequences of border closures are similar to those of the isolation of greater Abidjan. The curfew has drastically reduced the time frame in which economic operators can operate, as well as the number of potential customers. The near-compulsory halt to business activity is bound to have an impact on sales. Adaptation measures have been self-evident, especially as virtually no state subsidies have been forthcoming.

The informal sector accounts for approximately 65% of the Lagos state economy [19]. A significant negative impact on people's economic activities was reported. This was caused by the inability to travel as a result of the COVID-19 pandemic. Managers of businesses operating in the informal sector were unable to travel and carry out their activities,

which require a human presence. These included trade, transport, construction, catering, mechanical and electrical engineering, fashion design and hairdressing. Those who peddle and sell goods in circulation, operate Uber and other forms of transport, or have to travel to provide services, can no longer engage in these activities, which affects the state's economy. These informal structures are run by people on low incomes who operate in a society predominantly dominated by the circulation of cash. These people have to leave home every day to get money [20]. The increased cost of transportation, shortage/lack of transportation mode and traffic congestion were identified as the major impact of COVID-19 on Transportation in Lagos State. People in different locations around the megacity travelling to their places of work have experienced an increase in the cost of transportation. 94.5% of participants have experienced an increase in the cost of transportation. There are few fleets of public transport, and there are many people who want to travel. With the demand for transportation now greater than the supply, due to lock down and restriction, the transporters have increased their fares. This high cost of transportation has added to the overall cost of living in the city during this time. Similarly, the cost of food items has increased, as Lagos is not a food-producing state. Food is brought from other states, becoming expensive in its journey to the city, as vendors must find ways to bypass other states and lockdowns [20]. With a few exceptions, the situation in Lagos is similar to that in Bouaké. The United States of America also had its realities. The approximately 60-day forced closure of most U. S. restaurants ability to serve indoors had devastating results. An April 2020 survey [21, 22], conducted by the National Restaurant Association, of more than 6500 restaurant operators, indicated that average sales were down 78%. This represents a sales loss of more than \$30 billion in March and \$50 billion in April. Full-service restaurants were hit the hardest, with an 83% drop, while limited-service restaurants suffered a 61% drop. Open Table, who provides reservation services for more than 60,000 restaurants, surveyed approximately 20,000 of its clients, saying that total reservations were down 95% on May 13 from the same day last year. More strikingly, some estimate that one in every four U. S. restaurants will go out of business due to COVID-19 restrictions [23]. Restaurant sales declines have forced operators to cut staffing levels drastically. According to the U. S. Department of Labor Statistics, of the 701,000 American jobs lost in March, the majority came from restaurants and bars. Americans lost about 417,000 jobs in foodservice and drinking places, which is roughly 60% of the month's total losses [23]. On average, restaurants cut 83% of their total staff, which equates to more than 8 million restaurant employees being laid off or furloughed since the beginning of the coronavirus outbreak [17, 23]. The situation in Great Britain also has its specific features.

In this country, some sectors gained, and others lost. Food stores and non-store retailers showed considerable flexibility in adjusting to the crisis, with an increase in sales in the order of over £4 billion more in the period March–August 2020.

Gains to non-store retailers where particularly large in percentage. The ability to keep physical stores open provided an advantage to food retailers; while non-store retailers were able to use their existing capabilities to reach their customers remotely, without radically changing their operations. Food services and non-food stores were severely impacted by the crisis, losing over £20 billion pounds of sales, a large share of their yearly business. The loss was particularly large for food services. Contrary to what was observed in Denmark [24], lockdown rules in the UK caused significant losses of economic activity to the retail sector. Sales of both predominantly food and non-food stores appear to have recovered to BAU levels. Interestingly, there is little evidence of a post-lockdown fall in food sales due to stockpiled inventories, or of an overshoot in non-food sales caused by pent-up demand during the lockdown [25]. The situation is consistent with the findings of Vall Castello' and Lopez Casasnovas [26] in most food categories in Spain.

The near-inexistence of state financial aid is in line with the realities of developing countries. The informal sector is predominant, and government assistance exceptional. However, to the credit of decision-makers, some operators do not offer sufficient guarantees of credibility. Certain factors reinforce this lack of credibility. These include failure to declare a company to the relevant ministry, and failure to pay taxes. In the USA, Several governmental and non-governmental agencies created economic programs to provide relief economic relief to these beleaguered restaurant operators. A number of small businesses may not have opted into these programs because program requirements were convoluted, which led to differential access for larger firms [17].

5. Limitations

We have targeted several business sectors. This makes our results more heterogeneous than specific. In the absence of a directory of economic operators, we opted for the non-probabilistic method of selecting subjects. This method does not allow us to generalize to all economic operators in the city of Bouaké. The economic operators we surveyed are more involved in the provision of services than in the production and/or manufacture of consumer goods. We made no reference to any particular business model, as we took a holistic approach to our study. Our aim was to highlight the overall difficulties faced by economic operators as a result of the measures taken to combat covid19. Notwithstanding these limitations, our study has its *raison d'être*, as it contributes to filling the gap in Africa on this aspect of covid19 which has not yet been sufficiently explored.

6. Conclusion

This article explores the impact of the safety measures resulting from the covid19 pandemic on the activities of Business people in the city of Bouaké. The results show that the political authorities need to take the weakest economic

strata into account when making certain decisions. However, the global psychosis generated by covid19 has probably impaired the lucidity of decision-makers. Future research, targeting only specific areas of activity, would better focus the attention of the scientific community and decision-makers on the realities experienced by populations during the covid19 pandemic.

Conflict of Interests

The authors have not declared any conflict of interests.

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References

- [1] Gorain B, Choudhury H, Molugulu N, Athawale R B, Kesharwani P. Fighting Strategies Against the Novel Coronavirus Pandemic: Impact on Global Economy. *Frontiers in Public Health*. 2020; 8: 606129. <https://doi.org/10.3389/fpubh.2020.606129>
- [2] Lorenc A, Kesten J M, Kidger J, Langford R, Horwood, J. Reducing COVID-19 risk in schools: A qualitative examination of secondary school staff and family views and concerns in the South West of England. *BMJ Paediatrics Open*. 2021; 5 (1): e000987 <https://doi.org/10.1136/bmjpo-2020-000987>
- [3] Houvéssou G M, Souza T P, Silveira M F. Lockdown-type containment measures for COVID-19 prevention and control: A descriptive ecological study with data from South Africa, Germany, Brazil, Spain, United States, Italy and New Zealand, February - August 2020. *Epidemiologia e Serviços de Saúde*. 2021; 30. <https://doi.org/10.1590/S1679-49742021000100025>
- [4] Kaimann D, Tanneberg I. What containment strategy leads us through the pandemic crisis? An empirical analysis of the measures against the COVID-19 pandemic. *PloS One*. 2021; 16 (6): e0253237. <https://doi.org/10.1371/journal.pone.0253237>
- [5] Anthony Staines, René Amalberti, Donald M Berwick, Jeffrey Braithwaite, Peter Lachman, Charles A Vincent COVID-19: patient safety and quality improvement skills to deploy during the surge.
- [6] International Journal for Quality in Health Care, Volume 33, Issue 1, 2021, mzaa050, <https://doi.org/10.1093/intqhc/mzaa050>
- [7] Cherednik, I. Modeling the Waves of Covid-19. *Acta Biotheor* 70, 8 (2022). <https://doi.org/10.1007/s10441-021-09428-w>
- [8] Ozili, Peterson K and Arun, Thankom, Spillover of COVID-19: Impact on the Global Economy (March 27, 2020). Available at SSRN: <https://ssrn.com/abstract=3562570> or <http://dx.doi.org/10.2139/ssrn.3562570>
- [9] Korneta, P., & Rostek, K. The Impact of the SARS-CoV-19 Pandemic on the Global Gross Domestic Product. *International Journal of Environmental Research and Public Health*, 18 (10), 5246. (2021). <https://doi.org/10.3390/ijerph18105246>
- [10] Açıköz, Ö, & Günay, A. The early impact of the COVID-19 pandemic on the global and Turkish economy. *Turkish Journal of Medical Sciences*, 50 (SI-1), 520-526. (2020). <https://doi.org/10.3906/sag20046>
- [11] Morsy, H., Balma, L., & Mukasa, A. N. 'Not a good time': Assessing the economic impact of COVID-19 in Africa using a macro-micro simulation approach. *African Development Review*, 33 (Suppl 1), S17-S30. (2021). <https://doi.org/10.1111/1467-8268.12526>
- [12] Ministère du plan et du développement. Evaluation de l'impact du COVID-19 sur l'activité des entreprises du secteur formel en Côte d'Ivoire: rapport final. 2020. 62p. <https://www.undp.org/fr/cote-d-ivoire/publications/rapport-sur-l%E2%80%99%C3%A9valuation-de-l%E2%80%99impact-socio-%C3%A9conomique-du-covid>
- [13] Institut National de la Statistique. Recensement Général de la Population et de l'habitat de Côte d'Ivoire 2021. https://www.ins.ci/RGP2021/RGPH2021RESU LTATS%20GLOBAUX_VF.pdf
- [14] AMOATTA Koffi G. L'industrie de Bouaké à l'ère de la nouvelle économie Méditerranéenne. *Telecommunications Journal Vol. 7, N° 1, January 2017* ISSN: 2458-6765.
- [15] Xiao D, Su J. Macroeconomic lockdown effects of COVID-19 on small business in China: empirical insights from SEM technique. *Environ Sci Pollut Res Int*. 2022 Sep; 29 (42): 63344-63356. doi: 10.1007/s11356-022-20071-x. Epub 2022 Apr 22. PMID: 35451716; PMCID: PMC9026007.
- [16] Zainal, M., Bani-Mustafa, A., Alameen, M., Toglaw, S., & Al Mazari, A. Economic Anxiety and the Performance of SMEs during COVID-19: A Cross-National Study in Kuwait. *Sustainability*, 2022; 14 (3).
- [17] Nordhagen S, Igbeka U, Rowlands H, Shine RS, Heneghan E, Tench J. COVID-19 and small enterprises in the food supply chain: Early impacts and implications for longer-term food system resilience in low- and middle-income countries. *World Dev*. 2021 May; 141: 105405. doi: 10.1016/j.worlddev.2021.105405. Epub 2021 Jan 29. PMID: 36570098; PMCID: PMC9758390.
- [18] Brizek MG, Frash RE, McLeod BM, Patience MO. Independent restaurant operator perspectives in the wake of the COVID-19 pandemic. *Int J Hosp Manag*. 2021 Feb; 93: 102766. doi: 10.1016/j.ijhm.2020.102766. Epub 2020 Nov 19. PMID: 33230361; PMCID: PMC7674148.
- [19] Nwagbara UI, Osual EC, Chireshe R, Bolarinwa OA, Saeed BQ, Khuzwayo N, Hlongwana KW. Knowledge, attitude, perception, and preventative practices towards COVID-19 in sub-Saharan Africa: A scoping review. *PLoS One*. 2021 Apr 19; 16 (4): e0249853. doi: 10.1371/journal.pone.0249853. Erratum in: *PLoS One*. 2021 Jun 22; 16 (6): e0253833. PMID: 33872330; PMCID: PMC8055009.
- [20] Medina, L., Jonelis, M., Cangul, M., The informal economy in Sub-Saharan Africa: Size and determinants. *International Monetary Fund*, Washington, D. C. 2017.
- [21] Mogaji E. Impact of COVID-19 on transportation in Lagos, Nigeria. *Transp Res Interdiscip Perspect*. 2020 Jul; 6: 100154. doi: 10.1016/j.trip.2020.100154. Epub 2020 Jun 12. PMID: 34171020; PMCID: PMC7290214.

- [22] Grindy, B., 2020a. Restaurant Operators Do Not Anticipate a Rapid Improvement in Business. National Restaurant Association. Retrieved June 5 from. <https://www.restaurant.org/articles/news/restaurant-operators-do-not-expect-improvement>.
- [23] Grindy, B., 2020b. Restaurant Sales and Job Losses Are Widespread Across Segments. N. R. Association. <https://www.restaurant.org/Articles/News/Restaurant-sales-and-job-losses-are-widespread>.
- [24] Ludlow, E., 2020. One-quarter of American Restaurants Won't Reopen, Open Table Says. Bloomberg. <https://www.bloomberg.com/news/articles/2020-05-14/one-quarter-of-american-restaurants-won-t-reopen-opentable-says>.
- [25] Sheridan, A., Andersen, A. L., Hansen, E. T., Johannesen, N., Social distancing laws cause only small losses of economic activity during the covid-19 pandemic in scandinavia. *Proc. Natl. Acad. Sci. Unit. States Am.* 2020.117 (34), 20468–20473.
- [26] Luca A. Panzone, Shaun Larcom, Po-Wen She Estimating the impact of the first COVID-19 lockdown on UK food retailers and the restaurant sector *Global Food Security* 28 (2021) 100495 <https://doi.org/10.1016/j.gfs.2021.100495>
- [27] Vall Castello, J., Lopez Casasnovas, G., The effect of lockdowns and infection rates on supermarket sales. *Econ. Hum. Biol.* 2021, 40, 100947.