



Impact of the COVID-19 Health Crisis on the Indebtedness of Family SMEs in Chad

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Abstract. This research aims to assess the effect of the Covid-19 health crisis on the indebtedness of family SMEs in Chad. The sample of this study consists of 150 managers of family SMEs. We used a qualitative method complemented by a quantitative method based on linear regression. After processing the data, the results of our study show that debt is statistically significant and is negatively influenced by the Covid-19 health crisis. Similarly, the relationship between the Covid-19 health crisis and SME debt is moderated by age. The SMEs have not honored their commitments to financial institutions and are almost bankrupt. Finally, the managerial contributions were underlined to overcome the debts of family SMEs in the context of health crisis.

Keywords: COVID-19, Family SMEs Chad, Health Crisis, Indebtedness.

1. INTRODUCTION

The health crisis has disrupted the economies of countries, including the lives of businesses, whether or not they are able to continue operating. These disruptions have had a wide variety of impacts on businesses, and many are experiencing significant financial difficulties (Peretti-Watel, 2020). The Covid-19 crisis also exposed major vulnerabilities in firms' operations and supply chains related to working conditions and preparedness for potential disasters. Governments took exceptional measures to try to contain the Covid-19 crisis, imposing an unprecedented blanket lockdown and large-scale cessation of economic activity, and providing relief and recovery mechanisms to support struggling businesses and workers. The Covid-19 outbreak caused a financial and economic crisis for most sectors (Abouzaid and Balla, 2021). Many companies also mobilized to participate in the pandemic containment effort and mitigate the economic blow to their workers and supply chains (Bonono-Momnougui, 2020). Thus, the purpose of financial and accounting reporting is to communicate the company, its business, financial position, and results to key stakeholders (Razgani, 2017). However, the responses devised by governments and businesses can also come with unforeseen risks.

The world is paralyzed and thrown into doubt for several months. Chad has not been spared and continues to experience the repercussions of this global crisis. Chad recorded its first case of coronavirus on March 19, 2020. Through April 1, 2022, Chad is at 7343 confirmed cases with 7,151 cases treated and 192 deaths (Ministry of Health, 2022). This Covid-19 pandemic creates uncertainty at all levels: about the magnitude of the threat, about the effectiveness of the means to treat it, and about its consequences (Peretti-Watel, 2020). Thus, the consequences of Covid-19 are numerous (Ragot, 2020). It leads to indebtedness, declines in sales, and the slowing down of economic activities and huge problems for businesses around the world (OECD, 2020). Like everywhere else, economic activities and sales have slowed down in recent months in the CEMAC¹ zone in general and in Chad in particular. Production volumes in firms have fallen and they have incurred debts. Those that have taken out loans have remained insolvent and others that have relied on their own capital have lost their investment in family-owned SMEs. These SMEs are facing major difficulties, with supply chain disruptions, cash flow problems, and an inability to meet delivery deadlines (McGrath, 2020). Companies are being hit hard by the consequences of this crisis. They are all facing a major new challenge and their survival is at risk. This has a splash on their profits and financial profitability.

Also, family-owned SMEs are recognized as the breeding ground of the industrial fabric and contribute to economic development². In Chad, they occupy a predominant place in the national economic network and constitute a field of research that attracts our attention.

In general, companies have decreased under the constraint of respecting security measures, the number of agents or employees at the same time as value creation is now attracting growing interest in different areas of management sciences (Houkou and Tèkpanzo, 2018), other companies have closed their doors.

SMEs in Chad have difficulties especially, with the cessation of activities in bars, restaurants, dry cleaners, hardware stores, carpentry, etc. In order to respond to the various concerns of economic operators, the Chadian government has reduced expenses and taxes (on water, electricity, etc.) and has subsidized entrepreneurs. Other

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² For example, 90% of businesses in the United States are family-owned and account for 40% of US GDP. In Western Europe, family-owned businesses account for between 45% of GDP and 65% of employment.

countries have provided relief in several forms. Companies have strengthened their management mechanisms.

However, difficulties in accessing financing remain one of the main obstacles to the creation, survival and growth of SMEs. The crisis has only exacerbated the difficulties, with family-owned SMEs suffering from a double shock: first, a dramatic drop in demand for goods and services, and second, a tightening of credit conditions, which severely affects cash flow (OECD, 2019).

Indeed, according to the Ministry of Economy and Development Planning of Chad in a study on the socio-economic impact of covid-19 in June 2020, as far as the real sector is concerned, simulations incorporating the effects of this pandemic show that real GDP growth projected at 6, 9 percent in 2020, including 27.5 percent for the oil sector and 6.2 percent for the non-oil sector, would fall to -0.4 percent due to the slowdown in oil activities (3.2 percent) and also in the non-oil sector (-1.3 percent).

The annual average inflation rate stood at 4% in 2018 compared to -0.9% in 2017, -1% in 2019 (INSEED³, 2019) and would stand at 3.57% after the COVID-19 pandemic.

Public finances are also affected by COVID-19. Thus, the budget deficit in 2020 and 2021 will widen due to lower oil revenues and higher expenditures. The fall in oil prices is expected to reduce oil revenues by 40 percent in 2020 and 56 percent in 2021. As a result, the fiscal deficit is expected to stabilize at about 1.5 percent of non-oil GDP in 2020 and widen to 3.4 percent in 2021.

In view of this health situation, which weighs on the activities of the state and SMEs, the following research question arises:

What is the effect of the Covid-19 health crisis on the indebtedness of family SMEs in Chad?

To this end, the objective of this paper is to assess the effect of the Covid-19 health crisis on the indebtedness of family SMEs in Chad.

For any enterprise, the ultimate objective is to make profits and increase its activities in order to be solvent vis-à-vis microfinance institutions. This has been difficult since the emergence of the Covid-19 health crisis, which affects the supply and sales of family-owned SMEs worldwide. This article is structured in three sections, namely: a literature review, the research methodology and finally the results and discussions to end with the conclusion.

2. LITERATURE REVIEW

2.1. Theoretical Basis of the Study

We present the theoretical framework of the study with a focus on the concepts of Covid-19 health crisis and indebtedness.

2.1.1. Covid-19 Health Crisis

A health crisis is an epidemic that spreads over a large geographical area and affects a significant proportion of the population: among the many parameters that transform a disease into a pandemic, one must consider the incubation time before the first symptoms, the time before the contagious phase, the intensity of the contagiousness of the biological agent, the degree of immunity of the population and the mode of transmission (Nkoa, 2020). The coronavirus SARS-CoV-2 generates the infectious disease Covid-19. The first study of the first 425 cases, shows that human-to-human transmission dates back to at least mid-December 2019 (Cattacin, Ricciardi, Gamba, & Nardone, 2020). To avoid for contagion, a distance of more than one meter seems generally sufficient, but as a precaution, 2 meters or more are sometimes proposed or imposed (Nkoa, 2020). In many publications (WHO, 2020; Ragot, 2020), it has been reported that in case of coughing or sneezing, the spread of the virus is possible during exhalation up to a distance of 8 meters, far from the recommended two meters. The strong spread of Covid-19 has led to serious disruptions in business life (Oudda, Assaad and Bennis, 2020).

We can say that health crises are events actually or potentially affecting a large number of people, affecting health, and possibly increasing the significant mortality or excess mortality factor. Some of them can also be the subject of a health scandal, when the confidence of consumers and citizens is at stake. The Covid-19 pandemic is referred to as Coronavirus Disease 2019 or Covid-19, which emerged in Wuhan on November 17, 2019, in Hubei Province, Central China, before spreading around the world. The Covid-19 (acronym of its name in English "Coronavirus disease 2019"), was so named by the World Health Organization (WHO) on February 11, 2020.

2.1.2. Indebtedness

Debt refers to a situation marked by an accumulation of debt (Imane, 2016). In the business world, debt is very often directly related to the investments made, as these investments require a certain amount of long-term debt (Modigliani and Miller, 1958; Laura, 2015). Debt from microfinance institutions and even self-financing are the main methods of financing for non-financial companies. Indebtedness can be achieved through borrowing or bank credit (Stiglitz, 1972).

Indeed, debt increases risks and encourages the manager, who is threatened by the loss of his remuneration and benefits in kind, to adopt a more efficient management that is more in line with the interests of the firm

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(Modigliani and Miller, 1958; Imane, 2016). As a result, debt is a means of controlling managers. It can be considered as a mechanism of corporate governance. But, by resorting to debt, the manager, as a representative of the shareholders, may therefore be led to favor the interests of the shareholders to the detriment of the creditors, which leads to the emergence of conflicts of interest between the shareholders and the creditors. To resolve these conflicts and to protect their interests, creditors may demand an external audit of quality as a guarantee of the reliability of the financial information. In the case of SMEs, creditors will demand sufficient guarantees from financial institutions (banks, microfinance, etc.).

2.1.3. Explanatory Theories of Indebtedness

There have been theoretical advances in debt. It is based on traditional theories, the theory of Modigliani and Miller (1958) and the theory of trade-offs, to name but a few. The followers of this theory consider, under the hypothesis of absence of financial distress, that the bankruptcy costs linked to debt, coupled with the existence of fiscal advantages of debt, allow the firm to theoretically determine an optimal level of debt or a target debt ratio. Thus, the optimal financial structure results from the trade-off between the tax savings and the costs of this failure, which translates into the equalization of the marginal gains linked to the deductibility of financial charges and the marginal costs of bankruptcy linked to the increase in debt.

Since the work of Modigliani and Miller (1958), theoretical debates and empirical work on the question of indebtedness have abounded. Arbitrage theory is one of the first lines of progress from this school, known as neoclassical. This theory puts forward the following idea: the firm substitutes equity for debt or debt for equity until the value of the firm is maximized.

A firm always seeks the level of debt that allows it to minimize its cost of capital, and thus maximize its value (Laura, 2015). This debt level is according to the arbitrage (or trade-off) theory, the one that balances the fiscal benefits of any additional debt (perpetual rent from tax savings) with the costs of possible financial distress (bankruptcy costs incurred by debt).

We have:

$VE = VNE + tD - VA$, with VE = Value of the indebted Enterprise;

VNE = Value of the non-indebted Enterprise; tD = Tax Savings and VA = Amount of bankruptcy costs.

It is, in fact, a question of establishing the optimal trade-off between the benefits and costs of debt (Myers, 1984) and agency (Jensen and Meckling, 1976). Moreover, increasing debt means increasing debt service. Consequently, a firm that is unable to raise the necessary liquidity (liquid assets) to meet a due date (liabilities) is in a situation of bankruptcy. In addition, (Stiglitz, 1972) and (Titman, 1984) emphasize the importance of debt servicing, particularly for loans with fixed maturities which generate an additional cost borne by shareholders and lead to an increased risk of bankruptcy.

2.2. Link Between the Health Crisis and Corporate Debt

For Ntererwa and Lukundji (2020), financial leverage refers to the impact of the firm's financial structure on the return on equity. Under certain conditions, the use of debt makes it possible to increase the profitability of equity capital through a so-called "leverage" effect. It is therefore necessary to show the part of the return on equity that comes from the economic activity of the company (ROI) and the part that is attributable to the method of financing (financial leverage). However, we can define leverage as the positive impact that the judicious use of debt can have on the financial profitability of the company. The leverage effect is all the more important as the debt/CP ratio (called the Gearing ratio), thus amplifying the profitability differential (Economic profitability-cost of debt) (Modigliani and Miller, 1958).

Indeed, it turns out that over time, only sufficient economic profitability guarantees a satisfactory level of return on equity, because if the debts contracted to invest cost less (interest rate) than they yield (economic profitability), financial profitability is impacted upwards. If a firm can borrow capital at a cost of 6% and, as a result of this financing, its business grows and it achieves 9% profitability, the leverage effect is positive (Modigliani and Miller, 1958). Otherwise, we speak of a sledgehammer effect. The interest of the leverage effect is to highlight the origin of the profitability of equity capital, to know whether it is a favourable financial construction or a genuine operational/economic performance born of a judicious exploitation of the production tool (Stiglitz, 1972; Modigliani and Miller, 1958).

That said, it should not be forgotten that while debt can be a source of improvement in the profitability of equity capital, it can also be a source of weakening the solvency of the firm, and even jeopardize its continuity of operation.

In the case of SMEs, determining profitability in the theoretical sense of the term is difficult. The owners of SMEs operate in the informal sector and their activities are not subject to corporate taxes, but rather to a general tax (IGL) in Chad. In addition, the owners of these SMEs calculate their profit on the basis of traditional methods, notably the difference between revenues and expenses. The bank branch is considered a physical or traditional channel (Abdelaziz, 2018). Thus, the use of debt by these entrepreneurs makes the determination of the financial profitability of SMEs complex and perplexing. This does not prevent self-financing from being considered the best financial strategy (opportunity cost). When a firm undertakes an investment project and

borrowers to finance this investment, it expects that the operating result generated by the new activity will be greater than the financial expenses incurred by the debt. Based on this work, we test the following hypothesis:

Hypothesis: The covid-19 health crisis positively influences the indebtedness of family SMEs in Chad.

2.3. Link Between the Covid-19 Health Crisis and Indebtedness: The Role of SME Age

We consider the lifespan of the firm as representative of the informational capital available to creditors. As such, it influences the availability of capital through a reduction in uncertainty about repayment capacities. According to a dynamic approach, reputational capital, the experience of the owner-manager, and more generally the survival of the SME, are factors that contribute to the reduction of agency costs through a positive signal of the quality of investment projects. Static equilibrium and signal theories thus presuppose a positive relationship between the life of the firm and the debt burden. In the French context, the effect of firm age on debt is the opposite (Bourdieu and Colin-Sedillot, 1993). We test the following second hypothesis:

Hypothesis: The age of the SME would accentuate the relationship between the Covid-19 health crisis and the indebtedness of SMEs in Chad.

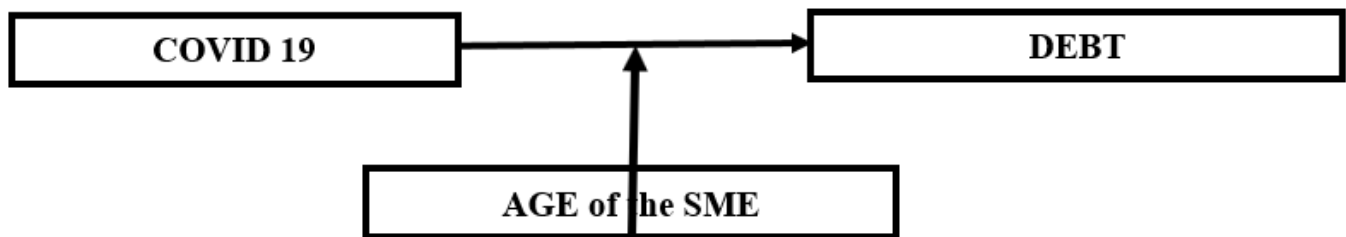


Figure 1: Research model.

3. RESEARCH METHODOLOGY

In this research, both the exploratory qualitative and quantitative approach is adopted (Gravard-Perret, et al., 2012). The study focuses on a few family-owned SMEs selected by the snowball method.

3.1. Characteristics of the Sample

This study focuses exclusively on primary data collected from the leaders of SMEs that contacted debt during the year 2020 or 2021 and whose repayment occurred during the period of the COVID-19 health crisis. Describing a representative study sample of family-owned SMEs in Chad is difficult due to the lack of a credible file of its entities. We identified them in the four major cities of Chad where our study was conducted. These are N'Djamena, Moundou, Bongor and Sarh. In addition, these SMEs are distributed across the three sectors of activity as shown in the following table:

Table 1: Distribution of SMEs in the sectors of activity.

Sectors of activity	Workforce	Frequency (%)
Primary sector	51	25
Secondary sector	29	14
Tertiary sector	125	61
Total	205	100

Our surveys revealed that the tertiary sector is the main activity of SMEs and includes trade, accommodation, dry cleaning, catering, etc. The secondary sector is represented by the sale of sand and gravel for construction, the sales of plots of land and rentals of all kinds, and small traditional bakeries. Finally, the primary sector is dominated by poultry, goat and sheep breeding.

In order to understand the phenomenon of indebtedness of family-owned SMEs, it is nevertheless normal to know how these SMEs finance themselves. To achieve this, we conducted a qualitative study using an interview guide that revolved around the following themes: source of financing, effect of covid-19 on sales, financial statements and level of indebtedness.

Thus, a semi-structured interview was conducted with a sample of seventeen owner-managers of family-owned SMEs. We conducted a thematic analysis. The data were analyzed by the Nvivo 9 software and the results are recorded in the table below:

Table 2: Results of the thematic analysis of the interviews.

Themes	Indicators	Answers	Frequency (%)
Source of funding	Own funds	Yes : 2	12
		No : 15	88
	Aids	Yes : 4	24
		No : 13	76
	Legacy	Yes : 1	5
		No : 16	95
Covid Effect 19	Financial Institutions (Bank, Microfinance)	Yes : 14	82
		No : 3	18
	Lack of sales	Yes : 14	82
		No : 3	18
	High sales	Yes : 2	12
		No : 15	88
Financial statements	High purchase price	Yes : 15	88
		No : 2	12
	Misunderstanding	Yes : 13	76
		No : 4	24
	Irregularity of specifications	Yes : 12	71
		No : 5	29
Debt	Activity report	Yes : 2	12
		No : 15	88
	Non-reimbursement	Yes : 11	65
		No : 6	35
	Recourse to other financial institutions for repayment	Yes : 14	82
		No : 3	18
Unpaid rental fees	Yes : 12	71	
	No : 5	39	

In light of these results, it appears that most SMEs use financial institutions (microfinance and banks) to finance their activities. However, with the advent of Covid-19, some of them are faced with poor sales, while others are confronted with a decline in their activity, high prices for raw materials and an increase in purchase prices. These situations lead these SMEs to face the non-repayment of their debts. The results of the qualitative study allowed us to design our questionnaire taking into account the specificities of SMEs in terms of debt in Chad. The data was collected using a questionnaire that was pre-tested with 22 owner-managers of family-owned SMEs in the four selected cities. In total, 150 of the 205 questionnaires distributed were usable. It should be noted that the data collected made it possible to test the hypotheses in the context of the study.

3.2. Operationalization of Variables

3.2.1. Measurement of the Covid-19 Health Crisis

Covid-19 health crisis (CRISCOV) is the independent variable. Research by Ntererwa and Lukundji (2020) has shown that it is a qualitative variable. It is measured through the speed of sale of SMEs. In the coding grid, this variable takes the value 1 if the speed of sale of SMEs is high at the time of the Covid-19 health crisis, 2 if it is very high, 3 if it is average, 4 if it is low, 5 if it is very low. In our research, this variable is measured by three items with a Cronbach's alpha close to 1, namely: poor sales, high sales and high purchase price in the management of family SMEs in Chad. Its three items are measured using a three-point likert **scale**.

3.2.2. Measurement of Debt

SME debt (ENDET) is the dependent variable. It is a quantitative variable. It expresses the weight of external capital committed by creditors to the firm. It is measured by the short-term debts on the total balance sheet (DCT/Total balance sheet) (Holmes and Cassar, 2003). In this research, this variable is measured by three items (non-repayment; use of other Financial Institutions to repay loans and unpaid lease fees having respectively $\alpha=0.85$; $\alpha=0.78$; $\alpha=0.88$). Its items are measured by a three-point likert scale ranging from disagree to agree according to Djimnadjingar (2012).

3.2.3. Measuring the Age of the SMEs

The age of the firm or the age (AGE) of family-owned SMEs is a control variable. It is a quantitative variable. The age of the firm is measured from its year of creation. Here, age is considered a moderating variable because it is an integral part of the socio-demographic variables. These variables most often play a moderating role. In this research, it is measured by 1 if the SME is more than two years old and 0 otherwise.

3.3. Data Processing and Analysis Techniques

The information collected was processed using SPSS 21.0 software. In order to measure the variables, we calculated the synthetic indices of present, from the means calculated from the answers given to the items by each individual. According to Breton and Trudel (2005), the advantage of this process is that it works with data that cannot be added up. This unweighted index, calculated in this way, indicates the degree of presence perceived by

the respondents of the different variables. This study measures, on the one hand, the influence of the health crisis on the indebtedness of SMEs and, on the other hand, the role of age on the relationship between the Covid-19 health crisis and the indebtedness of SMEs. To this end, the content analysis of qualitative data (from the semi-structured interviews) was used to enrich the analysis and interpretation of the quantitative results. Descriptive statistics tools (mean, variance, standard deviation) completed the correlation and regression analysis for the quantitative analysis.

4. RESULTS AND DISCUSSION

Out of a total of 205 questionnaires, only 150 questionnaires were usable and were analyzed. The primary sector represents 35%, the secondary 12% and the tertiary 53%. Men make up 55.33% against 44.67% of women. The SMEs have been in existence for at least three years.

4.1. Results of the Descriptive Analysis

The results of the descriptive analysis (Table 3 below) show that all of the COVID evaluation indicators in our research are used. Indicators focusing on poor sales, high sales, and high raw material purchase price (on average respectively) appear best suited to measure the effect of covid-19. This suggests that owner-managers of family-owned SMEs are experiencing poor sales related to the advent of the health crisis. Apart from a few owners of SMEs with high sales, the majority (70% of SMEs) are experiencing a decline in sales compared to the situation without the crisis. In addition, the cost of raw materials has increased drastically during the period and continues to affect the lives of SMEs. This is confirmed by the interviews carried out, of which some summarized extracts are illustrated as follows:

"Me...before I used to sell a lot but now things are more expensive to buy so we have also increased the prices here...people don't come like this anymore" (Manager of the establishment "Shertone boutique", 2022). On the other hand, the manager of the "Soumara" shop affirms that: "I sell food products, you see, no... spaghetti, rice, corn and others... but I assure you that I don't sell like I used to... customers find that my articles are a bit expensive, even though it doesn't depend on me. Another manager agrees: "I have contracted a debt with Microfinance "Finadev" to buy and sell food products and other products From producers and these products are more expensive than before ... the! Say that fertilizers have increased ... on the market, customers do not know if it is expensive, which means that I do not sell as before or there is no covid-19 ...".

On average, 82% of SME owners and managers are in debt, and they often turn to other financial institutions to settle their debts, which leads them to have several unpaid rental fees. They are also waiting for a loan from a financial institution to expire because they have several loans. This is evidenced by the comments of the entrepreneurs interviewed. An associate of a mini super market affirms: "Yes, we had made a loan to Finadev and another to the Commercial Bank of the Chari... but as there is no sale and we have to reimburse the loan and its interest to Finadev, we are obliged to go to the bank... even our landlord of the rented premises, we still owe him two months...". This one adds : "I am in the fish trade... I asked for credits from financial institutions to start my activity and every term I renew.... But since their history of Covid there ... I can no longer pay and I am obliged to go to the bank to ask for another credit ... I did to settle the bank".

4.2. Results of the Hypothesis Tests

4.2.1. Influence of the COVID-19 Health Crisis on Debt

The results of this study show that the Covid-19 crisis characterizes the drop in recent sales, the decline in turnover, the non-repayment of loans by family SMEs in Chad

Table 3: Link between Covid-19 and debt.

Variables	Items	Average	Deviation	Variance	Minimum	Maximum	Cronbach's
COVID-19	Lack of sales	2.94	0.30	0.71	1	3	
	High price	2.95	0.26	0.72	1	3	
	High purchase price	2.90	0.41	0.77	1	3	
Debt	No reimbursement	2.81	0.57	0.82	1	3	0.926
	IF to pay back	2.90	0.37	0.86	1	3	0.912
	Unpaid rent	2.76	0.60	0.84	1	3	

The results of the correlation analysis show that all covid-19 indicators are highly correlated with the debt indicators at the 0.01 significance level. All correlation coefficients are positive and greater than 0.5. This suggests that health crisis is positively correlated with debt at the 0.01 significance level.

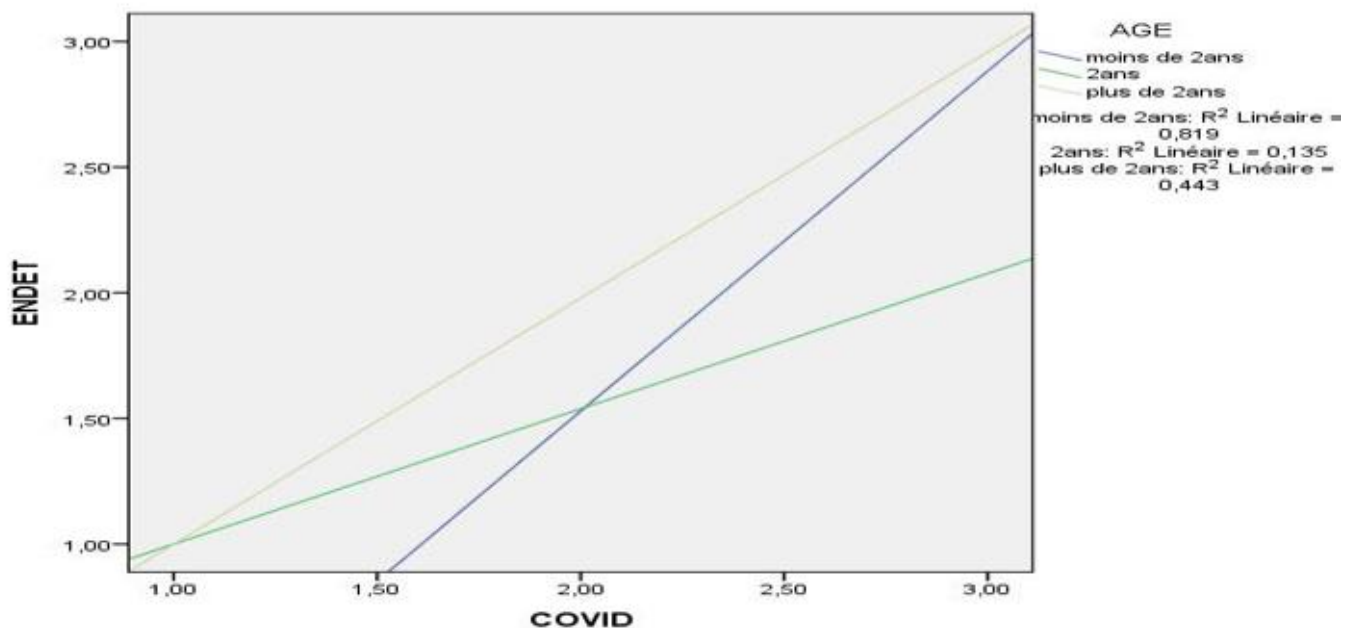
Table 4: Person's correlation matrix between health crisis and debt.

	MEVANTE	VETELVE	PAELVE	NONREMB	SFDREMB	IMPLOY
MEVANTE	1					
VETELVE	0.966	1				
PAELVE	0.817	0.806	1			
NONREMB	0.486	0.469	0.658	1		
SFDREMB	0.656	0.680	0.790	0.778	1	
IMPLOY	0.518	0.511	0.628	0.686	0.568	1
	0.000	0.000	0.000	0.000	0.000	0.000

To better understand the strength and direction of the health crisis on SME debt, we performed a linear regression between the Covid-19 health crisis variable and debt (table above). The parameters of this model explain 60% of the variance of the Covid-19 health crisis. This indicates that the Covid health crisis better predicts SME indebtedness (positively and significantly influences the indebtedness of family SMEs in Chad. This suggests that as the Covid-19 health crisis increases in magnitude, SME indebtedness increases. Hence, hypothesis H1 is confirmed.

4.2.2. Role of Age on the Relationship Between the Covid Health Crisis and Debt

A regression of SME indebtedness by health crisis and age (those with less than 2 years are coded 0 and more than 2 years are coded 1 and their interaction shows a significant effect between Covid-19 health crisis and SME indebtedness ($\beta = -0.019$; $t = -2.14$ and $p < 0.05$).

**Figure 2:** Moderating role of the age of the VSE on the relationship.

Examining the slope of the Covid-19 health crisis level with debt at each level of SME age allows us to decompose this interaction effect. This slope is significant and positive when SMEs are two years and older ($\beta = 0.924$; $t = 5.66$ and $p < 0.01$). A conditional analysis using the Johnson-Neyman technique (Hayes, 2018 macro process model 1) identifies the zone of seniority level in which the Covid-19 health crisis influences the debt of these SMEs. At the level of SMEs with seniority of two years or more ($\beta = 0.88$; $t = 0.18$ and $p < 0.01$), the effect of the health crisis on debt is positive and significant. These SMEs with two or more years of age take on more debt as the effects of the Covid-19 health crisis increase. Thus, the H2 hypothesis is confirmed.

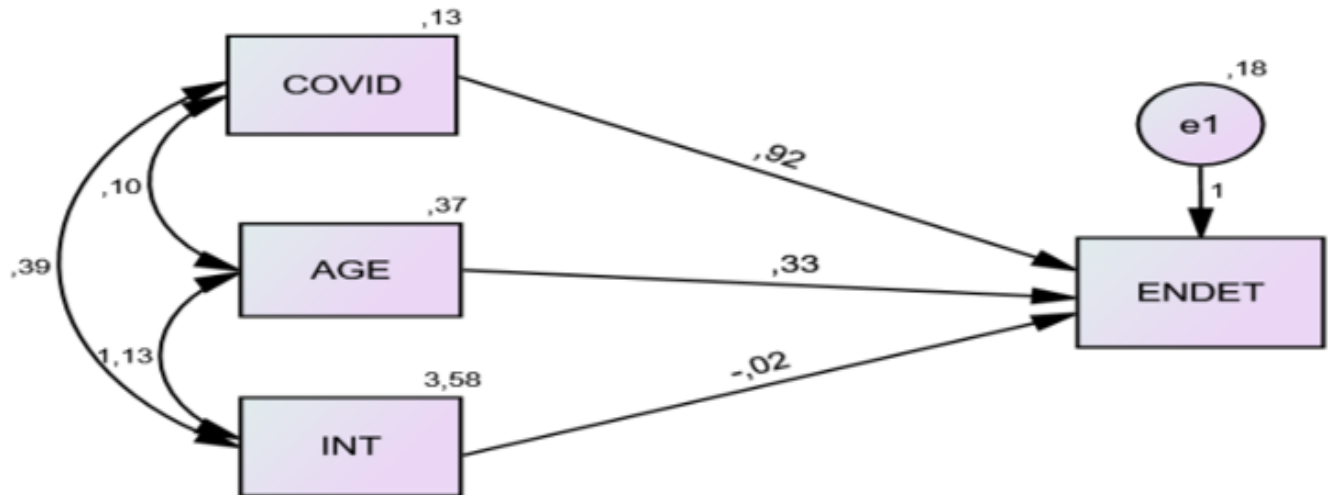


Figure 3: Causal research model.

4.3. Discussions and Implications

We conducted a test on the effect of the COVID-19 health crisis on the indebtedness of family SMEs on the one hand, and the role of age, i.e., the age of the SMEs, in the relationship between the COVID-19 health crisis and the indebtedness of SMEs on the other. The results of this test show that the COVID-19 health crisis has a positive and significant influence on the indebtedness of family SMEs in Chad. These results are consistent with the findings of Ntererwa and Lukundji (2020), who measure the impact of the COVID-19 health crisis on debt.

Just as the studies by Ntererwa and Lukundji, (2020) and Ngongang, (2012) had shown, the results of our research show that the advent of the Covid-19 health crisis causes owner-managers of family-owned SMEs to incur debt to cope with the various fluctuations associated with their business. Our results also suggest that the effect of indebtedness is more pronounced among SMEs that are two years old or more, which can be explained by the fact that decentralized financial systems have more confidence in MSEs that have been in existence for a few years (two or more) in the sense that these older SMEs are able to repay the loans granted. This situation of trust pushes SMEs to take on more debt to cope with the fluctuations caused by the Covid-19 health crisis.

In addition, the results of our research show that the Covid-19 health crisis has led to the decrease of the activities in the SMEs especially the sales, the payment of the renting expenses, the repayment of the loans. Also the rise in the purchase prices of raw materials or products. Our results are similar with the research work of (Velimir et al., 2019). His results are firstly in line with those found by (Lagadec, 1993), showing that the survival of SMEs in a crisis context goes through major issues, as generally they are less protected than large firms. In fact, large firms are able to spread the losses of certain activities.

4.3.1. Theoretical Implications

The strong capacity of the health crisis to spread has consequences for all sectors of activity, especially for family-owned SMEs. The measures taken by the Chadian government to limit the spread of Covid19 have contributed to the reduction of economic activity in SMEs in general.

On the theoretical level, our research highlights not only the effect of the Covid-19 health crisis on the indebtedness of SMEs, but also shows that the seniority of SMEs accentuates their indebtedness in a Covid-19 health crisis situation. Indeed, the Covid-19 health crisis positively affects the indebtedness of SMEs with a seniority of two years or more.

4.3.2. Managerial Implications

At the managerial level, our research shows that in a health crisis situation, owner-managers are confronted with a rise in purchase prices, which results in an increase in sales prices at the SME level. This situation leads to a decrease in sales and stimulates the effect of non-repayment of loans taken out with financial institutions. Therefore, SMEs that have the recourse to refinance themselves since they are old, get into more debt insofar as these credits only settle previous debts and do not contribute to the revival of activities. So managers will have to take on debt to refinance their activities and not to pay off previous debts.

5. CONCLUSION

Indebtedness is the situation by which an individual or a legal entity contracts a debt or accumulates debts to settle financial needs. Following the outbreak of the COVID-19 health crisis, companies are finding it difficult to cover their debts. Financial institutions often require excessive collateral induced by underestimating the company's future earnings (Dahri, 2017).

The objective of our study was to assess the effect of the Covid-19 health crisis on the indebtedness of family SMEs in Chad. The analysis of these results reveals that the health crisis caused several problems that prevented

businesses from operating as they should have, namely: border closures, confinement, etc. This means that they are unable to repay their debts to financial institutions or to the people from whom the debt was incurred. Thus, the results show that the crisis is positively correlated with indebtedness at the 0.01 level of significance. A regression of SME indebtedness by crisis ($M=2.77$; $\sigma=0.47$; $\min=1$ and $\max=3$) and age (those with less than 2 years are coded 0 and more than 2 years are coded 1 ($M=1.72$; $\sigma=0.61$; $\min = 0$ and $\max = 2$) and their interaction shows a significant effect between the Covid-19 crisis and SME indebtedness ($\beta = -0.019$; $t = -2.14$ and $p < 0.05$).

Faced with these results, we have identified the theoretical and managerial implications of the study. Nevertheless, there are some limitations to this research. This study has shortcomings related to the collection of information, the difficulty of access to documents to determine the financial profitability of SMEs, as well as the expansion of the theme on other variables such as gender, experience of the owner manager, his profile, level of study, ... Also, it is the lack of a specific theory of our object of study. In particular, we believe that all investigative issues can be productive, whether it be modeling, inductive approaches, or a comparative description of the values created before, during and after the Covid-19. Let us note that our research has some limitations.

The first is related to the size of the sample, which does not appear to be representative insofar as it did not take into account all the cities in Chad. A future study could extend the research to the entire territory of Chad. Another limitation relates to the external validity of the results of the qualitative study, which could be an avenue for future research. Similarly, the results considered age as a moderating variable even though it is not the only socio-demographic variable. Finally, we did not analyze the results according to the sectors of activity, which would constitute an avenue for future research.

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