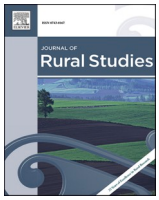
Journal of Rural Studies 113 (2025) 103523

Contents lists available at ScienceDirect

Journal of Rural Studies

journal homepage: www.elsevier.com/locate/jrurstud



Short-term gain, long-term loss: Exploring the effects of Covid-19 survival strategies on rural livelihoods and the agrarian economy

Daniel Siaw [a], George Ofosu [b], David Sarpong [c,*]

[a] Birmingham City Business School, Curzon Building Cardigan Street, City Centre Campus, Birmingham, B4 7BD, United Kingdom
[b] College of Business, Arts & Social Sciences, Brunel Business School, Brunel University London, Kingston Lane, Uxbridge, UB8 3PH, United Kingdom
[c] Aston Business School, Aston University, Aston St, Birmingham, B4 7ET, United Kingdom

ARTICLE INFO

Keywords:
Livelihoods
Coronavirus
Agriculture
Chain actors
Supply chain

ABSTRACT

In this paper, we explore how the practices of agricultural chain actors within the contingencies of the Covid-19 crisis, may have contributed to precarious rural livelihoods and the agrarian economy. Developing our contribution in the context of Ghana's agricultural sector, which is grappling with socio-economic and sustainability challenges such as land degradation, climate change, and biodiversity loss, we identified salient survival practices in the actions adopted during the Covid-19 pandemic which resulted in short-term gain, but also accounted for the long-term intractable decline in production and for producers' wellbeing. Explicating a fine analysis of how individual practices induced by the pandemic may have contributed to foster a decline in the agrarian economy, our study goes on to shed light on the devastating outcomes of the pandemic on rural livelihoods and the agrarian economies often marked by weak institutions and underdeveloped markets.

1. Introduction

The Covid-19 pandemic has been one of the most profound crises of our time. Thus, in the past couple of years, there has been an explosion of interest in the impact of the pandemic on economies and global businesses (Blanco et al., 2022; Vidya and Prabheesh, 2020; Haleem et al., 2020; Hilson et al., 2021; Mena et al., 2022). The socio-economic impact of the crisis has been devastating, and repercussions will continue to unfold for many years to come (Kathiresan et al., 2023). The restrictions in the form of lockdowns, closures of businesses and markets, and reduced business operating hours destroyed jobs, crippled incomes, and threatened food security across the world (Mena et al., 2022; O'Hara and Toussaint, 2021).

Undoubtedly, the loss of life has been the most poignant consequence of the pandemic, but the economic impact has also been overwhelming over the past years (Beckman and Countryman, 2021). Developing nations encountered disruption, especially in logistics and marketing. The workers in the informal sector form another key area where the livelihood and food security challenges were intensified (McBurney et al., 2021). In this regard, some scholars across disciplines, in some instances, have suggested that Covid-19 could end globalization altogether (Economist, 2020, Antràs, 2020), while others argue that it could at least alter its course (Yip, 2021).

What is clear is that while globalization has brought many benefits to the world's economy, it has also exposed nations, firms, and individuals to systemic supply chain risks during the pandemic (Scheibe and Blackhurst, 2018; Ağca et al., 2023). This sort of risk is associated, for example, with incidents that resulted, and might still result in the widespread and long-term scarcity of products or services with no alternatives or substitutes available (Kirk and Rifkin, 2020). The Covid-19 crisis is a severe example of a danger which drove and appears to be driving globalization to recede (Ciravegna and Michailova, 2022). In addition to the destruction of supply and value chains across the global north and south, the imposition of entry bans on goods and foreigners negatively impacted foreign earnings with detrimental impacts on national economies across the globe (Haleem et al., 2020). Since the lifting of restrictions, however, most economies have started to regain their growth—for example, GDP in the third quarter recorded growth in some countries, such as China (Cai and Hayakawa, 2022). Although the second wave hit Western countries in the third quarter, lessons learned from the first shock enabled people's social and economic activities to be better maintained during the subsequent pandemic period and the post-pandemic era (Leach et al., 2021).

Considerable research has focused on the impacts of Covid-19, the

* Corresponding author.
E-mail addresses: daniel.siaw@bcu.ac.uk (D. Siaw), george.ofosu@brunel.ac.uk (G. Ofosu), d.sarpong1@aston.ac.uk (D. Sarpong).

https://doi.org/10.1016/j.jrurstud.2024.103523
Received 1 June 2024; Received in revised form 8 October 2024; Accepted 22 November 2024
Available online 26 November 2024

associated restrictions and bans on movement, supply chain disruptions, and food and nutrition security for regions, such as sub-Saharan Africa (Mahajan and Tomar, 2021; Martin and Bergmann, 2021; Beckman and Countryman, 2021). Similarly, researchers have examined potential impacts of the pandemic on global and national economic indicators such as global poverty, government expenditures, GDP growth, budget deficits, employment, etc. (e.g., Vidya and Prabheesh, 2020; Haleem et al., 2020; Mena et al., 2022; ILO, 2020; Nicola et al., 2020; Sumner et al., 2020; UN-Habitat and WFP, 2020; World Bank, 2020a,b). Nonetheless, there is limited understanding of the economic behaviours and organizing practices of chain actors amid the pandemic and the effects of the aftermath on rural livelihoods in the agrarian economy.

Hence to advance insights into the economic 'practices' induced by the pandemic and extend our understanding of rural livelihood dynamics and the effectiveness of agricultural chain actors in practice, this present study draws on 'social practices (Reckwitz, 2002; Shove et al., 2012) as a lens to explore the short-term survival practices of chain actors during the pandemic, and their long-term intractable implications for production and for producers' wellbeing. By 'short-term gains', we refer to the immediate survival practices deployed by chain actors in response to the impact of the pandemic in the agrarian economy. This includes the sale of farmlands to artisanal miners, the hoarding of farm inputs, and the sale of livestock as well as some behavioural responses to survive the immediate impact of the pandemic. The term 'long-term loss' refers to the future or long-term implications of chain actors' short-term gains/practices during the pandemic. This 'loss' encapsulates implications including low farm yields and the loss of farmlands. To sum up, we find that the short-term survival practices of chain actors contributed to long-term losses in agricultural production with significant subsequent effects on rural livelihoods. Two advantages arise from our use of a practice approach. First, it gave us the opportunity to examine the context within which the loosely coupled agents in the agricultural sector acted within the contingencies of the Covid-19 pandemic, allowing us to reconstruct their intentions and commitments as they confronted the challenges they faced. Second, it provided us with a teleological framework for unpacking how practices are acted out, spoken, and communicated by action and through language (Tuomela, 2002).

Empirically focussing on Ghana's agricultural sector, data for the inquiry come from interviews with smallholder farmers, regulators, produce-buying companies, and publicly available documents between 2020 and 2023. Seeking to address the research question 'What are the economic practices of agricultural chain actors in the Covid-19 era and the post-Covid-19 effects on rural livelihoods in the agricultural sector?', our study derives several significant findings. First, we provide evidence of the short-term survival practices deployed by smallholder farmers and other actors during the Covid-19 pandemic, along with an empirically based account of this phenomenon. Second, the long-term implications of the short-term practices of these actors in the agricultural sector, which posed significant challenges to agricultural production, are highlighted. The post-Covid-19 effects on rural livelihoods are also presented in this study. The major contribution of our research is to extend this strand of literature into an investigation of the post-Covid-19 effects on rural livelihoods in the agrarian economy.

The rest of the paper is organized as follows: The second section reviews the literature on Covid-19 and the socio-economic impact on agriculture and rural livelihoods. The third section discusses the methodological issues. Next, the penultimate section presents our findings, while the final section offers a discussion of the findings and gives a conclusion.

1.1. Agricultural production, Covid-19, and livelihoods

In March 2020, the World Health Organisation (WHO) declared the Covid-19 outbreak to be a pandemic caused by a novel coronavirus (SARS-CoV-2). Since the beginning of the pandemic until May 2023, the world witnessed 766,440,796 cumulative cases of Covid-19 and 6,932,591cumulative deaths (WHO, 2020). In addition to being a health emergency, the Covid-19 pandemic caused ripple effects across every aspect of human life (Verma and Gustafsson, 2020), upending the business environment, decimating international trade, and causing serious damage to incomes and livelihoods (Verbeke and Yuan, 2021). Besides, the pandemic has disrupted global economies with restrictions in movement (both domestic and international) leading to large-scale unemployment and GDP changes across the world (Ciravegna et al., 2023). All facets of the economy have been affected, with double-digit decreases in the number of flights, for example. Tourism has been severely affected, and commercial oil prices at a point during the height of the pandemic decreased to levels not seen in two decades (Ntounis et al., 2022).

Although agriculture, perhaps, did not receive as much attention as other sectors of the economy (e.g., airlines and tourism) early in the pandemic, Yaffe-Bellany and Corkery (2020) note that the closing of restaurants, hotels, and schools left some farmers with no buyers for more than half their crops. Meanwhile, in most countries across the global south, the lockdowns have also highlighted the inadequacy of post-harvest facilities, mainly the storage infrastructure near farms and in the cities where such produce is temporarily stored (Ceballos et al., 2020). Wastage of agricultural commodities, especially perishables, was widely reported during the closures or partial closures of wholesale markets that accompanied the lockdowns (Martin and Bergmann, 2021). The agricultural supply and value chains were also disrupted due to the lockdowns, which affected the rural economy in developing countries (Nikolopoulos et al., 2021).

Disruptions, for example, left daily wage workers and other actors within the chain with reduced incomes and food insecurity (Nikolopoulos et al., 2021). Other studies revealed that the disruptions in supply chains had huge consequences for production in the agricultural sector, especially in the global south, where there are still shortages in farm inputs such as fertilizers, pesticides, weedicides, and many others (Workie et al., 2020; Reardon et al., 2020; Sharma, 2020). That said, the effect of the Covid-19 lockdowns has been assessed to be comparatively less severe on the agricultural sector than on the other sectors of national economies (Verbeke and Yuan, 2021). However, the food and agricultural sectors are mostly considered less resilient due to their dependency on the global market value chains (Beckman and Countryman, 2021).

Obviously, the focus of governments in the Covid-19 period was on saving lives while minimizing the disruption in the day-to-day lives of societies and across boundaries (Liu et al., 2022). Unfortunately, however, the activities of actors within the agricultural commodity chain, as indicated earlier, were hampered by travel limits imposed by various governments across the globe to stem the spread of the virus. Others note that governments' restriction measures to reduce the spread of the Covid-19 virus within and across borders may have exacerbated the negative impacts of Covid-19 beyond the pandemic period if vulnerable people (mostly poor rural inhabitants) and commodity producers are not assisted in their efforts to access food and other farm inputs to support their lives and production (Workie et al., 2020; Siaw et al., 2023a,b). As noted by the Food and Agriculture Organisation (FAO, 2020) and other farming organizations, if farmers are not supported after the pandemic, they will be forced to sell their assets and agricultural equipment to secure basic sustenance. As further suggested by the FAO, should the pandemic resurface, the purchasing power of farmers and the ability to produce and dispense food will be adversely affected. However, the latter would vary concerning the degree of impact and would excessively affect the vulnerable (generally women, the elderly, and children) and the poor (FAO, 2020).

Other studies have continued to emphasize that agricultural production was affected severely causing temporary food insecurity during the early stages of the pandemic (Laborde et al., 2021). For instance, in some provinces in Sri Lanka in South Asia, farmers encountered

disruptions in village collection systems in most farm produce during the pandemic (Rosairo, 2023). Thus, the packaging of harvested crops was a huge challenge to farmers due to logistical and labour constraints (Kumar and Kumar Singh, 2022). However, the emergence of the Covid-19 pandemic caused most smallholder farmers to adopt new approaches, such as local mobile selling, hawking, and door-to-door selling to sustain their families and livelihoods (Rakshit et al., 2021). As indicated throughout, the pandemic has intensified food insecurity in urban and rural areas because of the disruption in the food supply chain, the increased physical and economic barriers that restrict access to food, and the catastrophic increase in food waste because of labour shortages (ILO, 2020b). In this regard, during the lockdowns, gardening was a coping strategy that supported mental and emotional wellness as well as food security (Music et al., 2021).

On the macro-financial level, in response to the Covid-19 crisis, governments put large amounts of money into response strategies to ensure that people survived during that time (Bergant and Forbes, 2023). However, not all governments had sufficient funds for these response strategies. This meant that underdeveloped and developing economies had to borrow more money from the international financial institutions to fight the spread of the virus. In this regard, nearly half of all low-income nations, who had been living with significant debt levels before the pandemic, have seen these exacerbated to extraordinary levels since the eruption of Covid-19 (World Bank, 2020a,b). This debt-related instability will ultimately have negative implications for agricultural production. The situation is likely to stifle the provision of support to the agrarian economy in most countries in sub-Saharan Africa, where, already, structural adjustment programmes have sought to abolish basic subsidies and reduce credit and extension services for agricultural purposes (Banchirigah, 2006; Hilson and Potter, 2005).

Further, research has shown that the urgent and extreme countermeasures conducted by governments, especially lockdowns and transport restrictions, supply chain disruption across the global north and south have had significant and negative impacts on rural livelihoods, by decreasing households' incomes (Workie et al., 2020). Despite the importance of protecting rural people from catching the Covid-19 virus through lockdown measures, the economic consequences have been heavy. Another worrying trend that also affected rural livelihood during the pandemic is the disorder in daily life induced by the epidemic; this primarily included an increase in the price of food and additional expenditures, restrictions on movement and on family gatherings, and the closure of schools (Kansiime et al., 2021). The sudden lockdowns and strict restrictions on the movement of goods and people led directly to the scarcity of supplies of goods, impeded marketing channels, and resulted in the subsequent rise in food prices (Beckman and Countryman, 2021).

A review of these studies, however, reveals a certain particularity – a focus on the implications of Covid-19 across different sectors of the economy. As such, our understanding of the short-term practices deployed by chain actors during the pandemic, and the long-term impact on rural livelihoods has remained incomplete. We address this issue by turning towards the practices of smallholder farmers and other chain actors of practice in Ghana's agricultural sector.

1.2. A practice perspective of Covid 19

We turn to a practice approach to provide insight into the organizing practices of agricultural chain actors within the contingencies of the Covid-19 crises, and how they may have contributed to the increasingly precarious nature of rural livelihoods and the agrarian economy. Providing epistemic stability to explain and understand human action in ways that emphasize symbolic structures of meaning (Reckwitz, 2002), Schatzki (2005: 471) refers to practice as "human activities" which are "organised, open ended spatial manifolds of actions". Emphasizing what agents do and their understanding of the everyday practices they engage in, the recent interest in accounting for how practices may anchor social structures that contour actions has focused primarily on understanding the spatial, dynamic, and temporal features of social practices (e.g., Sarpong et al., 2020; Chia and Holt, 2006).

It is in this vein that we follow Shove et al.'s (2012) empirical articulation of practices as our analytical point for theorizing the practices of agricultural chain actors within the contingencies of the Covid-19 crises, and their potential implications for rural livelihoods and the agrarian economy within which they are embedded. In this regard, what we mean by practices is an outcome of the performative linkages and interactions between the triadic elements of *materials, meanings,* and *competences*. By *materials*, we refer to tangible and intangible things, including technologies, infrastructure, and epistemic objects – such as planting rules and land tenure systems, which are "always in the process of being materially defined" (Knorr-Cetina, 2001: 184). *Meanings*, on the other hand, is use to refer to that which provides epistemic stability and constitutes the social and symbolic significance of participation in a practice, consisting of the aspirations, emotions, ideas, and motivations that allow meanings to materialize in order to inform and constrain identity and action. Forming the final part of the jigsaw, *competences* refers to the ideas, symbolic meanings, and aspirations underpinning an action. These may encompass embodied competences, projects, intelligibility, techniques, expertise, and even tasks (Schatzki, 2010).

In essence, the reproduction of these three components drives the activities that contribute to the stable features of a given practice. Nevertheless, practices, rather than being institutionalized (Kemmis et al., 2017), are frequently conceptualized as something that is in constant flux and transformation and is relational in nature (Blue, 2019). Thus, we ask, what happens when there is a breakdown in the phenomenological experience of the flow of a given practice? Following Heidegger (1962), we employ the concept of 'breakdown' as a prism through which to see and explore something that interrupts the anticipated flow of everyday life that is initially hidden in plain sight or that is seen but unnoticed. From an ontological perspective, a breakdown can be good or bad depending on how it is assessed, and it could, potentially, give rise to the possibilities, opportunities, potentialities, and limits of a given social practice (Schatzki, 2016). In this case, we take Covid-19 and its attendant lockdowns and the disruptions of the markets for these farmers as an unwanted interruption in the flow of their everyday farming activities and livelihood. The pandemic in this sense became a 'breakdown' in the normal flow of the practice of agriculture and the way farming in general was organized. As shown in Fig. 1, Covid-19 led to disruptions in supplies of farm inputs reaching the farms in time for the planting season. At the same time, farm outputs could also not reach the markets. The 'breakdown', we argue, disrupted farmers' sense of reality. The breakdown then led to the enactment of new activities, practices, and routines to enable them to cope. These new activities emphasized a subsistence agriculture geared toward survival, and also the sale of farmlands, which were then mined by artisanal and small-scale miners. The upshot is the new circumstances experienced by these farmers in the form of precarious livelihoods and changes to the agrarian economy as a whole (see Fig. 2).

Covid-19 as a 'breakdown' in this circumstance serves as a wake-up call, alerting us and directing our attention to how the disruption challenged the habitual ways the loosely coupled chain actors, including farmers, thought, acted, and organized, and turned them into irrelevant knowledge within the contingencies of the pandemic. They were prompted to reflect, and potentially had conversations to help them make sense and meaning of what they knew, and then considered doing things differently. We argue that the lattice of connected activities and routines making up the past and the new ways of doing things differently are acted out, as well as spoken, in that they were frequently communicated not only by action but also through language (Nicolini, 2012). Thus, emphasizing the place of language within social practices, we accord priority to discursive practices, those linguistically articulable thoughts and the contextually relevant symbolic and sociocultural

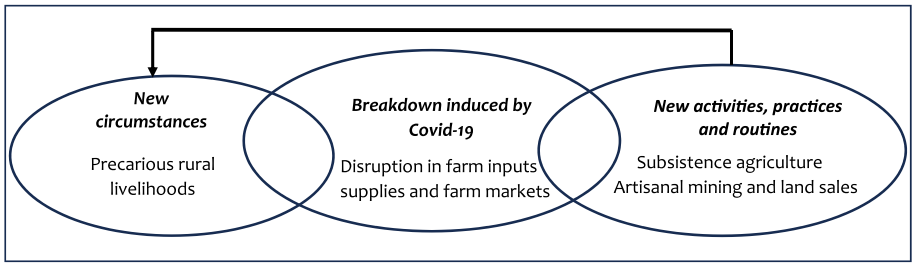


Fig. 1. Influence of Covid-19 breakdown on the anticipated flow of agriculture practices.

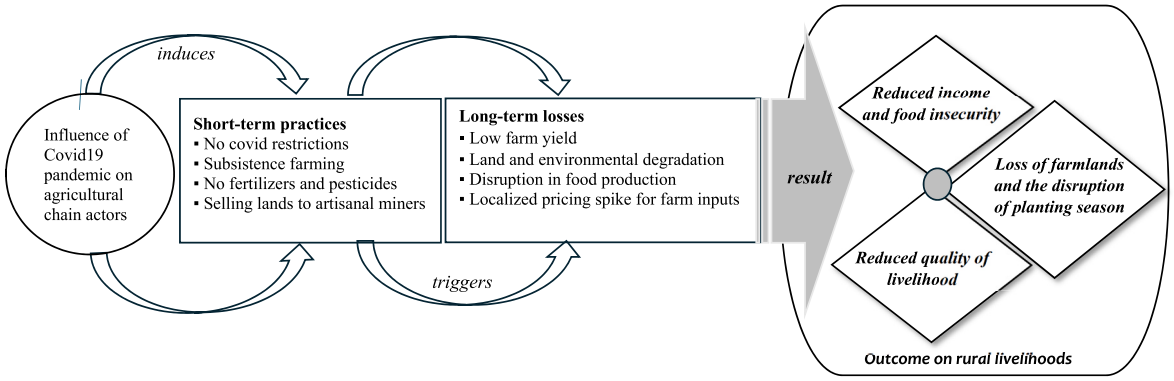


Fig. 2. Influence of Covid19 pandemic on rural livelihoods.

systems in theorizing what we see as the effects of Covid-19 survival practices on rural livelihoods and the agrarian economy.

1.3. Research context

We conducted our research in the cocoa sector in Ghana, which is the second largest producer and exporter of cocoa. Over the past two decades, the sector has contributed an average of 54% of Ghana's GDP and currently accounts for over 40% of export earnings (FAO, 2024). At the same time, the sector provides over 90% of the food needs of the country (FAO, 2024). Currently, about 6.3 million Ghanaians depend solely on the sector for their personal and family livelihood (FAO, 2024; Amankwah-Amoah et al., 2018). Ghana reported its first Covid-19 case on the March 12, 2020, when two individuals who had returned to the country from Norway and Turkey tested positive (Muthuri et al., 2021). Subsequently, the government set in place measures centred around limiting or stopping the importation of the virus, and containing its spread (Muthuri et al., 2021). These measures led to the subsequent imposition of a ban on all public gatherings and an eventual partial lockdown in some of the metropolitan areas of the country (Muthuri et al., 2021). Table 1 is a summary of the timelines and major interventions taken by the government in response to the pandemic.

Post-Covid-19, the government of Ghana announced in the 2022 mid-year budget that Ghana was set to record the lowest cocoa production for the past twelve years (Dontoh, 2022). This dramatic fall in production, the report goes on to observe, was due in part to the fact that over 19,000 ha of cocoa plantations had been lost to illegal mining sites, with the lost lands representing about 2% of cocoa farms in Ghana (Myjoyonline, 2022).

2. Methods

Given that we seek to analyse the post-Covid-19 effects on rural livelihoods in the agricultural sector in Ghana, we adopted an exploratory qualitative research approach to gain insight into the organizing practices of agricultural chain actors in the midst of the pandemic and the effects on rural livelihoods of the aftermath of the pandemic.

We collected data for this study from two main sources: interviews with key actors in the agricultural industry and secondary data from online publications and archival documents on the pre- and post-Covid-19 impacts on rural agricultural production. For our study, common method bias should not be a major concern because we used multiple data sources, including primary data from interviews and the various forms of secondary data. The initial data source consists of interview data collected from smallholder farmers and other key actors in the agricultural sector in rural communities regarding their livelihood during and after the Covid-19 pandemic. Based on our initial informal conversation with some actors in the regions we selected, purposive and snowball sampling were employed to select participants for this study. An initial interview was conducted with the local contact, who then served as the point of contact for identifying other participants, especially farmers. Those who consented to participate in the research were interviewed. The first set of our semi-structured interviews started from the third quarter of 2020 (from July to November) after the partial lockdown in the major cities in Ghana was lifted. We followed up with our second set of interviews in the post-Covid-19 period, that is, between the first and the third quarter of 2023, to understand the post-Covid-19 consequences for rural livelihoods. The entire data collection was carried out in three major regions, namely, Western (Nzema East Municipal District), Central (Assin Municipal District), and Greater Accra (Accra Metropolitan District) in Ghana. The Nzema East Municipal District was chosen as one of the research sites, as the area produces tonnes of cocoa to augment national production annually. The Assin Municipal District in the Central region was our second research site also due to the intensity of agricultural activities in the area. The Greater Accra region serves as the administrative capital of the Ghana Cocoa Board (COCOBOD), and the Ministry of Food and Agriculture (MOFA). We sought the views of officials of these two regulatory agencies to understand the impact of the pandemic on the sector.

In total, we conducted 41 semi-structured interviews. The majority of the interviews were conducted in the local language (Twi). The first author, who conducted the on-site interviews, is fluent in both Twi and

Table 1
Measures to combat Covid-19 as announced by the Government of Ghana between 01 March and May 31, 2020.

Date	Measures
March 11, 2020	● A $100 million fund set for COVID-19 preparedness and response. ● A100-bed capacity facility inside one remote area is set up to quarantine suspected cases; 5000 pieces of PPE purchased for health personnel across Ghana.
March 15, 2020	● All public gatherings, including conferences, funerals, political rallies, and religious activities are suspended for four weeks from 16 March. ● Closure of all universities, high schools, and basic schools, effective 16th March till further notice. ● Ban into the country of any traveller (except for Ghanaians and those with resident permits) who, within the last 14 days, has been to countries that have recorded at least 200 cases of persons infected of Covid-19.
March 21, 2020	● Parliament passes the Imposition of Restrictions Bill (2020) to give strong legal backing to the President's Covid-19 specific directives. ● Closure of land, sea, and air borders to human traffic effective midnight 22 March.
March 27, 2020	● A partial lockdown imposed in the Greater Accra and Kumasi Metropolitan Areas from 30 March to 20 April. ● Extension of the tax filing date from April to June 2020. A two percent reduction of interest rates by banks, effective 1 April. ● Establishment of a Covid-19 National Trust Fund to be managed by an independent board of trustees to receive contributions from the public to assist in the welfare of the needy and the vulnerable.
April 1, 2020	● A to'll-free line 311 set up by the National Information Centre to support Ghanaians to understand the prevention and management of suspected Covid-19 cases.
April 5, 2020	● The Coronavirus Alleviation Programme (CAP) provides food for up to 400,000 individuals and homes in Accra and Kumasi affected areas of the lockdown. ● Absorption of water bills for all Ghanaians for the three months from April 2020. ● Roll out a soft loan scheme up to a total of GH'600 million with a one-year moratorium and two-year repayment period for MSME businesses. ● Local companies are engaged to produce PPEs
April 15, 2020	● Launch of Covid-19 Tracker App.
April 19, 2020	● Partial lockdown lifted in Greater Accra and Kumasi Metropolitan Areas effective 20 April.
April 25, 2020	● Facemasks made mandatory in public spaces.
April 26, 2020	● The suspension of all public and social gatherings is extended by two weeks effective 27 April.

Source: Adapted from Muthuri et al. (2021)

English, so there was no major challenge with interviewing and transcription. Our informants included smallholder farmers (25), COCOBOD officials (5), officials at MOFA (5), and produce buyers (6). Following the collection of the biographical information from our participants, our interviews focussed on getting our participants, especially farmers, to share their views on how the Covid-19 pandemic had affected them. We then drilled down into post-Covid-19 effects on their livelihoods; suffice to say, there was no enforcement of stringent measures on farmers during the pandemic in the rural farming communities in Ghana. The age of the interviewees ranged from 40 to 70 years, with more than 60% older than 45 years. In the semi-structured interviews, 5 interviewees were females and 36 males. Out of the 36 male interviewees, 20 were farmers and were involved in the production of cocoa, coconut, pineapple, tomatoes, and other fruit and vegetables in the Western and Central regions of Ghana. The few women in cocoa production were elderly (aged over 50 years). The interviewees from COCOBOD, MOFA, and produce-buying companies, such as Olam Ghana Limited and Federated Commodities, were all males. To increase the trustworthiness of the interview data, we let the interviewees speak freely and asked them to share their anxieties about the potential future of their agriculture production. The interviews lasted around 1 h on average. All but three interviews, for which we took detailed notes, were recorded and transcribed.

Secondary data are an important second data source included in our study. The secondary data we drew on provided us with important additional insights into the post-Covid-19 effects on rural livelihoods within the agricultural sector. Crucially, the secondary data also enabled us to triangulate our findings and ensure the integrity of our analysis. To achieve that, we further employed an extensive set of webpage archival materials on agricultural production and post-Covid-19 effects on rural livelihoods as our data sources. To identify the relevant archival data, we used keywords in combination such as "farmers", "agriculture", "actors", "Covid-19, pandemic", "rural livelihoods", "Ghana Cocoa Board", "FAO", and "MOFA". Using these keywords to search databases such as Ghana web and myjoyonline.com produced several archived articles for our study. In addition, relying on Google's web search engine, we inspected the official websites of the various key actors in the agricultural sector, such as the FAO, MOFA, and COCOBOD, to identity and trace reports.

The secondary data supplement the primary insights with a deeper understanding of the post-Covid-19 effects on rural livelihoods in the agricultural sector. The secondary data analysed for the study commences from late 2018, that is, prior to the outbreak of the pandemic in 2020, till 2023, when the sector faced a decline in agricultural production and suffered from the ripple effects on the Ghanaian economy and livelihoods. These secondary data sources helped to build up a solid baseline understanding of the organizing practices of chain actors in agricultural production and the post-Covid-19 effects on rural livelihoods in the Ghanaian agricultural sector. Table 2 summarizes the data collected and gives the sources of the additional information retrieved for the inquiry.

2.1. Data analysis

Our data analysis followed three main steps. First, we listened carefully to the audiotapes several times to ensure that they reflected what we had heard in the field in order to make meaningful judgements of contextual statements, their relevance, and implicit connections (Marshall and Rossman, 2014). Here, cross-references were made between the transcribed data and field notes, which allowed for adjustments where necessary. Our initial textual analysis of the interviews and archival documents focused on the organizing practices of our key actors of practice, the survival strategies and measures they adopted during the pandemic, the long-term environmental and production loss, and the post-Covid-19 effect on rural livelihoods.

The literature review provided a useful starting point for our data analysis (Strauss and Corbin, 1990). We identified keywords and phrases that respondents were using concerning the measures adopted by the government and other chain actors during the pandemic. We produced a plethora of initial codes (Saldana, 2013) to capture our respondents' perspectives on the industry's organizing practices and policies in the midst of the pandemic, the on- and off-farm impact of the pandemic on agricultural production, and the broader effect of the pandemic on the agricultural industry. These were further categorized according to their similarities and analytical connections, and recurrent phrases were also identified and 'analytically converted' (Strauss and Corbin, 1994), reflecting the organizing activities of the actors of practice in the agricultural sector in the era of the pandemic, and the subsequent effects of the aftermath of the pandemic on rural livelihoods.

In the second stage, we classified second-order codes based on the data constructs and the codes (first-order codes) we identified earlier. We identified additional, separate codes from the data at this stage. We probed the data further to identify more connections between our initial categories and went further to merge those initial categories that appeared very similar. We continued to probe the new categories to explore how they reflected or linked into the contexts within which they were generated or produced. Drawing on theoretical insights from the

Table 2
Summary of Data collected.

Actors	Number of actors interviewed	*Other data sources and information retrieved*	
1. Farmers	25	**Data source**	**Information retrieved**
2. Ghana Cocoa Board	5	1. Online portal	Speech on final covid address
3. Ministry of Agriculture	5	2. Ghana Cocoa Board	Syndication loan, Agricultural programmes, Regulatory procedures
4. Produce Buyers (LBCs)	6	3. Online portal	Speech on final covid address
Total	**41**	4. Food and Agricultural Organization, and the Ghana Ministry of Food and Agriculture	Overview of Ghana agriculture sector, Reports on covid

extant literature on the implications of Covid-19 for agricultural production, the identified segments were then analysed and interpreted iteratively until common themes emerged and the data became saturated (Strauss and Corbin, 1997; Suddaby, 2006).

Probing further the connections and conceptual properties of the respective categories, we developed three aggregate theoretical themes, which we used to explore viable theoretical explanations of what we heard in the field, namely, short-term gains, long-term loss, and the Covid-19 effects on the agrarian economy and rural livelihoods, which we discuss in the next paragraphs.

2.2. Research findings

Our data evidence suggests that when the Covid-19 pandemic hit, chain actors in the agricultural food sector instinctively changed their economic practices and formulated a short-term response tactic to survive the immediate impact of the pandemic. However, these short-term practices of chain actors have had a profound long-term impact on agricultural production and livelihoods. In this section, we discuss the short-term survival practices deployed by chain actors during the pandemic and the long-term impacts of these survival decisions and actions on production and the environment. After this, we examine the subsequent effects of the aftermath of the pandemic on rural livelihoods.

2.3. Short-term 'practices': the Covid-engendered challenges and the short-term gains

As indicated throughout, the Covid-19 pandemic profoundly impacted people's lives in diverse ways. Within the period, significant number of people lost their jobs, resulting in their families being negatively affected. Many households suffered financially through the death of breadwinners. In some instances, people were temporarily forced to stop work and stay at home without any salary. In contrast to the devastating impact of the Covid-19 pandemic in other parts of the world, especially in the large cities, however, our findings highlight that though there were Covid-19 restrictions in the rural areas, the impact was not as severe as in the cities. Nonetheless, many rural farming communities in Ghana also suffered the brunt of the pandemic. Thus, although many farmers remained able to engage in their farming and non-farming activities, they still had to find ways to supplement their income and to accumulate some kind of wealth in order to withstand the uncertainties of the times. Some of the farmers interviewed shared their stories on the impact of the pandemic and lockdown measures in their community. One farmer stated:

> We understand the deadly implication of the Covid-19 virus, but for our village, we are still going to our farms. We heard the Ghana Cocoa Board chief executive officer on television saying that we should adhere to social distancing when going to the farm, but no one has tested positive, so at least we are able to go about our farming and non-farming activities.

Despite the fact that these smallholder farmers were aware of the implications of the Covid-19 pandemic, they were not as restricted as those living in the cities. Indeed, these farmers and the produce buyers were operating with very few restrictions. One farmer, who was also a produce buyer with Olam Ghana Limited, said this:

> Before the start of the pandemic, we were going about our cocoa purchases and still buying from the farmers. However, the cities are on partial lockdown, so operations at the port and other chain activities are slow. Our international partners are on lockdown, and this is affecting our whole supply chain operations. We hope that the borders will be opened on time so the government can export the beans, and, in return, be able to pay our farmers and sustain our business.

From the previous findings, the government introduced lockdown measures to fight the spread of Covid-19. However, within the farming communities, there were no strict measures, and some actors within the agricultural food chain, such as farmers and produce-buying companies, were actively working. However, it ought to be noted that subsistence farming was not the only activity for farmers; farmers were also engaged in the production of other crops, such as cocoa, rice, tomatoes etc. Considering the pandemic-related restrictions on transportation from the production regions to the cities and the difficulties in marketing and consuming these products within the production regions, the sale of the harvested crops became a challenge. Also, farm management challenges were among the concerns raised by farmers in our interviews. One farmer had this to say:

> I invested a lot in my farm just to get a good yield at the end of the season, but the lockdown and the Covid-19 restrictions are causing severe havoc to my farm. There are no fertilizers and other farm inputs, the purchasing clerks (PCs) are also not paying us. I sold my cocoa beans to the PC over five months now, but [they] have not paid me. How can I survive this hardship and even take care of my farm and family? so I sold a portion of my farmland to artisanal miners.

Even though some of the challenges raised by the farmer in the statement above had persisted for quite a long time, the Covid-19 restrictions across the region had exacerbated the situation. Farmers, therefore, resorted to finding alternative means to survive during the pandemic period, as they were uncertain about when the pandemic was going to end. A fifty-four-year-old farmer shared a similar story about his short-term survival practice in the pandemic era. He stated:

> This is the time for me to apply fertilizer to my farm, but the shortage of farm inputs is going to be problematic. The government and our produce buyers are also not offering any support in this pandemic period. The only option for me is that I rear goats and fowls in addition to my cocoa farm, so I have decided to sell some of the animals and also sell a portion of the cocoa farm to support my farm and family. I need to survive in this pandemic period.

Another farmer shared a similar story:

> There is a shortage of the supply of farm inputs in the country, especially pesticides. It's time for me to spray my farm, but I can't get some of the pesticides even to buy. I understand there are retailers in

some of the communities who are hoarding some of the pesticides and selling them at a higher price. In the interim, all I can do is to sell a section of my farmland, raise some money, and buy what my money can afford and spray the other side of the farm.

Our observations and interviews further revealed that in response to the outcry by agricultural actors such as farmers in finding instantaneous survival strategies, the government of Ghana launched the Corona Virus Alleviation Programme (CAP). The CAP was a comprehensive package to, among other things, serve as a stimulus package and address the social and economic effects of the pandemic and to ensure food safety (MOFEP, 2023). One of the promises made by the government in the CAP programme was to expand the support from 1.2 million to 1.5 million farmers (fertilizer, seeds, extension services etc.) under the Planting for Food and Jobs Programme (MOFEP, 2020). This programme was seen as a short-term measure to relieve farmers of their immediate concerns and alleviate the long-term challenges posed by the pandemic. However, the farmers and produce buyers interviewed in our research sites revealed that they had not benefited from this immediate support made available by the government.

> We understand the government has decided to supply some farm inputs to us through the Planting for Food and Jobs Programme. Well, in our community and other neighbouring communities, we have not received any farm inputs. It's almost a year since we heard of the launch, but we have still not received any inputs. I have four different farms, so I sold one of the farms to artisanal miners, who were in a mad rush for the farmland for their mining activities. Their offer was very lucrative, so I sold the land for Ghc 40,000. This was the only immediate solution to my hardship during the pandemic; if not, I wouldn't have survived.

From the aforementioned information, it is important to note that many farmers and other actors in the agricultural food chain were victims of the global supply chain disruptions and the pandemic. This put actors, especially farmers, under more financial and market pressure, as they had not been able to meet their domestic and international market demands. In addition, their ability to maintain their farms and livelihoods in the short term was a challenge. In this regard, our interviews revealed that most farmers began finding immediate ways to survive in the rural farming economy. Some of them engaged in practices such as selling their farmlands to artisanal and small-scale miners for mining activities, while others sold their livestock in order to gather resources to maintain their farms. These short-term practices/gains, coupled with other challenges engendered by the pandemic, resulted in long term losses. We examine this effect in the following paragraphs.

2.4. Impact of Covid-19 on agricultural production: unpacking the long-term loss

The Covid-19 pandemic in most developing countries has impacted food supply chains, agriculture input stocks, jobs, farmers, producer income, and limited storage capacity (Singh et al., 2021). Some smallholder farmers were unable to market their produce, especially perishables. As indicated in the previous paragraphs, some smallholder farmers in several rural communities in our study area sold their farmlands to artisanal and small-scale miners in the period of the pandemic. Our interviews show that land loss and the reduction in farm production were some of the long-term losses to the agricultural sector, as many farmers sold their lands to artisanal miners in return for money as a short-term strategy to survive the hardship and improve their farms. Even though the sale of farmlands seemed a viable option for some farmers during the pandemic, they could not foresee the long-term consequences of their action on production. An official at MOFA shed light on the impact of artisanal mining on agricultural production:

> We know some of the hardships our farmers went through during the pandemic, from input shortage to damaged perishable stocks. The sale of cocoa farmlands to illegal miners has been a big blow to us, even though that was a short-term survival option for some of the farmers. But the long-term implication for the sector is the loss of farmlands. We lost a greater number of farmlands, and it's a contributing factor to the low output we are currently experiencing in the sector.

We caught up with John, a cocoa farmer, who shared his story this way:

> The Covid-19 pandemic has affected me in diverse ways. I sold a portion of my farm to artisanal miners and took the money to survive the pandemic period. The problem is that the other portion of the farm has been negatively affected by activities of the miners. I have now realised that it wasn't the best decision to sell the farmland even though I needed money to survive during the pandemic.

Another farmer shared a similar story on the long-term loss of their short-term decisions during the pandemic. She revealed:

> When the pandemic hit, and with the localized pricing spike for agricultural inputs, I sold my farms to artisanal miners and others to a local purchasing clerk. I took the money for my upkeep to survive during the pandemic. Now I'm landless and need to buy food such as cassava, plantain, and other vegetables. Even though I had some good money, I think it was not the best decision to sell the land and the farms.

Our study further shows that due to the high sale of farmlands to artisanal miners during the pandemic period as a short-term survival practice by most farmers, these farmers have begun feeling the impact in the long term. Many farmers complained of a low yield as a result of the activities of artisanal miners in their communities. One farmer commented:

> Activities of illegal miners have affected cocoa production this year, even though there were input shortages last year 2021 due to the pandemic. This has affected production this year; we had a very low yield after the harvest.

2.5. Effects of Covid-19 on agricultural production and livelihoods

As indicated earlier, the economic and social disruption caused by the pandemic was devastating, with millions of people at risk of falling into extreme poverty, especially those living in rural communities where agriculture serves as the primary source of livelihood (Workie et al., 2020). Most of the actors interviewed confirmed that the pandemic has caused a severe reduction in their production incomes and has been a threat to food security, as there are still gaps in production. In an interview with a senior official at COCOBOD, it was revealed that the pandemic has caused severe disparities in the income of farmers, as most farm inputs were in short supply, resulting in high prices for the few that were on the market. He said:

> The pandemic has affected our farmers a lot, and as a regulatory institution, we cannot dispute that fact. The shortage of farm inputs during the pandemic was our biggest fear, as most farmers could not comply with the best practices in farming, e.g., weeding and spraying of the farm at the right time. This has had massive implications for production output and farmers' income now.

In 2020, COCOBOD predicted a loss of $1billion in cocoa revenues as the pandemic had caused a reduction in market prices (Larnyoh, 2020). Considering that the cocoa sector employs over 800,000 rural families, there is a fear that the cocoa sector could be hit further with negative consequences for rural livelihoods. The statement by the regulator in 2020 became a reality in the 2021 and 2023 farming seasons, as some farmers interviewed confirmed the predictions made by the regulator of the sector. One farmer shared his story on the effect of the pandemic on his production:

> The pandemic has caused a lot of havoc to my farm. You know the main crop season for cocoa production is October; this means I need to start spraying the farm, weed and apply fertilizer in the light crop season, which is somewhere in April, and that is when the pandemic hit. I didn't get enough pesticides to spray my farm, and this year [2021], I harvested only two bags of cocoa instead of the normal five bags.

The World Bank, 2020a,b warned that the corona virus pandemic could push an additional 71 to 100 million people into extreme poverty in 2020. The disruptions in supply chains and the effect on the agro-chemicals sector in the Covid-19 era has led to low farm yields in the Ghanaian agricultural sector. Moreover, the announcement of the initial 14-days partial lockdown in major cities in Ghana resulted in the panic buying and hoarding of farm inputs including cutlasses, weedicides etc. by retailers in the cities and rural communities. Resultantly, shortages ensued whilst some retailers in the agro-chemical sector reacted by increasing prices of pesticides. Some of the farmers interviewed revealed a local pricing spike for agricultural inputs in the Covid-19 period.

> You know there is no proper regulatory measures in the agro-chemical supply industry, and every supplier can just set their own price. During the pandemic period, the price of pesticides doubled, and the few who had fertilizers hoarded them for a higher price. Before the pandemic, 'Confidor' (pesticide) was Ghc 90 and 'Anonum' (fungicide) Ghc15.00, but the price doubled in the pandemic period. Most of us had no money to buy, so I sprayed the farm just once the whole year.

The shortage of glyphosate and other pesticides, a basic element of agronomy, is detrimental to the sector, and where supplies have been restricted, there have been very significant increases in prices as the laws of supply and demand come into force (Laborde et al., 2021). A produce buyer shed light on this phenomenon among retailers in the agro-chemical industry in the Covid-19 era.

> In fact, as a cocoa-buying company, the impact of the pandemic on our produce purchases was high; the price of farm inputs went up, and they were in short supply. The few supplies we gave on credit prior to the pandemic in return for cocoa beans, we could not even recoup this back since farmers could not get additional supplies to spray their farms.

We also discovered that the limits on the mobility of people across borders and the lockdown restrictions contributed to labour shortages for agricultural sectors, particularly those characterized by periods of peak seasonal labour demand or labour-intensive production. Chris, a tomato farmer, revealed in an interview that, prior to the pandemic, he had four acres of tomato farm, some of which were in the harvesting stage. However, the pandemic and its restriction on movement and the subsequent labour shortages caused havoc to his farm.

> I have staff that are on a permanent contract but normally hire others to support during the harvesting period. This time, due to the Covid-19 restrictions, most of the temporal workers could not turn up to support us on the farm, and that was a big blow to us. Most of our tomatoes rotted because of the labour shortage. In addition, we normally sell some to retailers who come to the farm to buy direct from us; they also ceased coming because of the pandemic. It was a total loss for me as a farmer, and I'm still paying the loans I invested in the farm.

Another farmer shared a similar view on the disruption to production due to the pandemic:

> I'm an orange farmer; the lockdown in Accra and Kumasi caused severe losses to my farm and production. There was no movement, and all our suppliers ceased coming to buy from us. About 60% of our harvest from 2020 to 2021 rotted, and we have not recovered from the shock.

3. Discussion and conclusion

While this research had several aims, our overarching goal was to better understand the post-Covid-19 effects on rural livelihoods (i.e., the instantaneous survival practices deployed by chain actors and their long-term implications and subsequent effects on livelihoods in rural communities). Our investigation provides several interesting findings. We found that the impact of Covid-19 varies for different actors in the agricultural value chain. The most affected actors in the chain are farmers, particularly smallholder farmers. Farmers' household income declined due to disruption in the production and marketing of their farm produce. Our results further reveal that the steep rise in the prices of farm inputs and consumer food resulted in increased hardships among families in rural communities. Evidence from our study shows that the pandemic has engendered widespread disruptions to livelihoods, and the response measures implemented by governments through restrictions have placed significant constraints on human lives. Since the beginning of the Covid-19 pandemic in March 2020, research on this global issue has been increasing due to uncertainty about the sustainability of livelihoods due to families and businesses needing adaptive and coping measures (Vidya and Prabheesh, 2020; Haleem et al., 2020; Mena et al., 2022). The responses from agricultural chain actors have made it clear that disruptions in global supply chains as a result of the corona virus have caused low yields and a price spike for agricultural farm inputs, and these have affected farmers' and other actors' livelihoods.

In this regard, we argue that the short-term survival practices of chain actors and the long-term loss in the era of the pandemic have, at the very least, resulted in significant changes in the rural livelihoods of agricultural actors in our study area. There has been a reduction in the quality of life and the income of actors in the agricultural food chain. We present a conceptual framework to support our argument that the short-term practices of chain actors and their long-term impact are some of the contributing factors to the post-Covid-19 effects on rural livelihoods. Overall, we highlight that the disruption in global supply chains led to a shortage of farm inputs where many farmers started experiencing hardship and began to sell their farmlands to artisanal miners to sustain their livelihood. The long-term impact of the short-term practices of these chain actors contributed to especially low farm yields, disruptions in food production, and a price spike for agricultural inputs. These issues combine to form analytically complementary ways to extend our understanding of how the synergistic relationships between agricultural chain actors identified in this research and their organizing practices may cohere to precipitate the post-Covid-19 effects on rural livelihoods.

However, it ought to be noted that some of the challenges raised by the farmers during our research work had existed for quite a long time even before Covid-19 struck. Generally, the agricultural sector in Ghana (Hilson and Garforth, 2012) and in most regions in Africa (Bryceson, 2002, 2018) had not been stable even before the surge of the pandemic. In most regions in Africa, scholars have long highlighted the challenges faced by farmers, e.g., limited access to markets, lack of farm inputs like fertilizers etc., leading to long running process of de-agrarianization – a reorientation of livelihoods away from the agrarian sector, and subsequent unemployment (Banchirigah and Hilson, 2010; Bryceson, 2002, 2018). Shrinking government budgets have meant large cuts in formal credit and input supply programmes resulting in very serious challenges for actors in the agrarian sector; the net outcome of this phenomenon has been the declining value of agricultural output relative to other sectors of production (Bryceson, 2018; Hilson and Garforth, 2012, 2013). Thus, although Covid-19 intensified the situation, the general issue of de-agrarianization and low agricultural output had long persisted. Hence, urgent policy considerations are required to help address

the structural difficulties in the agricultural sector.

Further, we note that the sale of agricultural land/farmlands to mining operators requires considerable policy attention. This is because this emerging practice may exacerbate household food insecurity (Nguyen et al., 2015; Nunoo et al., 2023; Siaw et al., 2023a,b; Obodai et al., 2024; Donkr et al., 2024). The mounting environmental damage from mining-related degradation is clearly harming efforts to overcome poverty and raise living standards, particularly in rural communities (Clifford, 2022; Conde, 2017). However, it ought to be noted that although the use of agricultural lands for small-scale mining activities has serious environmental degradation consequences (Ofosu et al., 2020; Arthur-Holmes and Abrefa Busia, 2022; Baddianaah et al., 2023), small-scale mining in the Ghanaian context cannot be regarded as wholly bad. A consistent body of work has established that the mining operations have contributed and have the potential to still contribute to rural poverty alleviation if properly harnessed (Okoh and Hilson, 2011; Arthur-Holmes et al., 2022; Adranyi et al., 2023; Ofosu and Sarpong, 2022, 2023). Indeed, any work/discussion examining artisanal and small-scale mining (ASM) and agriculture would be incomplete without recognizing the synergies between both industries. Both sectors have been known to complement each other, with revenues from agriculture supporting ASM production and vice versa (Cartier and Bürge, 2011; Hilson and Garforth, 2012; Okoh and Hilson, 2011; Ofosu et al., 2020).

Governmental policy, however, is known to have failed the ASM sector (Hilson, 2017; Ofosu et al., 2024). In this regard, a plethora of studies have established that pro-ASM policies in many mineral-rich countries, and especially in Ghana, have become a 'legislative afterthought' introduced after mining governance regimes have embraced pro-large-scale mining activities (Banchirigah, 2006; Hilson and Yakovleva, 2007; Hilson et al., 2020; Hilson, 2019). This has led to the occupation of extensive tracts of land by large-scale mining companies. Hence, for ASM actors keen on securing permits, only very limited amounts of land that are geologically viable are available (Hilson et al., 2020; Hilson, 2019). Policy should, therefore, seek to address issues related to the availability of mineralized lands for small-scale mining operators (Hilson, 2017, 2019).

3.1. Theoretical and practical implications

Our findings have several important practical implications for the Covid-19-related agricultural and rural livelihood literature. The Covid-19 pandemic has led to a dramatic loss of human life worldwide and presents an unprecedented challenge to public health, food systems, supply chains, and the world of work (Vidya and Prabheesh, 2020). Previous studies have focused on the impacts of Covid-19, the associated restrictions and bans on movement, and supply and value chain disruptions across the global north and south (Mahajan and Tomar, 2021; Martin and Bergmann, 2021; Beckman and Countryman, 2021; Rukasha et al., 2021). Our study adds to these studies and seeks to enrich our understanding of the short- and long-term organizing practices of agricultural chain actors in the era of the Covid-19 pandemic and the subsequent effects on rural livelihoods. In an era where the agrarian economy still serves as the engine of economic growth and the main source of livelihood for most households in emerging economies, governmental policy actors should be prepared to tackle the major challenges that confront the main actors, especially farmers in the sector. In this regard, we suggest that the provision of basic subsidies, including farm inputs, and the extension of credit and other financial services to enable farmers to recover rapidly from the shocks of the Covid-19 pandemic would not be out of place.

Our study and its findings also open whole new vistas for the formulation of policies for chain actors in the agricultural sector, and the strengthening of institutional environments. While the inability of government and regulatory institutions to offer the necessary support to chain actors of practice, such as farmers, in the midst of a pandemic forces farmers to engage in unsustainable practices, our arguments and findings imply that the institutions in charge of the agricultural sector should be equally wary of the Covid-related implications for rural livelihoods; they need to pay heed to the code of practice and the attendant fiduciary obligations of chains actors to remain effective in the post-Covid-19 era.

Furthermore, even though agricultural production was not very much affected in the early stages of the pandemic, the disruption of post-production supply chains had a major adverse impact on farmers' livelihood. The uncertainty was much greater, making farmers' decision making much more complex in the absence of appropriate information and support from the regulatory institutions and other chain actors. The smallholder farmers were the most affected amongst rural communities; thus, the pandemic adds to the agrarian distress they continue to face. Therefore, there is a need to safeguard the livelihoods of these vulnerable categories of farmers even beyond the pandemic to support the recovery and resilience mechanism. Finally, while the impacts of the pandemic on food chains are still unfolding, several lessons have emerged. Open and predictable markets have been critical to the smooth distribution of food along supply chains and to ensure food can move to where it is needed. Diversified sources of supply would therefore allow firms along the food chain to adapt rapidly when specific input sources are compromised by transport or logistics disruptions.

3.2. Limitations and future study

As with any other research, this study has a few limitations that can be addressed by future research. First, ours is a single-country study. We believe that the theoretical and practical rationale we presented - the post-Covid-19 implications for rural livelihoods in the agricultural sector - would be relevant in other emerging economies as well. Thus, similar studies in other emerging economies could validate our study and establish the generalizability of our findings. Second, data limitations precluded us from including livestock production in our analysis of the Covid-19 implications for rural livelihoods. Addressing this limitation could further enhance the generalizability of our results. Third, a focused qualitative study of selected industries in Ghana and other economies could complement our research and tease out further nuances of the phenomenon. Apart from addressing these limitations, future research can build on this study in several ways.

The results of our study help draw the directions of future research, which include but are not limited to the alignment of the methodology in theoretical generalizations of the post-Covid-19 effect on rural livelihoods in the agricultural sector. The exploration of causal links between agricultural chain actors in practice and the post-Covid-19 implications for rural livelihoods could include a quantitative research design, hypotheses testing, and the application of statistical procedures. We concede that the picture is incomplete, with some interesting parts of the landscape remaining outside our focus of attention. In this regard, we encourage future quantitative research to go further to place this discussion more accurately into the context of how far the industry has grown, and possibly to explore the challenges that confront the sector in the post-Covid-19 era.

There is another promising direction for future work. As this study focused on emerging economies, such as the Ghanaian agricultural sector, its results may not be applicable to agriculture in other countries with dissimilar socio-economic contexts. Therefore, the scope of future research can be extended to countries with different institutional and legal environments, such as those in emerging Asian and developed markets. Future research may examine the role of these different constructs in other emerging economies because of their different organizing practices.

In conclusion, this study provides a better understanding of the post-Covid-19 implications for rural livelihoods in emerging economies, following the outbreak of the pandemic across the world. Our findings show that the unprecedented shocks of Covid-19 have affected agricultural production, marketing, the environment, and agricultural

exports since March 2020 in Ghana. The greatest challenges include the timely purchasing of agricultural inputs, the selling and marketing of farm products, and the probable increase in rural poverty. However, with the government's elimination strategy for Covid-19 that is enabled by strict quarantine measures, the Ghanaian economy at large has been operating at pre-Covid-19 levels since May 2023 (Ghanaweb,2023). This has undoubtedly created an ideal environment for the agricultural and food system to recover and stabilize speedily. The synergistic efforts by the government and the wider community to mitigate the impacts of the Covid-19 pandemic are extremely crucial in recovering the agricultural production and food system in emerging economies, hence improving the livelihoods of farmers in rural communities.

CRediT authorship contribution statement

Daniel Siaw: Writing – original draft, Resources, Investigation, Formal analysis, Conceptualization. **George Ofosu:** Writing – review & editing, Visualization, Supervision, Methodology, Formal analysis, Data curation. **David Sarpong:** Writing – review & editing, Supervision, Conceptualization.

Declaration of interest

We, the Authors of the manuscript entitled: *Short-term gain, long-term loss: Exploring the effects of Covid-19 survival strategies on rural livelihoods and the agrarian economy* hereby declare that there is no actual or potential conflict of interest including any financial, personal or other relationships with other people or organizations within three years of beginning the submitted work that could inappropriately influence, or be perceived to influence, the work.

Data availability

Data will be made available on request.

References

Adranyi, E., Stringer, L.C., Altink, H., 2023. The impacts of artisanal and small-scale gold mining on rural livelihood trajectories: insights from Ghana. Extr. Ind. Soc., 14101273 https://doi.org/10.1016/j.exis.2023.101273.

Ağca, Ş., Birge, J.R., Wang, Z.A., Wu, J., 2023. The impact of COVID-19 on supply chain credit risk. Prod. Oper. Manag. 32 (12), 4088–4113.15.

Arthur-Holmes, F., Busia, K.A., Vazquez-Brust, D.A., Yakovleva, N., 2022. Graduate unemployment, artisanal and small-scale mining, and rural transformation in Ghana: what does the 'educated' youth involvement offer? J. Rural Stud. 95, 125–139.

Arthur-Holmes, F., Abrefa Busia, K., 2022. Safety concerns and occupational health hazards of women in artisanal and small-scale mining in Ghana. Extr. Ind. Soc. 101079. https://doi.org/10.1016/j.exis.2022.101079.

Baddianaah, I., et al., 2023. Local perspectives on the adverse environmental effects and reclamation of illegally mined degraded landscapes in North-western Ghana. Mineral Economics 36 (1), 139–155.

Banchirigah, S.M., 2006. How have reforms fuelled the expansion of artisanal mining? Evidence from sub-Saharan Africa. Resour. Pol. 31, 165–171.

Banchirigah, S.M., Hilson, G., 2010. De-agrarianization, re-agrarianization and local economic development: Re-orientating livelihoods in African artisanal mining communities. Pol. Sci. 43 (2), 157–180.

Beckman, J., Countryman, A.M., 2021. The importance of agriculture in the economy: impacts from COVID-19. Am. J. Agric. Econ. 103 (5), 1595–1611.

Bergant, K., Forbes, K., 2023. Policy Packages and Policy Space: Lessons from COVID-19*European Economic Review*, vol. 158, 104499. https://doi.org/10.1016/j.euroecorev.2023.104499.

Blanco, E., Baier, A., Holzmeister, F., Jaber-Lopez, T., Struwe, N., 2022. Substitution of social sustainability concerns under the Covid-19 pandemic. Ecol. Econ., 192107259 https://doi.org/10.1016/j.ecolecon.2021.107259.

Blue, S., 2019. Institutional rhythms: combining practice theory and rhythm analysis to conceptualise processes of institutionalisation. Time Soc. 28 (3), 922–950.

Bryceson, D.F., 2018. Deagrarianization and depeasantization in Africa: tracing sectoral transformation and rural income diversification. In: Binns, T., Lynch, K., Nel, E. (Eds.), Routledge Handbook of African Development. Routledge, pp. 368–377, 2018.

Bryceson, D.F., 2002. The scramble in Africa: reorienting rural livelihoods. World Dev. 30 (5), 725–739.

Cai, D., Hayakawa, K., 2022. Heterogeneous impacts of COVID-19 on trade: evidence from China's province-level data. J. Int. Trade Econ. Dev. 31 (7), 1072–1085.

Cartier, L.E., Bürge, M., 2011. Agriculture and artisanal gold mining in Sierra Leone: alternatives or complements? J. Int. Dev. 23 (8), 1080–1099.

Ceballos, F., Kannan, S., Kramer, B., 2020. Impacts of a national lockdown on smallholder farmers' income and food security: empirical evidence from two states in India. World Dev. 136, 105069. https://doi.org/10.1016/j.worlddev.2020.105069.

Chia, R., Holt, R., 2006. Strategy as practical coping: a Heideggerian perspective. Organ. Stud. 27 (5), 635–655.

Ciravegna, L., Michailova, S., 2022. Why the world economy needs, but will not get, more globalization in the post-COVID-19 decade. J. Int. Bus. Stud. 53 (1), 172–186.

Ciravegna, L., Ahlstrom, D., Michailova, S., Oh, C.H., Gaur, A., 2023. Exogenous shocks and MNEs: learning from pandemics, conflicts, and other major disruptions. J. World Bus. 58 (6), 101487.

Clifford, M.J., 2022. Artisanal and small-scale mining and the sustainable development goals: why nobody cares. Environ. Sci. Pol. 137164–137173.

Conde, M., 2017. Resistance to mining. A review. Ecol. Econ. 132, 80–90.

Donkr, P., et al., 2024. Impacts of illegal artisanal and small-scale gold mining on livelihoods in cocoa farming communities: a case of Amansie West District, Ghana. Resour. Pol., 91104879

Dontoh, E., 2022. Ghana cocoa crop set for 12-year low after drought. mine damage Available at: https://www.bloomberg.com/news/articles/2022-07-28/ghana-cocoa-crop-set-for-12-year-low-after-drought-mine-damage. (Accessed 31 May 2024).

Economist, 2020. Has covid-19 killed globalisation? Available at: https://www.economist.com/leaders/2020/05/14/has-covid-19-killed-globalisation. (Accessed 31 May 2024).

FAO, 2020. Addressing the impacts of COVID-19 in food crises. April–December 2020: FAO's Component of the Global COVID-19 Humanitarian Response Plan.

FAO, 2024. Ghana at a glance. Available at: https://www.fao.org/ghana/fao-in-ghana/ghana-at-a-glance/en/. (Accessed 31 May 2024).

Haleem, A., Javaid, M., Vaishya, R., Deshmukh, S.G., 2020. Areas of academic research with the impact of COVID-19. Am. J. Emerg. Med. 38 (7), 1524–1526.

Heidegger, M., 1962. *Being and Time* (Trans. J. Macquarrie and E. Robinson) (Original Work Published 1927). Harper & Row, San Francisco.

Hilson, G., 2017. Shootings and burning excavators: some rapid reflections on the government of Ghana handling of the informal galamsey mining 'menace'. Resour. Pol. 54, 109–116.

Hilson, G., et al., 2020. Large and artisanal scale-mine development: the case for autonomous co-existence. World Dev., 130104919

Hilson, G., Garforth, C., 2012. 'Agricultural poverty' and the expansion of artisanal mining in Sub-Saharan Africa: experiences from Southwest Mali and Southeast Ghana. Popul. Res. Pol. Rev. 31, 435–464.

Hilson, G., 2019. Why is there a large-scale mining 'bias' in sub-Saharan Africa? Land Use Pol. 81, 852–861.

Hilson, G., Garforth, C., 2013. 'Everyone now is concentrating on the mining': drivers and implications of rural economic transition in the eastern region of Ghana. J. Dev. Stud. 49 (3), 348–364.

Hilson, G., Van Bockstael, S., Sauerwein, T., Hilson, A., McQuilken, J., 2021. Artisanal and small-scale mining, and COVID-19 in sub-Saharan Africa: a preliminary analysis. World Dev. 139, 105315.

Hilson, G., Yakovleva, N., 2007. Strained relations: a critical analysis of the mining conflict in Prestea, Ghana. Polit. Geogr. 26, 98–119.

ILO, 2020. COVID-19 and the world of work: impact and policy responses. ILO Monitor.

Kansiime, M.K., Tambo, J.A., Mugambi, I., Bundi, M., Kara, A., Owuor, C., 2021. COVID-19 implications on household income and food security in Kenya and Uganda: findings from a rapid assessment. World Dev. 137, 105199.

Kathiresan, A., Nagai, T., Haneishi, Y., 2020. Policy options for galvanizing Africa's rice sector against impacts of COVID-19. World Dev. 136, 105126.

Kemmis, S., Wilkinson, J., Edwards-Groves, C., 2017. Roads not travelled, roads ahead: how the theory of practice architectures is travelling. Exploring Education and Professional Practice: through the Lens of Practice Architectures, pp. 239–256.

Kirk, C.P., Rifkin, L.S., 2020. I'll trade you diamonds for toilet paper: consumer reacting, coping, and adapting behaviors in the COVID-19 pandemic. J. Bus. Res. 117, 124–131.

Knorr-Cetina, K., 2001. Objectual practice. In: Schatzki, T.R., Knorr-Cetina, K., von Savigny, E. (Eds.), The Practice Turn in Contemporary Theory. Routledge, London, pp. 184–197.

Kumar, P., Kumar Singh, R., 2022. Strategic framework for developing resilience in Agri-food supply chains during COVID 19 pandemic. Int. J. Logist. Res. Appl. 25 (11), 1401–1424.

Laborde, D., Martin, W., Vos, R., 2021. Impacts of COVID-19 on global poverty, food security, and diets: insights from global model scenario analysis. Agric. Econ. 52 (3), 375–390.

Larnyoh, M., 2020. Coronavirus effect: COCOBOD predicts Ghana will lose $1bn in cocoa revenue as global price falls. Available at: https://www.pulse.com.gh/bi/strategy/coronavirus-effect-cocobod-predicts-ghana-will-lose-dollar1bn-in-cocoa-revenue-as/39dtw9e. (Accessed 31 May 2024).

Leach, M., MacGregor, H., Scoones, I., Wilkinson, A., 2021. Post-pandemic transformations: how and why COVID-19 requires us to rethink development. World Dev. 138, 105233. https://doi.org/10.1016/j.worlddev.2020.105233.

Liu, J., Shahab, Y., Hoque, H., 2022. Government response measures and public trust during the COVID-19 pandemic: evidence from around the world. Br. J. Manag. 33 (2), 571–602.

Marshall, C., Rossman, G.B., 2014. Designing Qualitative Research. Sage publications.

Martin, S., Bergmann, J., 2021. Im) mobility in the age of COVID-19. Int. Migrat. Rev. 55 (3), 660–687.

McBurney, M., Tuaza, L.A., Ayol, C., Johnson, C.A., 2021. Land and livelihood in the age of COVID-19: implications for indigenous food producers in Ecuador. J. Agrar. Change 21 (3), 620–628.
Mena, C., Karatzas, A., Hansen, C., 2022. International trade resilience and the Covid-19 pandemic. J. Bus. Res. 138, 77–91.
MOFEP, 2020. Ghana cares obaatanpa programme: Ghana Covid-19 alleviation and revitalization of enterprises support. Available at: https://mofep.gov.gh/sites/default/files/news/care-program.pdf. (Accessed 31 May 2024).
MOFEP, 2023. The Corona Virus alleviation programme - business support scheme. Available at: https://www.mofep.gov.gh/mof-covid-19-updates/obaatanpa-programme. (Accessed 31 May 2024).
Music, J., Finch, E., Gone, P., Toze, S., Charlebois, S., Mullins, L., 2021. Pandemic victory gardens: potential for local land use policies. Land Use Pol. 109, 105600.
Muthuri, J.N., et al., 2021. The impact of Covid-19 on gold and gemstone artisanal and small-scale mining in sub-Saharan Africa: the case of Ghana and Kenya. Africa Journal of Management 1–27.
Myjoyonline.com, 2022. 19000-hectares-of-cocoa-farmlands-are-now-illegal-mining-sites-Available at. https://www.myjoyonline.com/19000-hectares-of-cocoa-farmlands-are-now-illegal-mining-sites-cocobod/?fbclid=IwAR16BkmdyfXu9gb45i2rvIqehWXT96QvBQLrq 75Fmhdhb1bpbps8lIeJh4. (Accessed 31 May 2024).
Nguyen, T.T., et al., 2015. Rural livelihoods and environmental resource dependence in Cambodia. Ecol. Econ. 120, 282–295.
Nicola, M., et al., 2020. The socio-economic implications of the coronavirus pandemic (COVID-19): a review. Int. J. Surg. 78, 185–193.
Nicolini, D., 2012. Practice Theory, Work, and Organization: an Introduction. OUP, Oxford.
Nikolopoulos, K., Punia, S., Schäfers, A., Tsinopoulos, C., Vasilakis, C., 2021. Forecasting and planning during a pandemic: COVID-19 growth rates, supply chain disruptions, and governmental decisions. Eur. J. Oper. Res. 290 (1), 99–115.
Ntounis, N., Parker, C., Skinner, H., Steadman, C., Warnaby, G., 2022. Tourism and hospitality industry resilience during the covid-19 pandemic: evidence from england. Curr. Issues Tourism 25 (1), 46–59.
Nunoo, I., et al., 2023. Does the use of cocoa farmlands for artisanal small-scale gold mining really increase household food insecurity? Evidence from Ghana. Resour. Pol., 87104329
O'Hara, S., Toussaint, E.C., 2021. Food access in crisis: food security and Covid-19. Ecol. Econ. 180, 106–859.
Obodai, J., et al., 2024. The interface of environment and human wellbeing: Exploring the impacts of gold mining on food security in Ghana. Resour. Pol., 91104863
Ofosu, G., Sarpong, D., 2022. Mineral exhaustion, livelihoods, and persistence of vulnerabilities in ASM settings. J. Rural Stud. 92154–92163.
Ofosu, G., Sarpong, D., 2023. Defying the gloom: in search of the 'golden' practices of small-scale mining operations. Environ. Sci. Pol. 13962–13970.
Ofosu, G., et al., 2020. Socio-economic and environmental implications of artisanal and small-scale mining (ASM) on agriculture and livelihoods. Environ. Sci. Pol. 106210–106220.
Ofosu, G., Siaw, D., Sarpong, D., Danquah, S., 2024. Ban mining, ban dining? Re (examining) the policy and practice of 'militarised conservationism' on ASM operations. Extr. Ind. Soc. 17, 101432. https://doi.org/10.1016/j.exis.2024.101432 (in press).
Okoh, G., Hilson, G., 2011. Poverty and livelihood diversification: Exploring the linkages between smallholder farming and artisanal mining in rural Ghana. J. Int. Dev. 23 (8), 1100–1114.
Rakshit, S., Islam, N., Mondal, S., Paul, T., 2021. Mobile apps for SME business sustainability during COVID-19 and onwards. J. Bus. Res. 135, 28–39.
Reardon, et al., 2020. Covid-19s' disruption of India's transformed food supply chains. Econ. Polit. Wkly. 55 (18), 18–22.
Reckwitz, A., 2002. Toward a theory of social practices: a development in culturalist theorizing. Eur. J. Soc. Theor 5 (2), 243–263.
Rosairo, H.S.R., 2023. Smallholder agriculture in developing and emerging economies: the case of Sri Lanka. In: Sustainable Food Value Chain Development: Perspectives from Developing and Emerging Economies, pp. 259–293.
Rukasha, T., Nyagadza, B., Pashapa, R., Muposhi, A., 2021. Covid-19 impact on Zimbabwean agricultural supply chains and markets: a sustainable livelihoods perspective. Cogent Social Sciences 7 (1), 1928980.
Saldana, J., 2013. The Coding Manual for Qualitative Researchers. Sage Publication: London, Thousand Oaks, CA.
Sarpong, D., Maclean, M., Eyong, J.E., 2020. Cross-state mobility of European naturalised third-country nationals. Eur. Urban Reg. Stud. 27 (1), 50–69.
Schatzki, T.R., 2010. Timespace and Human Activity. Lexington Books, Lanham, MD.
Schatzki, T., 2016. Practice theory as flat ontology. In: Practice Theory and Research. Routledge, pp. 44–58.
Sharma, et al., 2020. Agriculture supply chain risks and COVID-19: mitigation strategies and implications for the practitioners. Int. J. Logist. Res. Appl. 1–27.
Shove, E., Watson, M., Pantzar, M., 2012. The Dynamics of Social Practice: Everyday Life and How it Changes. SAGE, London.
Siaw, D., Ofosu, G., Sarpong, D., 2023a. Cocoa production, farmlands, and the galamsey: examining current and emerging trends in the ASM-agriculture nexus. J. Rural Stud. 101, 103044.
Siaw, D., Sarpong, D., Botchie, D., Ofosu, G., 2023b. Rethinking the near collapse of certification programmes in commodity value chains: a temporal myopia perspective. J. Rural Stud. 103, 103073.
Singh, S., Kumar, R., Panchal, R., Tiwari, M.K., 2021. Impact of COVID-19 on logistics systems and disruptions in food supply chain. Int. J. Prod. Res. 59 (7), 1993–2008.
Strauss, A., Corbin, J., 1994. Grounded theory methodology. Handbook of Qualitative Research 17, 273–285.
Strauss, A., Corbin, J., 1990. Basics of Qualitative Research: Grounded Theory Procedures and Techniques. Sage Publication, London.
Suddaby, R., 2006. From the editors: what grounded theory is not. Acad. Manag. J. 49, 633–642.
Sumner, A., Hoy, C., Ortiz-Juarez, E., 2020. Estimates of the Impact of COVID-19 on Global Poverty. UNU-WIDER Working. Paper 2020/43. Teachout, M., and Zipfel, C., 2020 *The economic impact of COVID-19 lockdowns in Sub-Saharan Africa*.
Tuomela, R., 2002. The Philosophy of Social Practices: A Collective Acceptance View. Cambridge University Press, Cambridge.
UN-Habitat and WFP, 2020. Impact of COVID-19 on livelihoods, food security and nutrition in East Africa: urban focus. Available at: https://unhabitat.org/sites/default/files/2020/08/wfp-0000118161_1.pdf. (Accessed 31 May 2024).
Vidya, C.T., Prabheesh, K.P., 2020. Implications of COVID-19 pandemic on the global trade networks. Emerg. Mark. Finance Trade 56 (10), 2408–2421.
WHO, 2020. Impact of COVID-19 on people's livelihoods, their health, and our food systems. Available at: https://www.who.int/news/item/13-10-2020-impact-of-covid-19-on-people's-livelihoods-their-health-and-our-food-systems. (Accessed 31 May 2024).
Workie, E., Mackolil, J., Nyika, J., Ramadas, S., 2020. Deciphering the impact of COVID-19 pandemic on food security, agriculture, and livelihoods: a review of the evidence from developing countries. Current Research in Environmental Sustainability 2, 100014.
World Bank, 2020a. The Economy in the Time of COVID-19. The World Bank, New York.
World Bank, 2020b. Poverty & Equity Brief. Uganda World Bank.