

Gender, management style, and the flexibility of informal sector enterprises in the period of Covid-19: The case of agri-food microenterprises in Mali

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As in any organization, microenterprises owe their survival to their ability to adapt to changes in their environments. Informal microenterprises in Mali, particularly those run by women, also have to deal with the economic upheaval caused by the Covid-19 pandemic. This research is exploratory and aims to understand the adaptation of informal microenterprises run by women in a crisis context. To do so, a multiple case analysis is conducted. The results reveal the flexibility factors of the actions undertaken by informal women entrepreneurs to face the Covid-19 crisis. The perseverance of these women and their management style based on relational skills, as well as their mastery of the culinary arts linked to their role of "expert of the kitchen" in Malian society allowed their business to adapt to the context of the crisis. In addition to these individual characteristics and socio-cultural factors, women entrepreneurs adopted strategies such as adjusting working hours and diversifying into new activities. This research contributes to the literature by highlighting the combined effect of individual factors, gender-related socio-cultural factors, and management style on microenterprise flexibility in times of crisis.

Keywords: Covid-19, agri-food microenterprise, flexibility, gender, management style.

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Introduction

In sub-Saharan Africa, despite the rapid economic and social transformations witnessed over the past 15 years, the informal economy continues to represent a considerable section of the overall economy (Berrou et al., 2017). Informal sector enterprises are, for the most part, microenterprises, with an average of 4.7 employees at start-up (United Nations Economic Commission for Africa, UNECA, 2017). In Mali, for example, over 65% of informal sector enterprises are microenterprises with 1 to 4 employees (United Nations Conference on Trade and Development, UNCTAD), 2018). In this sector, women create and manage mainly agri-food microenterprises, enabling them to contribute more than 55.8% of national agri-food production (Sissoko, 2021).

In general, companies operate in an environment characterized by rapid change (Sogbossi Bocco, 2013) and turbulence. If small businesses are known to be flexible in their management style in times of stability (Mlouka & Sahut, 2008; Paget & Mounet, 2010), how do they cope in times of crisis?

The crisis of the Covid-19 pandemic has greatly disrupted the business world. It has affected all organizations differently depending on their structure, size, field of activity, and gender of the leader. In the Malian formal sector, 87% of business leaders have experienced a decrease in income or a total loss of income since the beginning of the pandemic, compared to 84% of leaders in the informal sector (UN-Women, 2020; UNICEF, 2020). According to the Higher Planning Commission in 2020, 26% of small and medium-sized Moroccan enterprises have experienced a temporary or permanent cessation of activity compared to 72% of very small enterprises (Larioui, 2021). Agricultural sales and processing activities have been particularly affected by the crisis (UN-Women, 2020). These activities involve interaction, social closeness, and physical contact, which have become binding in the time of Covid-19. The crisis has also affected female-led and male-led businesses differently. In Senegal, 74% of female-led businesses experienced a decline in revenues compared to 63% of man-led businesses (Anne et al., 2020). In Mali, on the other hand, 15% of man-led businesses feared they would have to close, while only 11% of woman-led businesses feared closure (UN Women, 2020). The lower percentage of fear among woman-led firms suggests that they appear to be more resilient to the crisis than man-led firms across all industries. Mendy's work (2017) shows that there is a dose of intuition, affection, and emotion in the managerial practices of Senegalese women entrepreneurs, even if they focus on growth and profit. Does gender influence the management of small businesses?

The literature study shows that in order to survive, companies must pay close attention to their environment so they can react appropriately to new threats and opportunities (Lesca, 2008). Small businesses especially need to pay attention, as some of their characteristics (strong dependence on a market, costly access to sources of financing, etc.) make them more vulnerable to changes in the environment compared to medium or large businesses (Sogbossi Bocco, 2009, 2013).

In African organizational theories, researchers have studied the influence of the environment on the management of small firms (Paget & Mounet, 2010; Sogbossi Bocco, 2013). In these works, the criterion of flexibility has often been considered as one of the means by which an organization can face changes of its environment. Indeed, small businesses must be flexible for their survival (Paget & Mounet, 2010). The notion of flexibility refers to the organization's ability to react or adapt to environmental disturbances. It is regularly understood as "the ability of individuals and organizations to adapt easily to new and unpredictable circumstances" (El Akremi et al., 2004, p. 24).

Hatum and Pettigrew (2006) and Bula and Ziebicki (2011) show that in periods of stability, management style influences firm flexibility, while Barzi (2011) reveals that, even in a competitive environment, the flexibility of SMEs depends on their management style. Despite the interest of researchers in justifying the relationship between management style and firm flexibility, little work has been done on the influence of the association between management style and gender on firm flexibility in times of crisis and in African context. According to the research findings of Sogbossi (2009) and Zogning (2021), in Africa the individual and socio-cultural dimensions play an important role in the flexibility of agribusinesses. Given these findings, it is important to know the influence of individual, socio-cultural factors, and management style on the flexibility of women-led enterprises. Our problematic is formulated

as follows: *How do individual, socio-cultural factors and management style influence the flexibility of agri-food microenterprises in times of crisis?* This general question gives raises two specific questions:

1. What is the influence of individual characteristics and socio-cultural factors on the flexibility of microenterprises owned and led by women in the context of Covid-19 in Mali?
2. What is the influence of women owner-manager's management style on the flexibility of microenterprises in the context of Covid-19 in Mali?

The objective of this research is to understand how women-led informal microenterprises perform in times of pandemic, particularly the Covid-19 pandemic. Specifically, it aims to analyze the influence of individual characteristics and contextual factors associated with the management style of women owner-managers in Mali on the flexibility of their agri-food microenterprises in the context of Covid-19.

This study is an important step towards improving our understanding of the behavior of informal agri-food microenterprises in the context of the disruption of their environment, particularly during a health crisis. In this perspective, the presentation of our work is structured into four parts. In the first part, we discuss the theoretical framework. Then, we present the research methodology. In the third part, we present the results and discussion, and finally, we present the implications of the study, its limitations, and avenues for future research.

Theoretical framework

Relational theory in the management to enterprise flexibility

Our study is based on Macneil's (1974) relational theory of contracts which suggests the idea that a transaction is not dissociated from other social or economic relationships. His relational approach developed in the 1970s is foundational to the emergence of an innovative perspective that genuinely challenges the foundations of classical theory.

For McNeil, as the social dimension surrounds every transaction, understanding transactions means taking this social dimension into account. The theory of relational contracts revolves around two fundamental points: the identification of norms common to all contracts, and the identification of a contractual spectrum extending from the discrete contract to the relational contract, along which common norms unfold.

The first stage of Macneil's theoretical path is based on the norms common to all contracts as a principle of action that governs the functioning of a group by serving to guide, control or regulate the behavior of its members (Macneil, 1980). The second stage of Macneil's theory consists of highlighting the fact that, depending on their relational intensity, exchanges unfold on a spectrum ranging from discrete to relational exchanges. To this spectrum of exchanges corresponds a contractual spectrum, ranging from classical contracts to relational contracts (Macneil, 1978). These two stages highlight the interest of McNeil's perspective which marks the importance of the relational perspective in the literature.

Macneil (1986, p. 578) suggests:

relational exchange (...) creates circumstances in which the individual long-term economic interests of each party conflict with their desire to maximize their individual short-term utility in a particular exchange: the more relational the exchange, the more artificial the idea of maximization becomes. (...) Over time, exchanges made with (...) long-term motivations produce norms to which participants expect to adhere and to which they expect other parties to adhere.

We build on this relational theory and in this regard consider the work focuses on Miller (1976) to explain the influence of gender and management style on the flexibility of small businesses

in crisis situations. Miller's work suggests the importance of social ties in the management of informal enterprises in times of crisis. For Miller, a person's self-esteem and values are based on his or her ability to establish and maintain ties with others. This is consistent with the work of Jordan (1993) that asserts that connection induces creative action and that a greater sense of clarity and confidence is achieved in relationships compared to the clarity and confidence achieved in solitude. Also, to point out the importance of relationships in the management of African organizations, Biwolé-Fouda (2020) asserts that many entrepreneurs in West Africa are driven by the philosophy of *Ubuntu* and *Tributariat*, which aims to reconcile loyalty, generosity towards the clan, and economic efficiency. Such perspective is consistent with the relational theory. In the same vein, Buttner (2001) suggests that the use of relational practices can improve organizational effectiveness. Also, Tsui & al. (1997) assert that relational practices encourage employees to stay with the company and be more committed to it. Moreover, Fondas (1997) sees relational practices as a means of improving the effectiveness of corporate management. In the context of women's entrepreneurship, relational practices such as sharing power and authority, encouraging open communication, assisting, and developing others, etc., are ways for women entrepreneurs to improve managerial effectiveness (Buttner, 2001) and to operate their businesses successfully for long-term success and survival (Buttner & Moore, 1997).

We build on these assumptions by suggesting that in the African context, relationships between employees can help the company for the development of new ideas that lead to innovation, which is a source of competitive advantage (Diop-Sall & al., 2021). Therefore, we suggest that by persevering to keep relationship with others within the organization, women entrepreneurs will be able to keep running their business. Their determination to remain attached to their socio-cultural role at the company level will encourage them to explore and experiment all possible alternatives (Sarr, 1998). By involving employees in decision-making for greater commitment, and by practicing open communication with customers and suppliers, women owner-managers will be able to enable their micro-businesses to adapt and continue to operate in a variety of contexts.

Gender and management

In the literature focusing on women's entrepreneurship, Tchagang and Tchankam (2018) point out the importance of gender. He suggests that the gender approach considers the man or woman as a social being. As such, he or she is partly constructed from the shared beliefs, in a given society, about the characteristics and expectations to which men and women should conform. Unlike sex, gender appears as a social construct (Garcia & Welter, 2013; Tchagang & Tchankam, 2018) allowing for the analysis of differences between individuals in the processes of business creation and management. While men managers are characterized by command, control, task orientation, women managers are presented as less hierarchical and more participative, interactive, and flexible (Meier et al., 2006). By adopting interpersonal-oriented leadership (Eagly & Johnson, 1990), women managers prefer a participative decision-making style that fosters an atmosphere of shared knowledge and skills (Saint-Michel, 2010).

The socio-cultural environment in Africa has a considerable influence on the life of the enterprise (Boubakary, 2016). Moreover, taking this environment into account in management is considered a requirement for the development and sustainability of the African enterprise (Kessy, 2005). The collective and solidarity spirit as a general characteristic of African societies affects small businesses by driving them to adopt a management mode imbued with socio-cultural considerations (Kamdem & Ongodo, 2004; Nkakleu, 1998). In this perspective, Boubakary (2016) suggested that socio-cultural factors such as "family support," "religious beliefs," "ethnic considerations," and "leader's own values" are positively associated with the

managerial practice of firms in Africa. Other authors explain the dynamism and success of African small businesses by their ability to reconcile the social and cultural values of Africa with economic efficiency (Olomo, 1987; Sogbossi Bocco, 2009). Thus, socio-cultural factors are positively associated with the managerial practice of firms in Africa (Boubakary, 2016).

In the context of SMEs, it is recognized that the manager has an influence on his or her company through its organization and functioning, the content of its activities, and its strategy (Castro, 2002). Entrepreneurial theory (Spence & al., 2007) recognizes that the personalities of the leaders, their perceptions of the environment, their beliefs, and their personal orientations determine the decision making in small businesses.

Regarding women entrepreneurs, Lortie-Lussier and Rinfret (2007) have shown that they attach importance to interpersonal relationships. In a similar vein, St-Pierre & al. (2011) found that by using a more participatory and interactive management style with their various stakeholders, women adopt more relational management style. They do this for both social and cultural reasons.

Crisis and management

A crisis is an unexpected event that can have enormous negative consequences (Pearson & Clair, 1998). As such it can affect the environment, the safety of people, the reputation of an organization, and its stakeholders. In the context of organization, a crisis has major implications: it threatens the viability of the organization (Lemonakis & Zairis, 2020). The literature counts a multitude of works focusing on crises including natural disasters (flood, storm, earthquake, etc.), sudden market changes, epidemics, and pandemics like Covid-19 (Boubakary, 2020).

According to Tardy (2009), the definition of the concept of crisis management is a complex exercise due to the difficulties of understanding the components of the concept and the diversity of approaches and definitions generally adopted. The notion of "crisis" has been theorized in sociology, economics, and international relations. Crisis management can be defined as the careful study and anticipation of the risks that an organization may face and how to reduce uncertainty and take measures to protect people, the environment, employees, and the company's financial situation (Lemonakis & Zairis, 2019). It is a systematic process supported by both internal and external stakeholders (Pearson & Clair, 1998) and stems from "proactive" behavior whose objective is to allow the company to continue operating as normally as possible (Zamoum & Gorpe, 2018).

Two perspectives emerge about how small firms are affected by a crisis: the vulnerability perspective and the resilience perspective (Smallbone & al., 2012).

Analyses from the vulnerability perspective highlight the high sensitivity of small firms to external shocks. This sensitivity is attributed to certain characteristics related to their size: more limited internal resources, a generally narrower customer and product line base, and less bargaining power with various external actors (customers, suppliers, and financial service providers). This view neglects the opportunities and capabilities that a smaller size might offer the firm in a turbulent environment.

In contrast to the vulnerability analysis, the resilience perspective emphasizes the flexibility and adaptability of small firms. Based on the adjustment of resources, processes, prices, and products, this adaptability and flexibility allows small firms to survive in times of crisis (Smallbone & al., 2012).

In the literature, flexibility is recognized as an essential need for any organization operating in a dynamic environment (Eppink, 1978; Mintzberg, 1980). It is presented as a key competitive advantage of small firms (Power & Reid, 2005; Sak & Taymaz, 2021), as they have a tendency

to excel in adaptability and flexibility (Smallbone & al., 2012). Based on an empirical investigation in the United Kingdom and New Zealand, Smallbone & al. (2012) shows that although many small firms are vulnerable to changing circumstances over which they have no control, they demonstrate a high level of adaptability and flexibility.

Flexibility refers to a variety of options, configurations, skills, and behaviors in managing a firm's relationship with the environment (El Akremi & al., 2004). In a study of women's microenterprises during the Covid-19 pandemic, Ndinga (2021) highlighted three strategies adopted by Congolese women managers to cope with the crisis: product diversification, the exploration of new customer niches, and flexibility in labor management.

The literature reveals that the management style of the leader is a factor of flexibility in small businesses. Ivanaj and Géhin (1997) found relationships between the management style of the leader and the leader's strategic behavior that determine the flexibility of the organization. Barzi (2011), in a study on the agility of Moroccan SMEs, noted that "human resources orientation" as a characteristic of the management style of the leader is a factor of flexibility for the company (flexibility being considered as an attribute of organizational agility). In the same logic, the study by Paget and Mounet (2010) on the flexibility of small firms in the sports and tourism sector concluded that the flexibility of small firms is based on the management style of the leader, which is characterized by the autonomy and involvement of employees in management.

Methodology

We chose a qualitative approach. As Rispal and Jouison-Laffitte (2015) point out, qualitative methods have the potential to enrich knowledge in entrepreneurship due to the fact that the tools mobilized adapt to the specificities of the context. Moreover, recent work in entrepreneurship (Leger-Jarniou & al., 2015; Berger-Douce, 2015) suggests using qualitative research methods to better understand the entrepreneurial phenomenon. In particular, we have opted for the multiple case study method. This method is designed to examine a phenomenon in its context (Yin, 2000). Most importantly, it helps to conduct a thorough study of phenomena that are not studied and less studied.

We chose the multiple case method because it is the most appropriate for the purpose of this research. Therefore, through the analysis of interviews of women entrepreneurs, the study of the different cases of women entrepreneurs allows us to grasp how the informal microenterprises run by women have adapted to the context of Covid-19. In particular, the individual and socio-cultural characteristics of women entrepreneurs as well as the type of management style that contributed to the adaptation of their enterprises to the crisis context are highlighted.

Sample characteristics

The district of Bamako is chosen as the field of application of our research. The choice of this district is linked to the fact that, being the capital of Mali, it draws the majority of the country's informal microenterprises (Ministry of Industry, Investment and Trade, MIIT, July 2011).

Informal microenterprises in the agri-food sector constitute the population of the research. Microenterprises make up more than 65% of informal sector businesses in Mali (United Nations Conference on Trade and Development, UNCTAD, 2018). The category of microenterprises corresponds to very small enterprises with a workforce of between 0 and 10 permanent employees, an annual turnover of less than USD 81, 483, and an investment level of less than USD 32, 593 (National Council of Employers of Mali, NCEM, 2016). The choice of the informal sector and agribusiness is related to their importance in West African economies,

particularly the Malian economy, in which women are strongly represented in informal agribusinesses.

The women entrepreneur of microenterprises represents the sampling unit since the prevalence rates of women's entrepreneurship is relatively higher in developing countries than in developed countries (Zogning, 2021) and microenterprises are characterized by promoter-centered management. The selection of women leaders was done according to the convenience method. The convenience sampling method allows for the construction of a sample based on the opportunities that arise. The choice of this method is justified mainly by the lack of a database and official information on existing companies that could be the subject of the research (Bouzekraoui, 2023). In our case, the use of convenience sampling is motivated by the fact that, in the Malian context, there is no database on informal sector enterprises and the managers of these enterprises, especially women, are generally hostile to surveys and polls.

The sample consists of twenty (20) women entrepreneurs who entirely own and manage their businesses. These informants have been coded E1–E20 to allow for easy retrieval of their comments (Fieve & Chrysostome, 2022). Most women are under 40 years old (75%), married (80%), and mothers (80%). They take care of three children on average. Three of the women are mothers of more than five children.

The enterprises owned and managed by the women in the sample have been in existence for an average of seven years and are involved in catering and in the processing of cereals, fruits, vegetables, tubers, and dairy products. The details of the sample are presented in Table 1.

Table 1: Details of Informants and Their Enterprises.

Characteristics of Women Microentrepreneurs	
Number of informants	20 women microentrepreneurs
Age of the woman entrepreneur	< 40 years old (n= 15, frequency = 75%) 41 years old and over (n=5, frequency = 25%)
Marital status	Single (n = 4, frequency = 20%) Married (n=16, frequency = 80%)
Number of children	Average number per woman =3 Minimum = 0 Maximum = 8
Characteristics of Microenterprises	
Age of the enterprise	Average age = 7 years old Minimum = 4 years old Maximum = 14 years old
Branches of activity	Processing of agricultural products (cereals, fruits, vegetables, tubers), Processing of dairy products, Catering.

Source: Survey data.

Data collection

A semi-structured face-to-face interview was conducted with the selected women. The semi-structured field interview is highly contextual and exploratory. It involves different levels of in-depth interaction between the participants and the researcher to yield rich data and generate analytical insights (Fieve & Chrysostome, 2022; Rodrigues & al., 2010).

The collection process took place between January and March 2022. We interviewed women micro-entrepreneurs until we reached theoretical saturation in the sense of Pires (1997). In other words, we conducted interviews until the data collection process did not provide any new elements that could enrich the patterns of interpretation (Pailot & al., 2015).

The selected women were interviewed using a semi-structured interview guide that included the following themes: general information on the microenterprise in the informal sector, the impacts of Covid-19 on women-led informal microenterprises, the behavior of the microenterprise in the face of Covid-19, and the individual and contextual characteristics and management style of the female leader. The interviews lasted an average of 72 minutes. The interviews were recorded with the permission of the respondents. However, in the absence of recording (when permission was not given), we took notes.

The objective of the interview was to assess the participants' perceptions of how their businesses were able to adapt to the context of the Covid-19 crisis. This approach allowed us to link the individual characteristics of women entrepreneurs and socio-cultural factors to the functioning of microenterprises in a disruptive environment.

Data analysis

All recorded interviews were transcribed. In cases where the interview was not recorded, the notes taken were organized into a structured text. Each document was reviewed rigorously for spelling and grammatical errors. Afterwards, an appointment was made with each interviewee to verify the accuracy of the content of the interview. Women with capacity read the document

themselves. Those who could not read listened to the reading of their interview content. This improved the quality of the data collected and avoided possible misinterpretation. Suggestions from these encounters were incorporated to ensure the accuracy of the data (Taylor & al., 2021).

The data was manually coded and analyzed according to the main themes that emerged from the interviewees' responses (Braun & Clarke, 2006; Taylor & al., 2021).

Coding is a tool that allows for rigorous work to be done to build similarities and work on differences (Dumez, 2016). It consists of identifying the core of meaning that makes up the data and whose presence or frequency of appearance could signify something related to our problem. It is therefore a question of transforming the raw data from the transcribed interviews into several themes. In this inductive coding phase, we created themes as we analyzed our data. The coding unit, the element on which we based our data breakdown, is the word, the group of words, or the sentence. The analysis of all our interviews allowed us to obtain data that represents our dictionary of themes (i.e., the set of themes resulting from our analysis). After extracting the themes, we proceeded to reconcile them in order to identify subcategories with generic titles. In this case, we proceeded to a horizontal analysis of the themes by trying to reconcile their meaning.

After identifying the different subcategories, a reconciliation was done to determine the different categories. According to Bardin (2013), categories are headings or classes that bring together a group of elements under a generic title, which is a gathering made because of the elements' common characteristics. We therefore analyzed the different sub-headings to group those that can be grouped into categories.

The categories derived from our data allow us to explain the process by which the individual and contextual characteristics and management style of the microenterprise manager in the Bamako district influence the flexibility of the enterprise in times of Covid-19.

Table 2: Data Collection and Analysis Steps

Data collection	Location	District of Bamako
	Collecting Technique	Semi-structured face-to-face interview with recording.
	Tool	Interview guide.
Data analysis	Analysis Technique	Thematic content analysis.
	Tool	Manual analysis.
	Step-by-step process*	
	Step 1.	Recorded interview transcription
	Step 2.	Data familiarization through readings, reviews, etc.
	Step 3.	Data organization
	Step 4.	Coding
	Step 5.	Identification of first-order categories (themes)
Step 6.	Identification of second-order categories (themes)	
Step 7.	Identification of aggregate dimensions (final categories)	

*Source: Adapted from J. K. D. Fieve and E. V. Chrysostome, "Credit Cooperative Lending Loans as Challenges and Opportunities for Women Entrepreneurship in Africa: Evidence from Ghana," *Journal of African Business*, 1-21, doi:10.1080/15228916.2022.2078937.

Findings and discussion

This study analyzes the flexibility developed by women-led microenterprises to cope with the Covid-19 crisis. In this section, we present and discuss the findings of the study.

Fig. 1. Mapping of codes to enterprise’s flexibility levers.

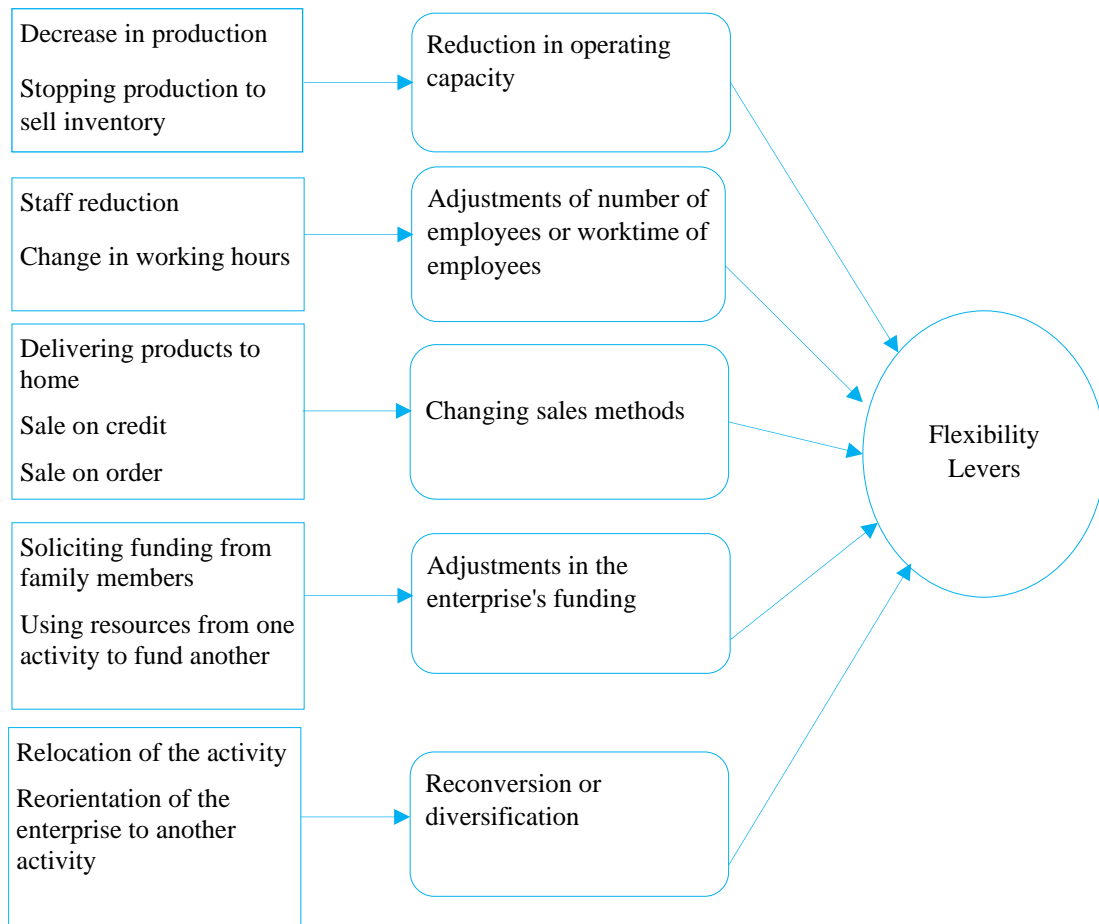


Fig. 2. Mapping of codes to enterprise’s flexibility factors.

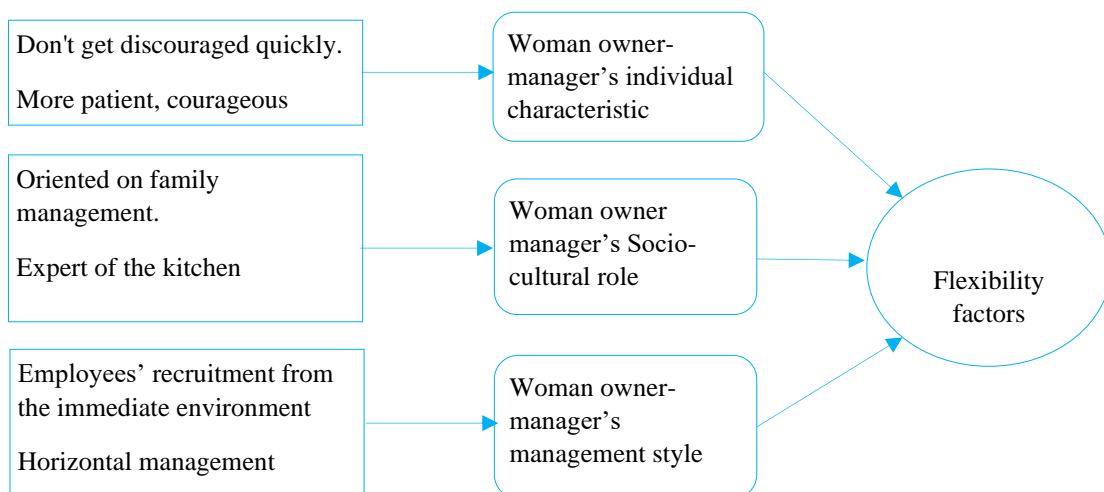


Table 3: Enterprise’s Flexibility Levers

Category	Dimension	No. of Mention	Quotes
Flexibility Levers	Reduction in number of employees	15	"So, I reduced the number of day laborers from 6 to 3. I did this so that my business would not stop working because if I kept the same number of employees, I would not be able to pay them" (E17).
	Reduction in operating capacity	17	"I just reduced my production of curdled milk and 'dèguè' [porridge made from millet and milk] because I already had a large quantity on the market, about XOF 200,000 worth of 'dèguè' and XOF 250,000 worth of curdled milk" (E6).
	Changing sales methods	16	"With Covid, I sold to order and often delivered to people's homes. I noticed that people were afraid to go into public spaces. That's why I started home sales and home delivery. And as the market was slow, because people didn't have enough money, I produced for people who placed orders, so that my products wouldn't go out of date if there were large quantities in stock" (E2).
	Adjustments in the enterprise's funding	13	"You will find that women who have been able to continue their business during the period of this illness usually have financial support from either their husband or a relative" (E9).
	Strategic actions: reconversion into new activities	12	"I have completely changed the type of food I sell and the time of day I do it. I used to sell at night but when the curfew was enforced, I started selling in the mornings. Also, I stopped selling alloko, potato fries, etc., [and started] to sell beef legs" (E12).

Table 4: Enterprise’s Flexibility Factors

Category	Dimension	No. of Mention	Quotes
Flexibility Factors	Individual characteristic: Woman's perseverance	18	" Women are more patient, courageous and astute. Women can also be content with a low-income activity. All these assets make me think that a woman-run business can adapt to the covid crisis." (E15).
	Sociocultural role: expert of the kitchen	14	"As I said, the woman goes into the agri-food business she knows best. She's learned cooking from an early age, usually from her parents. Here in Mali, as elsewhere in West Africa, it's the women who do the cooking. It's this tradition that makes women masters of the agri-food business and can better adapt to the Covid crisis " (E8).
	Relationship management style	15	"Decisions are made by the entire staff. By doing this, it facilitates the activity because everyone knows that they count in the company, and this is very important for the smooth running of the company. For example, with Covid, it was the employees themselves who suggested to me to stop the production of juice because the sales had decreased. They agreed to go out of work to save the company" (E4).

Crisis impact and enterprises ‘adaptation

The Covid-19 crisis systematically led to a decline in sales in all the microenterprises in our sample. Indeed, as soon as the first cases appeared in March 2020, the Government of Mali closed schools, instituted a curfew (9:00-5:00 p.m.), and decided to close the large market at

4:00 p.m. These measures and others reduced the space and selling hours of several women-led microenterprises in the agri-food sector, as this female microenterprise manager points out:

"For me, Covid-19 has only brought bad things for my business. My clientele had greatly diminished because the places where I used to sell my products were closed rather than [open as] usual because of the curfew" (E6).

In addition to the decline in sales, microenterprises faced difficulties in sourcing raw materials, although many recognized that the availability of these materials locally is an opportunity. With the reduction in intercity travel, the cost of transportation increased, which placed a strain on the price of raw materials. One of our respondents confirmed:

"My clientele has greatly diminished, and the cost of processing has increased because of the increased cost of transporting cassava" (E8).

Faced with this situation, microenterprises adopted various actions and strategies to continue operating. The analysis of the discourse of women entrepreneurs makes it possible to identify five levers of enterprises' flexibility based on the frequencies of appearance: (1) technical actions, (2) human resource actions, (3) business actions, (4) financial actions, and (5) strategic actions. In this section, the main decisions and actions taken to counteract the threats related to the Covid-19 crisis will be presented. Then the flexibility factors of the actions taken to cope with the Covid-19 crisis will be provided. Finally, the results of our research will be discussed.

Technical actions

On the technical side, while some companies have decided to stop their activity to observe the evolution of the situation, the majority proceeded to a reduction in operating capacity through a reduction in the quantities produced. The objective was to adjust the volume produced and the existing stock to the evolution of demand. One female microenterprise manager confirmed:

"I just reduced my production of curdled milk and 'dèguè' [porridge made from millet and milk] because I already had a large quantity on the market, about XOF 200,000 worth of 'dèguè' and XOF 250,000 worth of curdled milk" (E6).

Reducing the quantities produced made it possible to limit losses due to poor sales. In this logic of reducing losses to a strict minimum, other women-led enterprises chose to produce their products only to order, as described by a respondent: *"In addition, producing to order allowed me to minimize unnecessary losses" (E11)*. Therefore, a reduction in the volumes produced was used to cope with the scarcity of customers. This evolution had repercussions on the human resources used by the companies.

Actions on human resources

Most of the women-led firms interviewed passed on market changes to employees by reducing staff as part of a management approach to be flexible and adapt to the pandemic. The adoption of this option was made easier by the fact that informal microenterprises generally use day laborers. In addition, microenterprise managers sought to avoid accumulating debts to employees during this period of crisis, the duration of which they could not control, as some respondents stated:

"So, I reduced the number of day laborers from 6 to 3. I did this so that my business would not stop working, because if I kept the same number of employees, I would not be able to pay them" (E17).

"I had to reduce my staff. As it was not working like before, I went from 5 salesmen to 3" (E8).

However, the contagious nature of the virus prompted some informal women-led microenterprises to manage their day laborers differently by taking measures to encourage them. Indeed, in order to protect their families and prevent the spread of the disease, some entrepreneurs chose to maintain the same daily staff to avoid importing the disease into the enterprise. One manager summarized this situation:

"As I said, I had to work with the same daily staff because I was afraid of contracting Covid and infecting my family and relatives" (E2).

Commercial actions

On the commercial level, the actions taken by microenterprises to continue selling their product in a context characterized by the reduction of sales space and hours involved either the place of sale, the payment methods, or the positioning on the market. While some companies chose to sell their products at their headquarters, others offered to deliver the products to customers' homes. In this way, customers who were reluctant to travel could still purchase their products to order, while those who were willing to travel could make their choice in person. This view is reflected in the quotes below:

"With Covid, I sold to order and often delivered to people's homes. I noticed that people were afraid to go into public spaces. That's why I started home sales and home delivery. And as the market was slow, because people didn't have enough money, I produced for people who placed orders, so that my products wouldn't go out of date if there were large quantities in stock" (E2).

In addition to these efforts to stay connected with customers, some microenterprises agreed to sell on credit or to sell products that were previously sold exclusively to semi-wholesalers directly to customers in the retail market.

Financial actions

Faced with a drop in sales induced by the health crisis, the managers of informal microenterprises have resorted to various options to cover the financial expenses of the business and increase the cash flow. Some opted for community financing, as stated:

"You will find that women who have been able to continue their business during the period of this illness usually have financial support from either their husband or a relative" (E9).

Others used the resources of the agri-food activity to temporarily carry out another activity. This is the case of several managers who stated:

"To cope with Covid, I sold shoes to contribute to the expenses of the house and the maintenance of the children. My reconversion in another income generating activity is more than a necessity because my husband is retired and sick. So, I can't sit down because the pension alone is not enough" (E1).

Others finally changed their production technique to reduce production costs. This involved the use of less expensive production techniques during the Covid period, even though these techniques have disrupted the organization habits of the activity. This view is reflected in the quotes below:

"I have reduced the consumption of charcoal to use more firewood. With this technique, I reduced my expenses a little. When life gets tough, you must know how to adapt. I didn't want to take too many risks, so I stopped there" (E14).

Strategic actions

The analysis of microenterprise managers' discourses reveals three main strategic actions of flexibility. While the Covid-19 pandemic pushed some microenterprises to adopt coping strategies through reconversion or diversification into new activities, other enterprises chose to pivot to attract new clients to cope with the new normal. These two categories of businesses oriented their efforts towards seeking opportunities and migrating to new markets, as testified by the following entrepreneurs:

"I have completely changed the type of food I sell and the time of day I do it. I used to sell at night, but when the curfew was enforced, I started selling in the mornings. Also, I stopped selling alloko, potato fries, etc., to sell beef legs" (E12).

A third group of firms preferred to focus on products for which there is demand. This is the case of these managers who stated:

"I have focused more on the production of milk oil (Sirimè) because this product is intended for individuals who always demand it" (E6).

Flexibility factors in women-led microenterprises

The Covid-19 pandemic has represented a real threat to all businesses. However, the informal female microenterprise managers in Mali who were interviewed believed that their enterprises had the strength and ability to adjust to the uncertainties created by the disease. The analysis of the speeches of these women managers reveals that women-led businesses fared well in the face of Covid-19. Three factors are at the root of the flexibility of these microenterprises: (a) the *perseverance* of the female manager, (b) their sociocultural role as *expert of the kitchen*, and (c) their *relational management style*.

Perseverance

At the end of the discourse analysis, we were able to note the importance that women leaders of informal microenterprises attached to some of their individual characteristics in the management of the agribusiness in times of crisis. Among these characteristics, one recurred regularly: women's perseverance.

In the context of informal microenterprises, the manager's tendency not to "give up easily" leads her to identify and try different solutions to ensure the continuity of her enterprise's activities in times of disruption. In this perspective, she explores all the possibilities and opportunities available to her. Indeed, the women leaders interviewed believed that in difficult times, women know how to be patient and perseverant, which gives them a certain capacity to adapt to any situation. This point of view is reflected in the following quotes:

"Women have the courage and don't get discouraged quickly. Women have this ability to change their way of doing things while keeping the quality of their products unchanged to reduce the cost of production" (E14).

«Women are more patient, courageous and astute. Women can also be content with a low-income activity. All these assets make me think that a woman-run business can adapt to the covid crisis." (E15).

Thus, the perseverance of female informal microenterprise manager appears to be an asset that allowed the enterprises to cope with the Covid-19 crisis. This individual characteristic is combined with socio-cultural factors linked to the Malian context to influence the adaptation of enterprises managed by women in times of crisis.

Sociocultural role: Expert of the kitchen

Indeed, the women managers interviewed strongly emphasized the influence of the role of "housewife" assumed by Malian women on the management of their agribusinesses. In Malian society in general and in the household in particular, the woman develops expertise in everything related to cooking. Thus, from an early age, young girls learn to cook from their mothers. This practice facilitates a certain mastery of the different processes related to food. In adulthood, when they are led to take an interest in the agri-food industry, women transpose this skill into the management of the company they run, especially in times of crisis. As one interviewee declared:

"As I said, the woman goes into the agri-food business she knows best. She's learned cooking from an early age, usually from her parents. Here in Mali, as elsewhere in West Africa, it's the women who do the cooking. It's this tradition that makes women masters of the agri-food business and can better adapt to the Covid crisis " (E8).

In addition to the ability to adjust product combinations according to the needs and constraints of the moment, the traditional role of "master of the kitchen" allows the woman manager to guarantee a certain quality of the products that her company offers to customers. This analysis is shared by interviewees who affirms that:

"Traditionally, Malian women learn to cook from an early age. This aspect has a considerable impact on the quality of the products. And when the products are of good quality, your business can withstand many difficulties" (E2).

"Women know how to look for markets for their product. And it is not difficult for them to find them, because their products are of good quality thanks to the mastery of food processing" (E12).

In sum, the woman microenterprise manager has individual characteristics associated with sociocultural factors that affect the management of her business in times of Covid-19.

Relational management style

Another concept identified from the managers' speeches is the management style, specifically the type of relationship maintained with the informal microenterprise's stakeholders such as internal staff, customers, and suppliers. According to the interviewees, the mutual trust that exists between the company and its employees, suppliers, and customers has contributed enormously to coping with the disruption caused by the coronavirus.

As far as employees are concerned, informal microenterprises generally recruit employees from their immediate environment. Knowing that they have entered the business through the proximity relationship, these workers are willing to make every effort to enhance the business to remain in the esteem of the manager. They are more likely to accept changes in their working conditions or treatment when the situation requires it, as these managers point out:

"... because people that woman hires are usually her relatives. These people, even if they do not have a great knowledge of food processing, will stay to keep the company running during difficult times such as the case of Covid-19. They will even agree to work for minimal pay" (E4).

"... in addition, for production, I had to proceed with a work line: the people in charge of cleaning, winnowing was only solicited for their activity and a few days later, those in charge of smoking, steaming came to do their work, contrary to before when everyone met at the same time. With this practice, we minimized the risk of contamination of the Covid and kept a good part of our customers" (E2).

The workers are even more receptive to these changes, as they are generally involved in the management of the enterprise by the woman director. This horizontal management favors the implementation of the changes necessary to adapt to the fluctuations of the environment. Some interviewees stated:

"As permanent staff, I have 1 manager and 2 sales managers. Decisions are made with them. They advise on the need for decisions to be made. That's what happened on the decision making of stopping the production of croquettes and cakes" (E11).

"Decisions are made with the entire staff. By doing this, it facilitates the activity because everyone knows that they count in the company, and this is very important for the smooth running of the company. For example, with the Covid, it was the employees themselves who suggested to me to stop the production of juice because the sales had decreased. They agreed to go out of work to save the company" (E4).

In addition to the employees, it is clear from the speeches that the female microenterprise manager is focused on maintaining good relations with external stakeholders, especially suppliers and customers. The objective is to guarantee, regardless the situation, the supply of raw materials to the company and the sale of products. Two managers commented:

"I would say it's customer and supplier loyalty. By doing this, the company always manages to produce and sell the products even if the sales decrease according to the circumstances as with the case of Covid-19. With the suppliers, we manage to get supplies even if the raw materials we need are scarce in the market" (E2).

"...the woman is strategic; she uses all the means to keep her customers. To do this, she remains open and listens to everyone. As an illustration, I know at least three women who were able to save their businesses with the same strategies I used" (E13).

By integrating relational skills into her management style, the female microenterprise leader creates stable relationships with stakeholders. This factor favors the implementation of measures to adapt the company to environmental fluctuations, such as disruptions caused by the coronavirus pandemic.

Discussion and implications

The study examined how women-owned and operated agribusinesses in an African context adapt to a turbulent environment, such as the Covid-19 pandemic, and highlighted factors of flexibility.

Discussion of the results

Perseverance of the woman entrepreneur

Following Eisenberger & al. (1992), we define perseverance as a person's tendency to endure and persist in the face of adversity. Thus, perseverant people, through their actions, eventually discover ways to circumvent or modify constraints, while less resilient people are easily discouraged by unexpected obstacles and challenges (Eisenberger & al., 1992).

Our study shows that, in response to the health crisis, owner-managers of agri-food microenterprises demonstrated perseverance by continuing to identify and implement solutions that enabled their businesses to continue despite the constraints. In particular, it found that women persevered by making operational adjustments and strategic choices that enabled their businesses to endure through the period of disruption. A similar study carried out in Rabat, Morocco, showed that the resilience of SMEs in the context of health and economic crises is indicative of the entrepreneurs' commitment and deep attachment to entrepreneurial action, regardless of the circumstances (Lahcen & al., 2021). In general, it is noted that, in the context of entrepreneurship, success is determined by the extent to which individuals persevere despite what appear to be insurmountable obstacles or adversities (Stoltz, 1997; Baron & Shane, 2007; Roy & de Freyman, 2019). The study also supports the argument that perseverance influences individuals' level of effort, the course of their actions, and their endurance and resilience in the face of setbacks (Eisenberger & Leonard, 1980). From this perspective, Bullough and Renko (2013) propose that business leaders need to strengthen their self-efficacy in order to persevere in a context of economic crisis. Perseverance towards the situation thus becomes a personality trait of managers that plays an important role in the resilience of their companies (Elmahfoudi & Tajabrite, 2023) and even in the process of creating new businesses (Markman & al., 2005). This personality trait enables women entrepreneurs to identify and implement solutions to ensure the smooth running of their agri-food micro-businesses and stay connected to others.

‘Expert of the kitchen’ role

In the context of business management in times of crisis, our study reveals the importance of the "housewife" role, particularly the 'Expert of the kitchen' role attributed to women in Malian society. In fact, in Bamako and in the village, most of the tasks of the domestic unit are carried out by women alone. Among the tasks that make up the domestic unit are supplying water, the cleaning of the spaces of the domestic unit, the laundry, the washing of dishes, the care of others, and the preparation and serving of meals. In the village, as in Bamako, it is unlikely that a male member of the family will be involved in kitchen duties. This activity is part of the essence of female identity (Feldman, 2013). Our study established that the role of housewife, particularly the tasks of preparing and serving the meal, allows the woman to develop great expertise in cooking. In times of crisis, this skill promotes the flexibility of women-run agribusinesses through the adjustment of product composition to cope with market disruptions. The skill developed in a non-professional context thus allows for successful adaptation to the realities of the environment. This result supports the argument that the resources acquired in the performance of one role can be used to satisfy the demands of another role (Sieber, 1974; Marks, 1977). It also corroborates the results of a study by Ruderman et al.

(2002) who found that women managers' high investment in multiple roles is associated with both task structuring and interpersonal skills.

For Malian women, the traditional role of "*Expert of the kitchen*" translates into a close relationship with food processing from an early age. This proximity enables them to develop skills that are mobilized in times of Covid-19 to make the necessary adjustments to ensure the continuity of their agri-food businesses. Doumbia-Gakou and Kuepie (2009) have shown that there does not seem to be a conflict of roles in Mali in poor households because young mothers in these households combine motherhood and work, while those from the wealthy classes are often less active when they are mothers of young children.

Relational Management Style

The study established that women owner-managers of agri-food microenterprises adopt a relational management style. They recruit employees from their immediate environment, involve them in the management of the enterprise, and pay particular attention to relations with customers and suppliers. This proximity management allowed them, once confronted with the constraints of the crisis, to make adjustments with these different stakeholders in order to get through the difficult period.

Our results confirm the idea that women entrepreneurs have more recourse to a feminine management style, focused on human resources, social cohesion, and vulnerability (Rinfret & Lortie-Lussier, 1997). They adopt more participatory and interactive management styles with their various stakeholders (Carter & al., 2007; St-Pierre & al., 2011). Thus, in a context of adversity, women's natural tendency to be relational (Miller, 1976; Tsui & al., 1997; Biwolé-Fouda, 2020) helps women entrepreneurs to persevere and involve all stakeholders (internal and external) in the management of the business to get through a difficult period and maintain contact. Moreover, Frimousse and Peretti (2021) concluded, in their study on the management style to adopt in the post-Covid organization, that the manager of tomorrow must adopt a flexible style that is a combination of participative and consultative styles. Such a transparent management style allows employees to know the direction taken by the management and creates a climate of trust that makes professionals supportive in their daily commitment (Adam, 2022). Thus, women's natural tendency to establish and maintain connections with others helps them to adopt a relationship-based management style for their enterprises, facilitating the implementation of adjustments to be made in times of crisis to ensure business continuity.

Our results show that these individual characteristics, socio-cultural factors, and management style have enabled women managers to develop strategies to cope with the Covid-19.

Operating strategies to cope with the crisis.

The study showed that in a crisis context, company adaptation is the result of both operational adjustments and strategic choices. Operational adjustments concern production levels, the number and working hours of employees, sources of financing, and marketing methods. Our study found that women entrepreneurs in the Bamako district in Mali, in response to the disruption and lower sales caused by the Covid-19 crisis, cut back on production volume and the number of employees. They also modified working hours, sources of financing, and marketing methods for their businesses in order to stay in the market. These findings corroborate those of a similar study carried out on SMEs in Burkina Faso, according to which companies chose to move towards customers by transforming the employees they decided to keep during the Covid-19 period into product deliverers on mopeds (Kaboré, 2022). In the

Congolese and Moroccan contexts, companies reduced the number of days and hours employees worked (Elmahfoudi & Tajabrite, 2023; Ndinga, 2021), and they advocated telecommuting (Elmahfoudi & Tajabrite, 2023).

Our study also revealed the importance of reconversion to other activities and diversification into new opportunities as strategic choices that enabled the company to continue operating despite the difficulties caused by the pandemic. The context of the Covid-19 crisis was both incompatible with the continuation of certain activities and a source of new opportunities. With this in mind, women owner-managers of agri-food micro-enterprises in the Bamako district adopted reconversion or diversification strategies to cope with the crisis. These findings corroborate those of Ndinga (2021) in a study of Congolese women's microenterprises. Indeed, to cope with the Covid-19 pandemic, these women's microenterprises adopted strategies to explore new customer niches. Other studies (e.g., Kaboré, 2022; Atangana, 2022) have also revealed that businesses abandoned their core activity to engage in other activities in order to meet needs that emerged with the Covid-19 crisis.

In addition to flexibility levers, our research identified three (3) key factors in the adaptation of informal sector agri-food microenterprises to the Covid-19 context: perseverance, the role of the housewife, and relational management style.

Implications of research

From a theoretical perspective, we noticed that contrary to what is observed in developed countries, in precarious contexts such as in West African countries where social relations in communities are strong, enterprise flexibility is not only oriented toward individual and socio-cultural factors or gender but also toward management style. This study highlights the *perseverance, gender, role of housewife, and relational management style* as antecedents of women-led informal microenterprises' ability to adapt to the Covid-19 crisis.

From a managerial perspective, women-led enterprises cope better with the crisis of Covid-19 through woman personal and socio-cultural characteristics and woman management style. This qualitative study of women agribusiness owners/managers shows that, in response to the crisis, the enterprises have adjusted in terms of production, employees, finances, sales methods, and strategy. The interactive management style of the woman manager-owner, reinforced by her perseverance and her mastery of the culinary, helped her business to adapt to the crisis. The results of this study suggest that women entrepreneurs operating in the informal sector systematically integrate the relational dimension into their business management style, particularly in their interactions with employees, customers, and suppliers. The results also imply that women entrepreneurs realize that the accumulation of roles is not necessarily a limiting factor in the entrepreneurial process. On the contrary, it can be an asset in the sense that the skills acquired in one area can be useful in another.

The study has a policy impact as well. It will enable the Malian government to develop policies and programs that will support capacity-building, in the field of business management, for women in the informal sector. These policies and programs should emphasize the contribution of relational aspects and socio-cultural realities to management through the skills they generate.

4. Conclusion, limitations, and future research

The objective of our research was to explore the flexibility developed by women-led informal microenterprises to overcome the Covid-19 crisis while highlighting key factors in their

adaptation to the new context. We tried to understand “*How do individual, socio-cultural factors and management style influence the flexibility of agricultural microenterprises in times of crisis?*”

To answer this question, we used a multiple case study of women entrepreneurs. The main results showed that three key factors helped informal sector agribusiness microenterprises adapt to the Covid-19 context: perseverance, the role of the housewife, and the relational management style. In addition to the influence of individual characteristics and socio-cultural factors on the flexibility of microenterprises, women entrepreneurs adopted strategies such as adjusting working hours and diversifying the business into new activities. Our research has theoretical and methodological limitations.

Limitations and future research

We used a relational approach to show the importance of relational factors in times of crisis, especially in microenterprises. Like any other theory, relational theory doesn't resist to criticism. We are aware that other theories, such as dynamic capabilities or resource-based view theory could be considered as well for this study.

A few other limitations can also be pointed out. First, our unit of analysis is composed solely of women-led microenterprises. Although the selected enterprises operate in the same field of activity, they do so alongside male-led enterprises, with which comparisons could have enriched the results. Second, focus group interviews with owner-managers would have facilitated interactions that would have allowed for the triangulation of information. Finally, the analysis of the discourse was done manually. The use of software would allow us to draw better conclusions. We also believe that it would be appropriate to conduct a quantitative study to generalize our results.

In future research, it would be interesting to investigate male-led microenterprises and compare the results with the results of this study. In addition, the research could be extended to other business sectors or carried out on a representative sample with a view to generalizing the results.

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