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Essuman, D. orcid.org/0000-0003-1838-2505, Boso, N., Addo Asamany, P. orcid.org/0000-0003-3237-5942 et al. (2 more authors) (2024) Firm resilience, stressors, and entrepreneurial well-being: insights from women entrepreneurs in Ghana. International Journal of Entrepreneurial Behavior & Research, 30 (11). pp. 279-305. ISSN 1355-2554

https://doi.org/10.1108/ijebr-07-2023-0742

International Journal of Entrepreneurial Behavior & Research

Firm resilience, stressors, and entrepreneurial well-being: insights from women entrepreneurs in Ghana

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Received 19 July 2023
Revised 27 February 2024
16 June 2024
Accepted 5 August 2024

Abstract

Purpose – This study draws on the conservation of resources logic to theorize the role of firm resilience in explaining variations in entrepreneurial well-being under varying conditions of supply chain disruption and dependency ratio.

Design/methodology/approach – The study uses ex-post survey data from 373 women entrepreneurs in diverse agricultural supply chains in Ghana, a sub-Saharan African country. Moderated regression analysis is employed to test the research hypotheses.

Findings – The results indicate that firm resilience has both positive and negative relationships with economic and subjective well-being, depending on the level of supply chain disruption and dependency ratio women entrepreneurs face. Notably, the findings suggest that firm resilience contributes more to economic and subjective well-being of women entrepreneurs when dependency ratio is low and supply chain disruption is high.

Originality/value – The study integrates firm resilience research and entrepreneurial well-being literature to provide new insights into theorizing and analyzing the benefit of firm resilience for women entrepreneurs' well-being.

Keywords Supply chain disruptions, Firm resilience, Well-being, Women's entrepreneurship, Conservation of resources theory, Developing country

Paper type Research paper

1. Introduction

Women in developing countries have interestingly turned to entrepreneurship to improve their well-being (Chatterjee *et al.*, 2022; Ojong *et al.*, 2021). Ghana is one such country where

United States Agency for International Development, Grant/Award Number: 7200AA20CA00010.

women have turned to entrepreneurial activity to enhance their socio-economic well-being (Mastercard Index of Women Entrepreneurs, 2022). However, supply chain disruption (SCD) continues to undermine the efforts of women entrepreneurs to create and grow successful businesses to enhance their well-being (Saridakis *et al.*, 2023; Graeber *et al.*, 2021). SCD comprises unexpected natural and human-caused events that interrupt supply chains (Essuman *et al.*, 2023), with a potency to undermine the profitability and survival of businesses (Mustafa *et al.*, 2021; Yue and Cowling, 2021). Studies show that SCD increases entrepreneurs' stress due to the threat it poses to the survival of entrepreneurial ventures (Stephan *et al.*, 2023). The impacts of SCDs on women entrepreneurs' well-being in developing countries can be severe (Saridakis *et al.*, 2023; Iyengar *et al.*, 2021), particularly due to the heightened difficulties of accessing critical external resources to sustain businesses during disruptive events (Mastercard Index of Women Entrepreneurs, 2020; Iyengar *et al.*, 2021). For example, women entrepreneurs in Ghana face restricted access to state support, business resources, and finance from traditional financing sources (e.g. banks), which limits the ability of such entrepreneurs to grow their businesses, especially during SCDs (Mastercard Index of Women Entrepreneurs, 2022).

Scholars argue that firm resilience, defined as the ability of firms to maintain normal performance during SCDs (Li *et al.*, 2023), is a major driver of the success of women entrepreneurs (Saridakis *et al.*, 2023; Fares *et al.*, 2022). However, there is a lack of theoretical and empirical understanding of the relationship between firm resilience and entrepreneurial well-being. Extant theoretical and empirical analyses of the value of firm resilience are limited to firm-level economic outcomes (e.g. Zhao *et al.*, 2023; Sturm *et al.*, 2023; Iftikhar *et al.*, 2021). Yet, conclusions about firm-level outcomes of firm resilience may not necessarily explain variation in the well-being of individual entrepreneurs (Stephan *et al.*, 2023; Wiklund *et al.*, 2019). A major problem with exiting theoretical explanations grounded in resource-based theories is that they treat the value of firm resilience as objectively available resources (Iftikhar *et al.*, 2021; Manhart *et al.*, 2020), disregarding entrepreneurs' unique circumstances and subjective interpretation of the value of such resources (Foss and Ishikawa, 2007).

This research applies the conservation of resources (COR) theory and data from women entrepreneurs in Ghana (a sub-Saharan African country) to analyze the role and boundaries of firm resilience in determining differences in entrepreneurial well-being. From the COR perspective, the study conceptualizes firm resilience as an entrepreneurial venture-specific resource that reduces economic, social, and psychological stress while empowering entrepreneurs to fulfill their well-being needs (Hobfoll *et al.*, 2018; Stephan *et al.*, 2023). Nonetheless, the COR theory suggests that the well-being benefits of firm resilience may be conditional upon entrepreneurial stressors. Specifically, while the gain paradox principle suggests that entrepreneurs may attach greater value to the resilience of their ventures in stressful situations, the desperation principle indicates that such situations can equally overstretch the value of resilience (Hobfoll *et al.*, 2018). Thus, drawing insights from recent research on entrepreneurial well-being (Mustafa *et al.*, 2021; Stephan *et al.*, 2023), this study proposes SCD and dependency ratio as major entrepreneurial stressors (Williamson *et al.*, 2021) that may independently and jointly moderate the extent to which firm resilience contributes to the well-being of entrepreneurs (Hobfoll *et al.*, 2018). Accordingly, this study seeks to answer two questions using data from women entrepreneurs in Ghana: (1) How does firm resilience relate to entrepreneurial well-being? and (2) How do SCD and dependency ratio individually and jointly moderate the relationship between firm resilience and entrepreneurial well-being?

The study contributes to the literature on firm resilience and entrepreneurial well-being in three important ways. Firstly, it broadens prior theoretical and empirical analyses that have narrowly focused on firm-level performance outcomes of firm resilience capabilities (e.g. Sturm *et al.*, 2023; Zhao *et al.*, 2023). Secondly, by applying COR theory, the study

offers a fresh theoretical perspective for understanding the complexities of firm resilience outcomes for entrepreneurs. It demonstrates how firm resilience can enhance or diminish entrepreneurial well-being in a developing country, depending on the extent of SCDs faced by women entrepreneurs and the level of dependency ratio. Thirdly, the study advances limited prior research on firm-level determinants of entrepreneurial well-being (Wiklund *et al.*, 2019) by examining how an interactivity between firm-level (firm resilience), entrepreneurial-level (dependency ratio), and external environment (SCD) factors explains variations in entrepreneurial well-being.

The remainder of the article is structured as follows. The next section discusses relevant literature and develops the study's hypotheses. Then, the data and sample for testing the hypotheses are presented, followed by the empirical analysis and results. The subsequent section covers the implications of the results for research, policy, and practice. The final section provides concluding remarks, discusses the study's limitations, and suggests directions for future research.

2. Theoretical background and hypotheses development

As illustrated in Figure 1, the study uses COR principles to propose a conceptual model to explain how firm resilience contributes to entrepreneurial well-being and the extent to which this baseline relationship is moderated by SCD and dependency ratio. This section provides context for the study and explains its key constructs and the theoretical rationale behind the hypothesized relationships.

2.1 Women's entrepreneurship in developing countries

The study's context comprises women entrepreneurs in Ghana, a developing country in sub-Saharan Africa. There has been rapid growth in women's entrepreneurship in developing countries in recent years, especially in Africa (Mastercard Index of Women Entrepreneurs, 2022; Global Entrepreneurship Monitor, 2019). These entrepreneurs often engage in informal businesses, such as trading and providing services in diverse economic contexts (Global Entrepreneurship Monitor, 2019). In Africa, women entrepreneurs comprise about 58% of the self-employed population (World Economic Forum, 2022), particularly in agriculture, agri-food processing, and trading (Ojong *et al.*, 2021). Despite high poverty levels in these countries, entrepreneurship is noted to have empowered women to improve their economic status, fulfill family dependency demands, gain independence, and lead fulfilling lives (Chatterjee *et al.*, 2022; Ojong *et al.*, 2021).

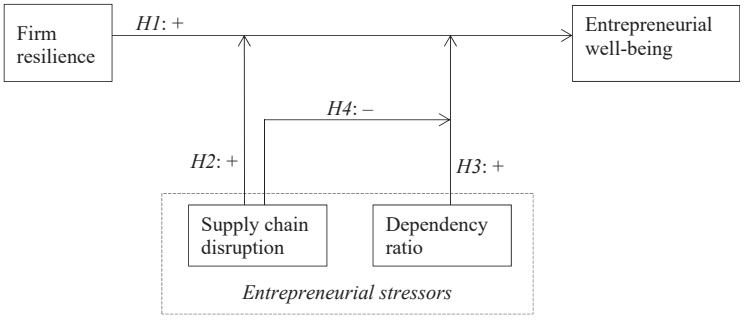

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Figure 1.
Theoretical model

However, a growing number of studies shows that women entrepreneurs in Africa face several challenges (Ojong *et al.*, 2021) with potential implications for their well-being (Love *et al.*, 2024; Wiklund *et al.*, 2019). For example, due to limited educational and training opportunities, women entrepreneurs lack the managerial and entrepreneurial competencies to explore profitable opportunities and manage day-to-day business operations while mitigating institutional, market, and infrastructural failures (Love *et al.*, 2024; Ojong *et al.*, 2021). Additionally, African women entrepreneurs struggle to access financial and social resources (Ojong *et al.*, 2021). Furthermore, they spend significant time on unpaid domestic chores such as cooking, household maintenance, and childcare (Chatterjee *et al.*, 2022; Ojong *et al.*, 2021), which divert their attention from their businesses (Ojong *et al.*, 2021), especially during SCDs (Gannon *et al.*, 2022). These contextual factors collectively contribute to women entrepreneurs' vulnerability during SCDs (Mastercard Index of Women Entrepreneurs, 2020). Meanwhile, studies indicate that a limited capacity to manage SCDs reduces entrepreneurial well-being (Stephan *et al.*, 2023), highlighting the importance of studying how women entrepreneurs can improve their well-being in SCD circumstances (Stephan *et al.*, 2023; Wiklund *et al.*, 2019).

2.2 Entrepreneurial well-being

Well-being is a multi-faceted construct, and entrepreneurship research has analyzed different aspects of the construct, including its subjective, psychological, and economic dimensions (Stephan *et al.*, 2023; Wiklund *et al.*, 2019; Ribes-Giner *et al.*, 2019). Subjective well-being reflects the extent of positive feelings such as happiness and satisfaction in life, whereas psychological well-being reflects a sense of purpose and normal functioning in life (Chatterjee *et al.*, 2022). While these aspects of well-being are distinct, they are complementary (Wiklund *et al.*, 2019). Economic well-being, the extent to which people are satisfied with their current economic situation (Hayo and Seifert, 2003), is particularly central to entrepreneurship, as it is a direct measure of the rewards of entrepreneurial actions (Ribes-Giner *et al.*, 2019; Carter, 2011).

Economic well-being is vital for women entrepreneurs in developing countries as it contributes to their financial independence and socio-economic status (Chatterjee *et al.*, 2022; Ojong *et al.*, 2021) and other well-being outcomes, such as overall life satisfaction (Hayo and Seifert, 2003). Generally, well-being has subjective and economic dimensions (Ribes-Giner *et al.*, 2019; Hayo and Seifert, 2003), although the entrepreneurship literature hardly sheds light on the economic well-being dimension (Stephan *et al.*, 2023; Chatterjee *et al.*, 2022; Wiklund *et al.*, 2019). Given their centrality to entrepreneurship, this study predicts variation in both subjective and economic well-being (Ribes-Giner *et al.*, 2019; Carter, 2011).

2.3 Firm resilience

The resilience concept has been studied at multiple levels, such as individuals, firms, and supply chains (Essuman *et al.*, 2023). Additionally, the literature highlights the multi-dimensional nature of the resilience construct (Essuman *et al.*, 2023; Protogerou *et al.*, 2022), although some studies utilize a unidimensional scale to operationalize it (e.g. Li *et al.*, 2023; Wong *et al.*, 2020). This research analyzes the concept at the firm level.

Some scholars view firm resilience as the ability of a firm to endure a major disruption and bounce back (Waehning *et al.*, 2023; Buyl *et al.*, 2019), while others define it as the ability of a firm to persist despite disruptions while at the same time regenerating and maintaining existing operations (DesJardine *et al.*, 2019). These definitions highlight multiple manifestations of firm resilience, such as disruption absorption, recoverability, and adaptability. While some studies employed subjective measures to operationalize these firm resilience manifestations (Wong *et al.*, 2020; Manhart *et al.*, 2020), others utilized changes in firm performance indicators during SCDs as latent measures (Jiang *et al.*, 2023; Li *et al.*, 2023; Buyl *et al.*, 2019). This research follows the latter conceptualization and operationalization of firm resilience.

The systems view literature argues that resilient firms, in the face of disruptions, exhibit a low probability of failure, low consequences of failures (e.g. economic losses), and are more likely to quickly restore normal performance (Bruneau *et al.*, 2003). Due to the ability of their operations to survive longer and recover faster during SCDs (Essuman *et al.*, 2023), resilient firms experience minimal performance losses (Buyl *et al.*, 2019; Li *et al.*, 2023). Accordingly, this study defines firm resilience as the latent ability of firms to meet normal performance objectives during SCDs (Bruneau *et al.*, 2003; Li *et al.*, 2023). This definition aligns well with previous empirical operationalizations of firm resilience, such as firms' ability to minimize economic losses during SCDs (e.g. Jiang *et al.*, 2023; Li *et al.*, 2023). This manifestation of firm resilience underlies business survival (DesJardine *et al.*, 2019) and contributes to economic success (Wong *et al.*, 2020; Manhart *et al.*, 2020).

2.4 Relationship between firm resilience and entrepreneurial well-being

A core tenet of the COR theory is that people inherently prioritize well-being and are inclined to search for and deploy resources to enhance and sustain it (Hobfoll *et al.*, 2018). In the case of women entrepreneurs, the business enterprise is an important resource that generates economic and subjective well-being outcomes (Stephan *et al.*, 2023; Chatterjee *et al.*, 2022). For example, because their business represents employment, economic independence, and an improved ability to cater for dependents' needs (Chatterjee *et al.*, 2022; Ojong *et al.*, 2021), women entrepreneurs leading successful businesses are likely to improve their socio-economic status (Hobfoll, 1989; Ojong *et al.*, 2021). In contrast, women entrepreneurs whose businesses fail or cannot thrive through adversity may be deprived of the well-being benefits of entrepreneurship (Stephan *et al.*, 2023).

Prior empirical studies show that "the wellbeing of entrepreneurs is linked to the wellbeing of their businesses" (Stephan *et al.*, 2023, p. 668). For example, Stephan *et al.* (2023) find that entrepreneurs whose businesses quickly exploited new business opportunities during the Covid-19 pandemic achieved greater subjective well-being. This study argues that firm resilience reflects how well a business enterprise functions during SCDs (Essuman *et al.*, 2023) and constitutes a crucial resource for driving entrepreneurial well-being (Hobfoll *et al.*, 2018; Stephan *et al.*, 2023). COR theory suggests that "individuals and organizations who lack resources are more vulnerable to resource loss and less capable of resource gain" (p. 4). The stronger the level of firm resilience, therefore, the greater the capability of entrepreneurs to minimize resource losses and maximize new resource gains (e.g. sales revenue, customers, and business reputation) (Manhart *et al.*, 2020). Several studies indicate that firm resilience improves financial and market performance (e.g. Sturm *et al.*, 2023; Iftikhar *et al.*, 2021; Manhart *et al.*, 2020). Thus, in theory, greater firm resilience helps safeguard the entrepreneurs' venture and its continued capacity to help meet their economic and subjective well-being needs (Hobfoll, 1989). On the contrary, entrepreneurs leading less resilient firms tend to experience financial and socio-psychological stress during SCDs (Mustafa *et al.*, 2021; Saridakis *et al.*, 2023). While a greater firm resilience level may provide hope for entrepreneurs to cope with life in difficult situations, studies show that entrepreneurs leading less resilient firms may suffer the psychological torment of a possible resource loss, which may undermine their subjective well-being (Stephan *et al.*, 2023; Wach *et al.*, 2021). These arguments suggest the following hypothesis:

H1. Firm resilience has a positive relationship with entrepreneurial well-being.

2.5 Boundary condition roles of supply chain disruption and dependency ratio

While past research has highlighted potential boundary conditions of the economic benefits of firm resilience (e.g. Wong *et al.*, 2020; Essuman *et al.*, 2020), the COR theory suggests that entrepreneurs may interpret the overall value of firm resilience differently depending on the

intensity of stressors they face (Hobfoll *et al.*, 2018; Halbesleben *et al.*, 2014). For instance, individuals who secure employment after a long period of unemployment are likely to be more satisfied than those who have not previously experienced such a situation (Halbesleben *et al.*, 2014). This research draws on the COR theory's gain paradox and desperation principles to examine SCD and dependency ratio as key stressors (Williamson *et al.*, 2021) that may moderate the relationship between firm resilience and entrepreneurial well-being. The gain paradox principle states that "... when resource loss circumstances are high, resource gains become more important—they gain in value" (Hobfoll *et al.*, 2018, p. 3). On the other hand, the desperation principle posits that, when "their resources are outstretched or exhausted, individuals enter a defensive mode to preserve the self that is often aggressive and may become irrational" (Hobfoll *et al.*, 2018, p. 4).

SCD refers to unexpected events that disrupt firms' internal or external supply chain operations (Essuman *et al.*, 2023). These events are diverse and can include transportation failures, communication breakdowns, technological and plant malfunctions, macroeconomic fluctuations, sudden shifts in supply and demand market conditions, supplier delays or poor-quality supplies, labor strikes, employee turnover, entrepreneur illness or incapacity, cash shortages, and natural disasters (Wong *et al.*, 2020; Iyengar *et al.*, 2021). Past studies have shown that SCD events can produce three major costs that may induce significant stress to undermine the well-being of entrepreneurs: *economic costs* (e.g. inefficiencies, lost sales, reduced profit, personal debts, and lost investment), *social costs* (e.g. deteriorated relationships with supply chain partners, and social stigma of failure), and *psychological costs* (e.g. psychological impairment due to the economic and social costs of disruptions) (Stephan *et al.*, 2023; Williamson *et al.*, 2021; Mustafa *et al.*, 2021). Because firm resilience can mitigate these costs, women entrepreneurs leading more resilient firms may be economically stable and feel less psychologically impaired as SCD increases.

In contrast, the perceived well-being benefits of firm resilience are likely to reduce under low conditions of SCD. The rationale is that there is little uncertainty, stress, and agency under low conditions of SCD (Stephan *et al.*, 2023), and entrepreneurs are less likely to appreciate the value of firm resilience (Hobfoll *et al.*, 2018). Building resilient firms can require substantial resources and may result in sunk costs, yielding limited economic benefits under low SCD conditions (Essuman *et al.*, 2020; Wong *et al.*, 2020). In resource-constrained and institutionally weak and volatile contexts, such as those in developing countries (Chatterjee *et al.*, 2022), women entrepreneurs may encounter significant challenges in building firm resilience (Williamson *et al.*, 2021). Therefore, the COR theory's gain paradox principle suggests that under low SCD conditions, where the costs of building firm resilience may outweigh its benefits (Essuman *et al.*, 2020), the contribution of firm resilience to entrepreneurial well-being may be lower (Hobfoll *et al.*, 2018). Accordingly, this study posits that:

H2. SCD positively moderates the relationship between firm resilience and entrepreneurial well-being.

Dependency ratio refers to the level of economic burden an individual carries. It reflects the number of people whose basic needs an entrepreneur funds (Xin *et al.*, 2020). Research reveals a high dependency ratio in many African countries (Keho, 2012). In these countries, women entrepreneurs rely on daily business sales to finance the basic needs of multiple family dependents (Ojong *et al.*, 2021; Chatterjee *et al.*, 2022). However, family dependency can increase entrepreneurs' experiences of work-family conflicts, family stress, and poor mental health (Xin *et al.*, 2020; Fang, 2022).

Firm resilience is associated with more opportunities that enable entrepreneurs to cope with the stress of family dependency. Regarding meeting their needs (e.g. physiological, safety, social, and esteem), firm resilience can enhance entrepreneurs' self-efficacy and confidence, enabling them to re-appraise dependency obligations in a positive light (e.g. social

and moral obligation) instead of as a threat to their welfare. Moreover, entrepreneurs with a greater dependency burden may appreciate the well-being value of firm resilience compared to their counterparts with a limited dependency burden (Hobfoll *et al.*, 2018). The reason is that people socially and psychologically value families and family obligations (Hobfoll, 1989). Therefore, as dependency ratio increases, COR theory's gain paradox principle suggests that women entrepreneurs are likely to attach greater importance and meaning to resources (e.g. firm resilience) that enable them to fulfill their family obligations (Hobfoll *et al.*, 2018). Accordingly, the study argues that:

H3. Dependency ratio positively moderates the relationship between firm resilience and entrepreneurial well-being.

A recent study suggests that entrepreneurs with many dependents experience significant stress and deteriorated well-being during SCDs (Mustafa *et al.*, 2021). The core reason is that the economic costs of SCD reduce entrepreneurs' ability to fulfill the basic needs of their dependencies. Accordingly, this study further argues that, over and above their unique moderating roles, the interaction between SCD and dependency ratio would moderate the relationship between firm resilience and entrepreneurial well-being. As the arguments for H2 and H3 indicate, not only may it be costly and wasteful for entrepreneurs facing limited SCD to increase firm resilience, but also the perceived value of this resource may be lower for entrepreneurs with less dependency burden. By implication, the gain paradox principle suggests firm resilience may benefit well-being less when entrepreneurs with limited dependency issues face low SCD, compared to situations when entrepreneurs with high dependency issues face high SCD (Hobfoll *et al.*, 2018).

Nonetheless, it is equally likely that situations characterized by high levels of both SCD and dependency ratio can cause stress and burnout problems, even for entrepreneurs leading resilient firms (Williamson *et al.*, 2021). As both SCD and dependency ratio increase, the threat to critical business resources (e.g. financial resources) and accompanying frustration, anxiety, and uncertainty about business failure may increase for entrepreneurs (Stephan *et al.*, 2023). Therefore, high levels of both SCD and dependency ratio can over-burden entrepreneurs (Williamson *et al.*, 2021). While women entrepreneurs need to pay attention to both pressing issues, they may experience greater work-family conflicts and more frustration, potentially limiting their ability to fully exploit firm resilience to enrich their well-being (Hobfoll *et al.*, 2018).

As SCD and family obligations deplete critical business resources, high levels of both factors can trigger a resource loss spiral problem, i.e. where resource losses intensify in impact and momentum (Hobfoll *et al.*, 2018). Women entrepreneurs in developing countries, lacking relevant managerial and entrepreneurial skills and facing greater challenges in accessing external financial and social resources (Mastercard Index of Women Entrepreneurs, 2022), may struggle to navigate resource loss cycles accompanying high SCD and dependency ratio levels. These conditions can overwhelm women entrepreneurs, leading to defensive or aggressive and irrational responses to demands from their dependents (e.g. shirking responsibilities) while responding to SCD issues. Such reactions, as predicted by the desperation principle, can mask a positive appraisal of the value of firm resilience (Hobfoll *et al.*, 2018). Therefore, the study hypothesizes that:

H4. The interaction between SCD and dependency ratio negatively moderates the relationship between firm resilience and entrepreneurial well-being.

3. Research methodology

3.1 Sample and data

The research tests its hypotheses on primary data obtained from a sample of women entrepreneurs in agricultural supply chains in Ghana, a developing sub-Saharan African

country. Despite Ghana being among the top three countries globally with the highest number of women entrepreneurs leading small and informal businesses (Mastercard Index of Women Entrepreneurs, 2022), approximately 85.1% of the country's women entrepreneurs operate in vulnerable contexts (Mastercard Index of Women Entrepreneurs, 2020). One notable vulnerable context is the agricultural supply chains (World Economic Forum, 2022), where roughly 52% of the country's female population is involved in producing, processing, distributing, or marketing food crops (Britt *et al.*, 2020).

The study sampled women entrepreneurs who were members of farm-based organizations (FBOs) in the Ashanti Region of Ghana. The FBOs are cooperative associations that promote and protect the interests of their members. The researchers contacted the regional and district-level agricultural extension offices to obtain databases containing information on the FBOs in the region, including commodities, locations, and phone contacts of chairpersons. After making several phone calls, 47 FBO chairpersons in five districts agreed to connect the researchers to female members. The researchers collaborated with the FBO chairpersons and local officials of the Women in Agriculture Development (Ghana) to organize the members at the community level. This approach allowed the field workers to meet the respondents and establish rapport and trust with them before administering the data collection instrument (Iyengar *et al.*, 2021).

The researchers worked with local agricultural extension officers and a local data collection agency to train field workers to use face-to-face interviews to collect the data in March 2022 (Iyengar *et al.*, 2021). The interviews were conducted using Twi, a native language in the research setting (Chatterjee *et al.*, 2022). The field workers were proficient in both English and Twi languages and were, therefore, able to translate the questionnaire back from English to Twi. The field workers initially recorded the responses using the Twi questionnaire before duplicating them in the English questionnaire. The field supervisor reviewed questionnaire pairs for accuracy and consistency before entering the data into the datasheet.

During the field study, four criteria were used to select the target respondents: (1) women entrepreneurs who solely own and manage an agricultural-related business (Wach *et al.*, 2021), (2) the entrepreneur's business has been operating for at least one year, (3) the business employs no more than 10 full-time employees, and (4) the business has experienced SCDs within the previous six months (Iyengar *et al.*, 2021; Stephan *et al.*, 2023). A total of 378 women entrepreneurs participated fully in the study. However, five questionnaires had more than 5% missing values and were subsequently excluded from the analysis (Stephan *et al.*, 2023). The remaining 373 questionnaires were used to test the hypotheses.

Table 1 details the characteristics of the sample. Approximately 54% of the businesses employed an average of two full-time workers. The average business had been in operation for 17.7 years, while the entrepreneurs had an average of 18.3 years of business experience. The businesses engaged in various agricultural supply chains focusing on grains, root and tuber crops, cocoa, vegetables, livestock, and fruits supplies. However, a majority were in farm-based business, while the others were involved in intermediary and processing business.

3.2 Measurement

Secondary data for measuring the study's variables are challenging to obtain in developing economies such as Ghana (Essuman *et al.*, 2023). Consequently, the researchers relied on examples from previous firm-level resilience research (Essuman *et al.*, 2023; Wong *et al.*, 2020) and past empirical studies on SCD and entrepreneurial resilience (Iyengar *et al.*, 2021) and entrepreneurial well-being (Wach *et al.*, 2021) to obtain primary data on the study's variables. The study asked the women entrepreneurs to focus on their main business venture in order to respond to the survey items.

Variables	Indicators	Count	%
Agricultural supply chain type*	Livestock supply chain	53	14.21
	Fishery supply chain	3	0.80
	Vegetable supply chain	139	37.27
	Fruit supply chain	38	10.19
	Grain supply chain	177	47.45
	Root and tuber crop supply chain	237	63.54
	Cocoa supply chain	228	61.13
	Other agricultural supply chains	52	13.94
Position in the supply chain	Commercial farming	264	70.8
	Middle person (e.g. aggregator)	78	20.9
	Agro-processor	31	8.3
Education level	No formal education	145	38.9
	Primary school	183	49.1
	Secondary school and related	41	11.0
	Diploma	2	0.5
	Bachelor degree	2	0.5
Religious affiliation	Christianity	271	72.7
	Islam	93	24.9
	Traditional	2	0.5
	Others	7	1.9
Marital status	Married	225	60.3
	Single	29	7.8
	Others	119	31.9
Entrepreneur's age (in years)	Less than 20	1	0.3
	20 to 29	25	6.7
	30 to 39	79	21.2
	40 to 49	108	29.0
	50 or more	160	42.9
Firm's workforce-type	Full-time employees	201	53.9
	Otherwise	172	46.1

	Mean	SD
Business experience (in years)	18.3	11.9
Firm age (in years)	17.7	12.5
Firm size (number of full-time employees [$N = 201$])	2.3	1.8

Note(s): *Multiple response items
Source(s): Table created by authors

Table 1.
Sample characteristics

Using multi-item instruments for individuals with low education levels in developing countries is subject to ongoing debate (Iyengar *et al.*, 2021). While some previous studies in such contexts have measured resilience (e.g. Iyengar *et al.*, 2021) and well-being (e.g. Tobias *et al.*, 2013) as single-item constructs, to enhance content validity and minimize measurement errors, this study followed a systematic process to develop and refine multi-item indicators to measure the reflective (i.e. subjective well-being, economic well-being, and firm resilience) and the formative (i.e. SCD and dependency ratio) constructs in the study (Jarvis *et al.*, 2003). The process began with the specification of the domain of the constructs and the identification of a pool of items from existing literature. Subsequently, the items and scales were evaluated and revised by a team of local and international scholars and practitioners serving as advisors on the research project. A data collection instrument was then developed and piloted on 33 target respondents in the Kumasi metropolitan area. Preliminary analyses (e.g., descriptive analysis, reliability test, missing value analysis) did not reveal major issues

other than concerns about the length of the data collection instrument. Consequently, additional efforts were made to reduce the indicators of the key constructs while retaining marker indicators.

3.2.1 Dependent variables. Economic well-being was measured using three items that capture the extent of happiness of the entrepreneurs with their present economic situations relative to life expectations and the economic conditions of their peers (Hayo and Seifert, 2003; Carter, 2011). Each item was evaluated on a five-point scale: very dissatisfied = 1; dissatisfied = 2; indifferent = 3; satisfied = 4; very satisfied = 5.

Subjective well-being was measured using the first four items of the WHO-5 well-being instrument, which has been used widely for capturing global hedonic dimensions of well-being and quality of life (Sischka *et al.*, 2020). Each item was rated on a six-point scale: all of the time = 6; most of the time = 5; more than half of the time = 4; less than half of the time = 3; some of the time = 2; at no time = 1. The study dropped the fifth item during the questionnaire development process for three reasons. Firstly, the pilot study results showed that this item had poor correlations with the remaining items. Secondly, the remaining items had better internal consistency in the absence of the fifth item. Prior studies show the contributions of items to overall scale reliability vary by context (e.g. Fung *et al.*, 2022; Lara-Cabrera *et al.*, 2022). The results from the main survey show the four items used to measure subjective well-being have high internal consistency (congeneric reliability = 0.844; Cronbach's alpha = 0.840). Finally, the WHO well-being scale comprises reflective items (Sischka *et al.*, 2020), which are theoretically interchangeable (Jarvis *et al.*, 2003). Therefore, the construct reliability of the study's subjective well-being construct does not change if one of its items is removed (Jarvis *et al.*, 2003).

3.2.2 Independent variable. Firm resilience. Some prior studies have used subjective items to measure firm/supply chain resilience concepts, such as disruption absorption, recoverability, and adaptability (e.g. Zhao *et al.*, 2023; Essuman *et al.*, 2023; Wong *et al.*, 2020). Others have used quantitative measures to operationalize these resilience concepts (e.g., Jiang *et al.*, 2023; Li *et al.*, 2023; DesJardine *et al.*, 2019). This study draws insights from the latter approach to measure firm resilience. This measurement approach recognizes firm resilience as a latent concept, whose levels can be measured by inferring from changes in firms' performance due to a disruptive event (Li *et al.*, 2023; DesJardine *et al.*, 2019). The reason is that firms that possess resilience properties such as disruption absorption, recovery, and adaptability are more capable of achieving desired or normal performance objectives during disruptions than their counterparts with limited possession resilience properties. For example, Haraguchi and Lall's (2015) analysis of the resilience of Japanese automobile firms (e.g. Toyota, Nissan, and Honda) during the floods in Thailand in 2011 reveals that firms' ability to absorb structural damage from a disruption, resume production quickly, or adapt (e.g. diversify and redesign) reflect in changes in their production output levels, sales revenues, and profitability. Another case in point is when Ericsson, unlike Nokia, lost over USD 400 million when their then primary chip supplier, Philips Semiconductor's plant caught fire in 2001. Nokia experienced minimal production and sales loss due to its ability to absorb and recover from the disruption by quickly exploring new sources of supply and initiating product redesign (Sheffi, 2020).

On this front, this research used performance loss logic to measure firm resilience. Performance loss in a disruption scenario refers to the quantity or amount of loss in normal performance due to a disruptive event (Gao *et al.*, 2019; Tran *et al.*, 2017; Bruneau *et al.*, 2003). Several past studies have used this indicator to measure firm or operational resilience. Firms that experienced a greater loss in performance due to disruptions are considered less resilient than those that experienced a minimal drop in normal performance. For example, DesJardine *et al.* (2019) used "severity of loss" (i.e. drop in stock price) as a measure of firms' ability to persist during the 2008 global financial crisis; Sajko *et al.* (2021) used "drop in stock price" to measure a similar firm resilience aspect during the same event. Relatedly, Li *et al.* (2023), Liu

et al. (2023), and Jiang *et al.* (2023) used "performance loss" during the Covid-19 pandemic to measure operational/firm resilience.

Accordingly, this study measured firm resilience as the degree to which firms' performance in the areas of operations/production output, sales revenue, and overall profit levels remained unchanged during SCDs (e.g. Li *et al.*, 2023; Buyl *et al.*, 2019). Entrepreneurs first provided information about disruptive events their firm experienced in the last six months. Subsequently, they indicated the resilience level of their businesses to the disruptions (Iyengar *et al.*, 2021). The study captured multiple firm performance indicators to enhance measurement reliability and validity. Specifically, the entrepreneurs indicated the average percentage drop in their firms' normal performance level in each of the three performance areas over the period the SCDs occurred. The responses were then coded, with firms experiencing a greater percentage drop in performance considered less resilient and vice versa (Li *et al.*, 2023). Recognizing the potential challenge for respondents to recall the exact percentage change in performance, their responses were scaled as follows (Gibb *et al.*, 2022): "no drop" = 11, "up to 10% drop" = 10, "up to 20% drop" = 9, "up to 30% drop" = 8, "up to 40% drop" = 7, "up to 50% drop" = 6, "up to 60% drop" = 5, "up to 70% drop" = 4, "up to 80% drop" = 3, "up to 90% drop" = 2, "up to 100% drop" = 1.

3.2.3 Moderating variables. *Supply chain disruption* was operationalized as the unexpected events that interrupt a firm's internal or external supply chain operations (Essuman *et al.*, 2023). These events can vary in number and are dependent on the specific context. Hence, 16 unexpected disruption events were identified based on previous research (e.g. Essuman *et al.*, 2023; Wong *et al.*, 2020) and insights gained from the fieldwork. The entrepreneurs indicated disruptive events they had experienced in the last six months, such as supply shortages, sudden closure of major suppliers, sudden closure of key channel members, transport failure, operations/technology breakdown, and natural disasters.

The study measured *dependency ratio* with four indicators that reflect the extent of the entrepreneur's financial support for dependents (e.g. children and aged family members) in the last 12 months (Xin *et al.*, 2020).

3.2.4 Control variables. To address potential endogeneity issues, the study controlled for various individual, firm, supply chain, and external environment factors that could influence firm resilience, well-being, or their relationships (Lu *et al.*, 2018). These factors include individual resilience, access to finance, supply chain context, social cohesion, educational background, firm's legal status, marital status, workforce type, entrepreneur age, firm age, and religious affiliation. Individual resilience was assessed using three items adapted from Sinclair and Wallston (2004). Access to finance was measured by asking the entrepreneurs to indicate the extent to which they can obtain financial resources to fund new initiatives in their business. Workforce type was captured as a dummy variable, where full-time employment was coded as "1" and other types of employment as "0". The study controlled for two supply chain context factors: vertical position in the supply chain (farming = 1, otherwise = 0) and product-type supply chain (cocoa supply chain = 1, otherwise = 0). Entrepreneur age was represented by a dummy variable based on the data distribution: "< 40" = 1, otherwise = 0. Firm age was measured as the natural logarithm of the number of years the firm has been in operation. The firm's legal status was operationalized as whether the firm is formally registered as a business (=1) or not (=0). Marital status was captured as a dummy variable indicating whether the entrepreneur is married (=1) or not (=0). Education background was coded as "1" for respondents with formal education and "0" for those without formal education. Social cohesion, a significant aspect of social capital, was captured using three items to measure the extent of shared values, solidarity, and mutual trust among neighbors (Collins *et al.*, 2017). The entrepreneurs' religion was measured as Christians, coded "1", others coded as "0". Table 2 provides information on the indicators of the key constructs and their validity and reliability results.

Table 2.
Full measurement items and reliability and validity results

Construct/Item/Congeneric reliability (CR)/Average variance extracted (AVE)	Standardized loading	*t*-value
Supply chain disruption[*]*. How frequently has your business experienced each of the following events within the last 6 months (since September 2021)?*		
Customers failing to pay debts owed your business on time		
Shortages of cash-in-hand/cash-at-bank		
Key employees leaving the business on short notice		
Shortage of important raw materials		
Major suppliers failing to make deliveries on time		
Sudden closure of major suppliers (e.g. due to bankruptcy)		
Transport failure (e.g. congestion, vehicle breakdown)		
Production plant/machine/tool downtime/failure		
Energy shortage/power cuts		
Sudden closure of key distributors (e.g. due to bankruptcy)		
Disease/pest outbreaks		
Fire outbreak at company facilities (e.g. plant, warehouses)		
Natural disasters (e.g. floods, earthquakes, drought)		
Loss of loved ones (e.g. family members, friends)		
Personal illness		
Interferences in your business activities by government agencies (e.g. police officers, tax officials)		
Firm resilience (CR = 0.973; AVE = 0.924). In your estimation, what was the average percentage (%) drop in your normal business performance level due to the events you have indicated above in each of the following performance areas over the past 6 months (since September 2021)?		
Production/operational output level	0.954	Fixed
Sales revenue	0.989	52.083
Overall net profit level	0.940	39.768
Subjective well-being (CR = 0.844; AVE = 0.575). Within the last 3 months,		
I felt cheerful and in good spirits	0.763	Fixed
I felt calm and relaxed	0.801	15.244
I felt active and vigorous	0.775	13.228
I wake up feeling fresh and rested	0.690	11.817
Economic well-being (CR = 0.809; AVE = 0.586)		
Relative to your expectations in life, how satisfied are you with your current personal income?	0.828	Fixed

(*continued*)

Construct/Item/Congeneric reliability (CR)/Average variance extracted (AVE)	Standardized loading	*t*-value
Compared to your colleagues, how satisfied are you with your current earnings?	0.747	12.672
Considering all things, how satisfied are you with your current economic situation?	0.717	12.418
Individual resilience (CR = 0.896; AVE = 0.743). Over the past year (between 2020 and 2021),		
I looked for creative ways to manage disturbing situations in my life	0.885	Fixed
I searched for positive ways of dealing with difficult situations in my life	0.890	21.378
I actively looked for ways to replace losses I encounter in my life	0.809	19.204
Social cohesion (CR = 0.756; AVE = 0.510)		
People in my neighborhood are willing to help their neighbors	0.651	Fixed
People in my neighborhood can be trusted	0.774	9.661
People in my neighborhood generally get along with each other	0.712	9.771
Dependency ratio[*]		
How many children aged below 18 years do you have?		
How many people aged above 60 years do you have in your family that are not doing paid work?		
How many people aged between 18 years and 60 years in your family have been unemployed (i.e. not engaged in a paid job) in the last 12 months?		
How many other people (apart from your family members) have you frequently supported financially in the last 12 months?		

Note(s): *Frequency of occurrence is scaled as 0 = never occurred, 1 = "1 to 3 times", 2 = "4 to 6 times", 3 = "7 to 9 times", 4 = "10 or more times"; The measurement scales for the other indicators are presented in the text (see Section 3.3); 1captured with formative indicators

Source(s): Table created by authors

Table 2.

3.3 Survey bias assessments

While it has been suggested that theoretically-based moderation models are generally unaffected by common method variance (CMV), survey data from a single source are susceptible to CMV (Podsakoff *et al.*, 2012). It may be argued that people have an inherent tendency to exaggerate threatening issues, such as disruptions, or provide false information about their economic and non-economic circumstances. The study addressed these potential biases by including a social desirability item in the survey: "I sometimes try to get even rather than forgive and forget" (Crowne and Marlowe, 1960), rated on a five-point scale from "strongly disagree (=1)" to "strongly agree (=5)". Results, as captured in Table 3, show no statistically significant correlations between the social desirability item and subjective well-being, firm resilience, SCD, or other control variables. However, the study finds a weak but significant association with economic well-being. In minimizing recall bias, the study measured SCD and firm resilience over a shorter timeframe (six months) than previous research (Iyengar *et al.*, 2021). Again, the study assessed the respondents' recall ability and controlled for its potential influence on the findings. Results show that most respondents scored significantly above the median point on the scale, indicating a good recall ability. Table 3 further shows that respondents' recall ability was not linearly related to SCD or firm resilience but was associated with individual resilience and education level. Consequently, the social desirability and recall ability variables were included in the analysis as covariates to control for their potential effects (Podsakoff *et al.*, 2003). By excluding these sources of bias, therefore, the study retested the hypotheses and found the results to be consistent.

3.4 Measure validation and variable construction

Covariance-based confirmatory factor analysis (CFA) in Mplus was used to validate the multi-reflective items used in the study (Hair *et al.*, 2019): firm resilience, individual resilience, subjective well-being, economic well-being, and social cohesion. The CFA model fits the data well: $\chi^2 = 157.353$, normed $\chi^2 = 1.674$, DF = 94, RMSEA = 0.043, CFI = 0.982, NNFI = 0.978, SRMR = 0.030 (Hair *et al.*, 2019). Results show that the items have high and significant positive loadings, and their congeneric reliability and average variance extracted values are above the minimum cut-off points of 0.60 and 0.50, respectively (see Table 2), thus demonstrating internal consistency and convergent validity of the constructs (Hair *et al.*, 2019). In addition, the items exhibit discriminant validity as the shared variances between the constructs of interest are less than the average variance extracted values (Gibb *et al.*, 2022; Hair *et al.*, 2019). Accordingly, each set of items was averaged to represent their theoretical constructs (Essuman *et al.*, 2023).

SCD and dependency ratio were assessed using formative items. Formative indices were constructed for these constructs by summing their items after multicollinearity issues were examined (Essuman *et al.*, 2023). The highest variance inflation factor observed for SCD was 1.734 and 1.265 for dependency ratio, suggesting that multicollinearity is not a major issue (Essuman *et al.*, 2023).

4. Hypotheses testing and results

Table 3 further shows the descriptive statistics and inter-construct correlations of the variables included in the hypothesis test. Moderated regression analysis was used to test the hypotheses. The hypotheses included main and interaction effect relationships, hence the study used a mean-centering approach to create the interaction terms (Aguinis *et al.*, 2017). Three hierarchical regression models were then estimated. Model 1 included only the firm resilience and the control variables. In Model 2, the two-way interaction terms were added to Model 1, and in Model 3, a three-way interaction term was added to Model 2. The results

Table 3. Correlation and descriptive results

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1 Subjective well-being																			
2 Economic well-being	0.27**																		
3 Firm resilience	0.16**	0.11*																	
4 Supply chain disruption	−0.08	−0.20**	−0.08																
5 Dependency rate	−0.12*	−0.15**	−0.01	0.29**															
6 Individual resilience	0.26**	0.04	0.22**	0.08	−0.08														
7 Social cohesion	0.12*	0.10	0.05	−0.04	0.05	−0.01													
8 Access to finance	0.14**	0.07	0.22**	−0.12*	0.10	0.02	0.08												
9 Farming (=1)	−0.03	0.20**	0.02	−0.10	−0.14**	−0.19**	0.04	0.09											
10 Cocoa supply chain (=1)	−0.01	0.06	0.17**	0.01	0.00	−0.06	0.10	0.15**	0.47**										
11 Firm age[b]	−0.07	−0.04	−0.07	−0.01	0.03	−0.01	−0.01	−0.08	0.13*	0.19**									
12 Full-time workers (=1)	−0.01	0.00	0.25**	0.10	0.06	0.08	0.10	0.13*	0.09	0.35**	0.13**								
13 Registered (=1)	0.04	0.11*	−0.01	0.15**	0.02	0.11*	0.03	−0.12*	0.06	0.19**	0.01	0.13*							
14 Age: <40 years (=1)	0.14**	0.05	0.09	0.09	0.03	0.00	−0.07	0.03	−0.12*	−0.09	−0.47**	−0.03	0.08						
15 Education (=1)	−0.03	−0.06	0.03	0.01	0.15**	0.08	−0.06	−0.04	−0.15**	−0.06	−0.14**	−0.08	−0.13*	0.16**					
16 Married (=1)	0.03	0.03	0.06	0.13*	0.08	0.00	0.06	−0.02	−0.03	−0.12*	−0.07	0.10	0.08	0.09	0.01				
17 Christian (=1)	−0.17**	−0.05	0.00	0.09	0.04	0.00	−0.06	−0.04	−0.01	0.14**	0.16**	0.06	−0.05	−0.23**	0.21**	−0.12*			
18 Recall ability	0.03	0.01	0.01	−0.01	−0.01	0.14**	−0.01	0.04	−0.01	−0.05	0.04	0.03	−0.06	0.02	0.11*	−0.05	0.02		
19 Social desirability	0.01	−0.10*	0.02	0.07	0.10	0.15**	0.05	0.12*	−0.16**	0.15**	0.05	0.08	−0.04	−0.02	0.03	0.01	0.05	−0.01	
N	373	373	373	373	373	373	373	371	373	373	370	373	373	373	373	373	373	368	371
Minimum	1	1	0	1	4	1	1	1	0	0	0	0	0	0	0	0	0	1	1
Maximum	6	5	10	14	24	5	5	5	1	1	4.36	1	1	1	1	1	1	5	5
Mean	3.82	2.67	5.71	6.29	13.09	3.48	3.57	2.03	0.71	0.61	2.57	0.54	0.12	0.28	0.61	0.6	0.73	3.44	3.64
Standard deviation	1.19	0.96	2.72	2.63	4.39	1.07	0.9	1.36	0.46	0.49	0.86	0.5	0.33	0.45	0.49	0.49	0.45	1.33	1.2
Skewness	−0.25	0.32	−0.23	0.32	0.20	−1.11	−0.74	0.97	−0.92	−0.46	−0.81	−0.16	2.34	0.98	−0.46	−0.42	−1.02	−0.42	−0.7
Kurtosis	−0.72	−0.89	−1.07	−0.19	−0.53	0.08	0.04	−0.52	−1.16	−1.8	0.56	−1.99	3.49	−1.05	−1.8	−1.83	−0.96	−1.09	−0.56
VIF[a]	n/a	n/a	1.23	1.23	1.24	1.22	1.05	1.16	1.49	1.75	1.39	1.28	1.17	1.43	1.21	1.09	1.22	1.05	1.15

Note(s): [a]Dependent variable = subjective well-being. [b]Natural logarithm. *$p < 0.05$ (2-tailed); $p < 0.01$ (2-tailed)
Source(s): Table created by authors

indicate that Model 3 demonstrated the strongest explanatory power. Accordingly, results from Model 3 were used to evaluate the study's hypotheses (Aguinis *et al.*, 2017). Table 4 presents the results of the tests of the research model.

The results indicate that firm resilience is positively related to economic well-being ($\beta = 0.048$, $p = 0.017$) and subjective well-being ($\beta = 0.070$, $p = 0.005$), in support of H1. The interaction between firm resilience and SCD is not significantly related to economic well-being ($\beta = 0.011$, $p = 0.117$) and subjective well-being ($\beta = 0.008$, $p = 0.370$), thus H2 is rejected. The results further indicate that the interaction between firm resilience and dependency ratio is positively associated with subjective well-being ($\beta = 0.012$, $p = 0.032$) but not economic well-being ($\beta = 0.008$, $p = 0.056$). Accordingly, the study plotted the effects of firm resilience on entrepreneurial well-being at ±1 standard deviation of the mean value of dependency ratio (Hayes and Matthes, 2009). The results, as depicted in Figure 2, show that firm resilience has a stronger positive relationship with both dimensions of well-being, in support of H3.

Additional results show that the three-way interaction among firm resilience, SCD, and dependency ratio is negatively related to economic well-being ($\beta = -0.004$, $p = 0.012$) and subjective well-being ($\beta = -0.007, p = 0.0001$), which provides support for H4. In interpreting these results, the study employed the PROCESS macro to conduct slope analysis and graph the well-being effects of firm resilience under differing conditions characterized by low and high (i.e., minus and plus one standard deviation) levels of SCD and dependency (Hayes and Matthes, 2009). Figure 3 presents the plots and test of slope difference results. Consistent with the study's arguments, the results show that firm resilience is negatively related to economic and subjective well-being when both SCD and dependency ratio are low. The effects are, however, positive when SCD and dependency are both high, and more so when dependency ratio is high and SCD is low, or when dependency ratio is low and SCD is high.

5. Discussion

5.1 Research contributions and implications

The study's theoretical model and findings contribute to the literature on the determinants of entrepreneurial well-being (Chatterjee *et al.*, 2022; Wiklund *et al.*, 2019), especially in SCD contexts (Stephan *et al.*, 2023), by highlighting firm resilience as an important firm-level resource that contributes to improvement in the well-being of women entrepreneurs in a developing country. Wiklund *et al.* (2019) contend that "... people pursue entrepreneurship for deeply personal, idiosyncratic reasons" and that "... how entrepreneurship relates to fulfillment and well-being is of utmost importance" (p. 579). By analyzing the entrepreneurial well-being outcome of firm resilience, this study expands the scope of the extant literature on the firm-level outcomes of firm resilience (e.g. Sturm *et al.*, 2023; Iftikhar *et al.*, 2021) and advances knowledge on the limited understanding of how firm resources benefit entrepreneurs (Wiklund *et al.*, 2019).

The study further advances the emerging literature on the interface between SCD and entrepreneurial well-being (Stephan *et al.*, 2023; Graeber *et al.*, 2021; Mustafa *et al.*, 2021; Yue and Cowling, 2021) in two significant ways. First, the study moves beyond concerns about SCDs as detrimental to entrepreneurial well-being by showing how SCD conditions rather serve as a moderating force to explain the disruption experience boundary conditions of the extent to which firm resilience, as a resource, contributes to entrepreneurial well-being. Second, the study provides an alternative approach to analyzing the interconnection between entrepreneurial resources, SCD, and well-being. Contrary to Stephan *et al.*'s (2023) self-determination theorization of the mediating roles of entrepreneurs' agility in the relationships between SCD factors and well-being outcomes, this study uses COR theory to provide a contingency-based approach to explain how firm resilience interacts with SCD and dependency ratio to explain variations in entrepreneurial well-being.

Table 4. Regression results

	Dependent variables																	
	Subjective well-being									Economic well-being								
	Model 1a			Model 2a			Model 3a			Model 1b			Model 2b			Model 3b		
Independent variables:	β	SE	p	β	SE	p	β	SE	p	β	SE	p	β	SE	p	β	SE	p
Firm resilience (FR)	0.042	0.024	0.078	0.041	0.024	0.087	0.070	0.024	0.005	0.028	0.019	0.151	0.027	0.019	0.160	0.048	0.020	0.017
Supply chain disruption (SCD)	−0.006	0.025	0.823	0.000	0.025	0.988	−0.006	0.025	0.806	−0.051	0.020	0.012	−0.045	0.021	0.028	−0.056	0.021	0.007
Dependency ratio (DR)	−0.029	0.015	0.052	−0.028	0.015	0.063	−0.034	0.015	0.021	−0.013	0.012	0.291	−0.011	0.012	0.375	−0.015	0.012	0.202
FR × SCD				−0.002	0.009	0.841	0.008	0.009	0.370				0.006	0.007	0.379	0.011	0.007	0.117
FR × DR				0.011	0.005	0.054	0.012	0.005	0.032				0.007	0.004	0.124	0.008	0.004	0.056
SCD × DR							0.000	0.005	0.969							0.007	0.004	0.106
FR × SCD × DR							−0.007	0.002	0.000							−0.004	0.001	0.012
Individual resilience	0.260	0.061	0.000	0.260	0.061	0.000	0.266	0.060	0.000	0.033	0.050	0.503	0.029	0.050	0.554	0.031	0.049	0.528
Social cohesion	0.171	0.068	0.012	0.178	0.068	0.009	0.155	0.066	0.020	0.126	0.055	0.022	0.130	0.055	0.019	0.116	0.054	0.034
Access to finance	0.101	0.047	0.032	0.091	0.047	0.052	0.088	0.047	0.060	0.026	0.038	0.498	0.019	0.038	0.618	0.006	0.038	0.879
Farming	−0.114	0.158	0.470	−0.107	0.157	0.495	−0.135	0.155	0.385	0.387	0.128	0.003	0.393	0.128	0.002	0.394	0.127	0.002
Cocoa supply chain	0.035	0.161	0.826	0.042	0.161	0.793	0.036	0.158	0.822	−0.111	0.131	0.401	−0.115	0.131	0.384	−0.132	0.130	0.309
Firm age	0.044	0.080	0.582	0.042	0.079	0.600	0.060	0.079	0.446	−0.037	0.065	0.567	−0.042	0.065	0.520	−0.015	0.064	0.815
Full-time workers (=1)	−0.110	0.133	0.410	−0.109	0.132	0.412	−0.106	0.130	0.415	−0.011	0.108	0.917	−0.009	0.108	0.935	−0.008	0.106	0.943
Registered (=1)	0.037	0.193	0.847	0.041	0.193	0.832	0.102	0.190	0.590	0.331	0.158	0.036	0.339	0.157	0.031	0.362	0.155	0.021
Age: <40 years (=1)	0.340	0.155	0.029	0.334	0.155	0.032	0.380	0.152	0.013	0.126	0.126	0.321	0.111	0.126	0.381	0.144	0.125	0.250
Education (=1)	−0.042	0.132	0.751	−0.026	0.132	0.845	−0.089	0.131	0.498	−0.053	0.108	0.623	−0.042	0.108	0.698	−0.066	0.107	0.538
Married (=1)	0.032	0.125	0.799	0.027	0.124	0.830	0.049	0.122	0.689	0.115	0.102	0.258	0.112	0.101	0.272	0.124	0.100	0.214
Christian (=1)	−0.308	0.145	0.035	−0.297	0.147	0.044	−0.210	0.145	0.149	0.087	0.118	0.464	0.115	0.119	0.335	0.159	0.119	0.182
Social desirability	−0.045	0.053	0.390	−0.040	0.053	0.452	−0.045	0.051	0.379	−0.050	0.043	0.244	−0.047	0.043	0.273	−0.048	0.042	0.251
Recall ability	−0.013	0.045	0.778	−0.009	0.045	0.847	0.000	0.045	0.999	0.000	0.037	0.995	0.008	0.037	0.830	0.013	0.036	0.719
Constant	2.603	0.517	0.000	2.502	0.518	0.000	2.404	0.508	0.000	2.276	0.421	0.000	2.185	0.422	0.000	2.120	0.416	0.000
R^2	16.1%			17.1%			20.98%			12.%			13.2%			16.3%		
ΔR^2				1.0%			3.9%						1.1%			3.1%		
F of R^2	3.871***			3.691***			4.287***			2.774***			2.737***			3.146***		
F of ΔR^2				1.978			8.422***						2.253			6.229**		

Note(s): 1. Unstandardized coefficients, standard errors (SE), and p-values (p) are reported
2. One-tailed and two-tailed tests at 5% significance levels are used to evaluate the hypothesized and control paths, respectively
3. **$p < 0.01$; ***$p < 0.001$

Source(s): Table created by authors

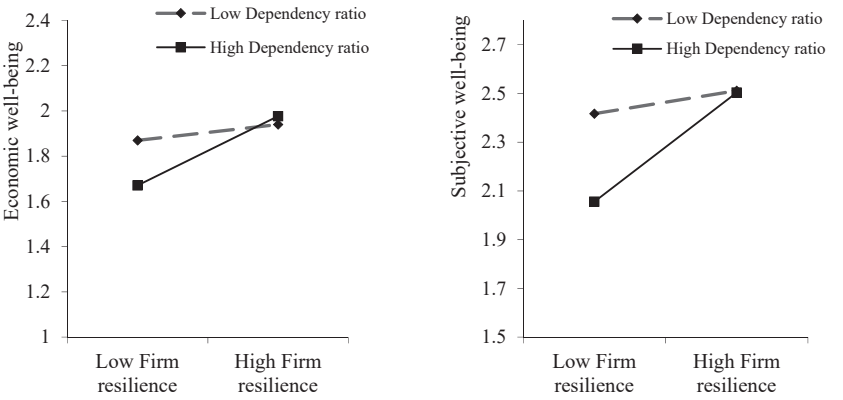
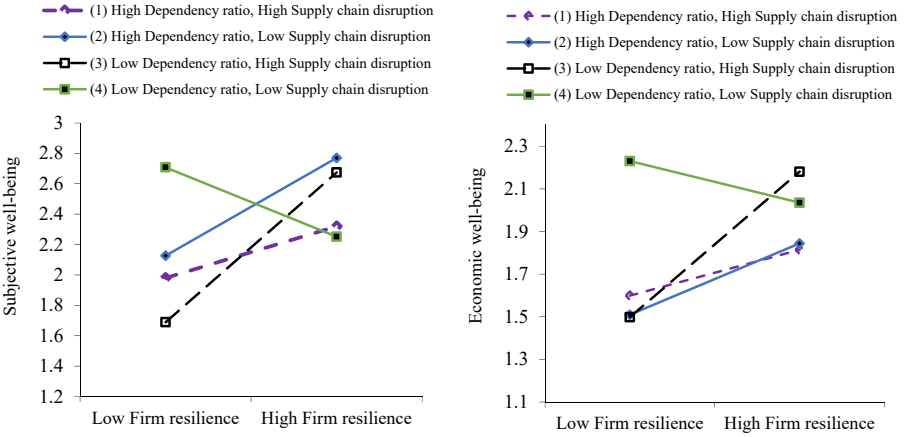


Figure 2.
Surface of the moderating effects of dependency ratio

Note(s): Low and high levels are –1SD and +1SD values, respectively

Source(s): Figures created by authors



Note(s): 1.Low and high levels are –1SD and +1SD values, respectively
2.Test of slope difference:
Δ(1) and (2): t-value = –0.888, p = 0.375
Δ(1) and (3): t-value = –2.243, p = 0.026
Δ(1) and (4): t-value = 2.672, p = 0.008
Δ(2) and (3): t-value = –0.835, p = 0.404
Δ(2) and (4): t-value = 2.875, p = 0.004
Δ(3) and (4): t-value = 4.1978, p = 0.000

Note(s): 1.Low and high levels are –1SD and +1SD values, respectively
2.Test of slope difference:
Δ(1) and (2): t-value = –0.426, p = 0.670
Δ(1) and (3): t-value = –1.984, p = 0.048
Δ(1) and (4): t-value = 1.683, p = 0.093
Δ(2) and (3): t-value = –1.039, p = 0.300
Δ(2) and (4): t-value = 1.692, p = 0.092
Δ(3) and (4): t-value = 3.122, p = 0.002

Source(s): Figures created by authors

Figure 3.
Surface of the three-way interaction effects of firm resilience, SCD, and dependency ratio on well-being

Additionally, the study demonstrates that a theoretical approach that considers entrepreneurs' subjectivity in interpreting the value of firm resources (Foss and Ishikawa, 2007) is vital for providing a nuanced understanding of the implications of firm resilience for

the well-being of entrepreneurs. This study's theoretical analysis and evidence contrast existing theorizations that assume firm resilience has an objective, externally determined value (Iftikhar *et al.*, 2021; Manhart *et al.*, 2020; Essuman *et al.*, 2020). Consistent with the gain paradox and desperation principles of COR theory, this study reveals that, while firm resilience is essential for driving economic and subjective well-being, women entrepreneurs are inclined to associate firm resilience with different well-being levels, depending on the extent of their exposure to SCDs and family dependency burden (Hobfoll *et al.*, 2018; Halbesleben *et al.*, 2014). Accordingly, the study presents COR theory as an alternative compelling theoretical lens for explaining the value of firm resilience from an entrepreneur's standpoint. This theoretical perspective highlights the need to account for entrepreneurs' interpretations and appraisal of the contextual factors that shape resilience-building and value-generation processes. The study's results align with the COR theory's contention that, consciously or unconsciously, entrepreneurs weigh the costs and benefits of increasing firm resilience vis-à-vis the levels of stress-inducing factors they face (Hobfoll *et al.*, 2018; Halbesleben *et al.*, 2014).

A surprising but intriguing finding from the study is that, unlike dependency ratio, SCD alone does not significantly moderate the relationship between firm resilience and entrepreneurial well-being. This finding contradicts the prediction of COR theory's gain paradox principle (Hobfoll *et al.*, 2018) and related theoretical and empirical literature that suggest that firm resilience is more beneficial under high conditions of SCD (Wong *et al.*, 2020; Essuman *et al.*, 2020). The study finds that, though dependency ratio uniquely moderates the relationship between firm resilience and entrepreneurial well-being, it also interacts with SCD to provide additional insights on the extent to which firm resilience drives well-being outcomes. The results imply that the effects of SCD and dependency stress factors on the relationship between firm resilience and entrepreneurial well-being may vary in magnitude and be conditional upon one other. Importantly, both SCD and dependency ratio are stressors due to their capacity to drain the entrepreneurs' crucial resources (e.g. financial resources); however, the latter may also be associated with social status, particularly in collectivist societies, such as Ghana (Ojong *et al.*, 2021). From a COR perspective, individuals may prioritize fulfilling family obligations by taking on additional dependents, which may induce stress (Hobfoll *et al.*, 2018). This inclination is especially notable among women in Africa, where there is a tendency for women to accept caregiving roles in the family (Gambe *et al.*, 2023) and cultural norms that expect women to manage business and family responsibilities concurrently (Chatterjee *et al.*, 2022; Ojong *et al.*, 2021). As such, the well-being implication of firm resilience may be more salient under high dependency ratio conditions compared to high SCD conditions.

The study further finds that firm resilience contributes more to entrepreneurial well-being when SCD is high, but dependency ratio is low. A low dependency burden reduces strain on firms' critical resources, enabling entrepreneurs facing high SCD conditions to appreciate the value of firm resilience. This situation also enhances entrepreneurs' ability to address their well-being needs. In contrast, firm resilience might benefit entrepreneurial well-being less when SCD and dependency ratio increase simultaneously. The joint increases in SCD and dependency ratio can produce resource and stress cycles, potentially damaging entrepreneurs' psychological states and overstretching the well-being benefit of firm resilience (Hobfoll *et al.*, 2018). This situation is particularly likely in the study's context: women entrepreneurs in many sub-Saharan African countries experience an uptick in domestic responsibilities when major SCDs occur (Gannon *et al.*, 2022). Specifically, in such countries, women entrepreneurs with high family dependency may find themselves overwhelmed by work-family conflicts and stress. Moreover, in such countries, women entrepreneurs often face greater challenges in securing financial and institutional resources to support their businesses during disruptive events (Chatterjee *et al.*, 2022; Ojong *et al.*, 2021).

5.2 Practical and policy implications

The results have two major implications for women entrepreneurs, policymakers, and relevant stakeholders in a developing country. Firstly, the results indicate that women entrepreneurs' ability to build resilient businesses is crucial for improving their welfare. Secondly, the results further suggest the need to tailor efforts and investment in building resilient businesses to match women entrepreneurs' circumstances to achieve superior well-being. Both women entrepreneurs and stakeholders have roles to play in achieving such outcomes, as discussed below.

Though women entrepreneurs in developing countries face significant constraints, they can explore alternative, cost-effective measures and resources to build resilient businesses. For instance, they can collaborate with suppliers and customers to share information and build trust. Similarly, women entrepreneurs may cultivate positive social relationships with influential local stakeholders (e.g. religious and chieftain leaders), who can facilitate access to difficult-to-reach resources such as credit facilities from financial and non-financial institutions (Boso *et al.*, 2023). These efforts to build relationships and enhance communication can help augment the ability of women entrepreneurs in less developed countries to anticipate and swiftly mobilize relevant resources to counter imminent SCDs.

Furthermore, women entrepreneurs in developing countries can use basic technologies such as feature phones with voice assistants and local radio and local community networks such as cooperative associations to explore new business models or adapt existing ones during severe SCDs. These technological and community platforms can aid them in identifying new supply sources and customers, enabling them to stay in business during SCDs.

Policymakers and other stakeholders support women entrepreneurs in developing and strengthening the resilience of their businesses in several ways. Though finance is critical for designing and implementing measures to improve business resilience, women entrepreneurs in developing countries struggle to access it. Thus, stakeholders should prioritize resilience-building in financing solutions for women entrepreneurs. Again, initiatives such as property ownership and land title acquisition, along with low-interest rate loan packages, can facilitate access to finance for women entrepreneurs. Local government agencies and informal authorities like chiefs and religious leaders should promote and support women's active participation in resource acquisition and property ownership.

Moreover, local government institutions, leaders, and corporate entities should individually implement, monitor, review, and update resilience-building training programs for entrepreneurs to prepare them for SCDs (Gibb *et al.*, 2022). Given the high degree of religiosity of Ghanaian society, religious leaders can play a significant role in helping women entrepreneurs cultivate personal resilience to cope with and overcome adversities. Furthermore, local government agencies, leaders, and corporate institutions should provide, monitor, review, and update business resilience-building training schemes for women entrepreneurs to help build their capacity to cope with and bounce back from adversities.

Furthermore, women entrepreneurs and stakeholders must discern when investment in building resilient businesses is most beneficial. The study shows that women entrepreneurs with significant family dependencies may require a higher threshold of firm resilience to benefit from well-being outcomes. In countries such as Ghana and other collectivistic societies, women entrepreneurs value support for family dependencies. However, a high degree of family dependency burden can be stressful, especially when an entrepreneur's business lacks resilience to SCDs. Women entrepreneurs who lead resilient businesses but have fewer family responsibilities experience improvements in their well-being when they face high levels of SCDs. In settings with limited resources and high dependency ratios, policymakers and institutional sponsors interested in fostering resilient women-led

businesses should prioritize women entrepreneurs with significant family dependency responsibilities or those operating in highly disruptive environments but with fewer dependency responsibilities. This targeted approach can generate greater entrepreneurial well-being outcomes.

6. Conclusions

This study contributes to the limited theoretical and empirical understanding of how and when firm resilience benefits entrepreneurial well-being. The study, however, has some theoretical and empirical limitations that provide avenues for future research.

Firstly, the study presents firm resilience as an antecedent to entrepreneurial well-being. Notwithstanding the soundness of the theory driving this proposition, it is equally likely that entrepreneurial well-being can drive firm resilience. The reason is that economic and subjective well-being dimensions can improve entrepreneurs' psychological strength (e.g. composure), decision-making quality, and resourcefulness when responding to SCDs. Through these mechanisms, entrepreneurial well-being can contribute to firm resilience. Future studies can explore and develop this line of reasoning.

Secondly, the study's model incorporates only two entrepreneurial stressors (i.e., SCD and dependency ratio) as boundary conditions of the well-being effect of firm resilience. Future studies can explore additional stressors, such as job demand, work-family conflict, resource constraints, or entrepreneurial resources, that can complement firm resilience, including autonomy and creativity (Williamson *et al.*, 2021).

Thirdly, the study's sample comprises women entrepreneurs in Ghana. While the results are broadly consistent with the study's theoretical expectations, the peculiarities of the sample raise concerns about the generalizability of the study's theoretical model and findings to other entrepreneurs and countries. Future research can test the study's model in several other contexts, such as women entrepreneurs in different supply chain settings other than agricultural supply chains, women entrepreneurs in diverse sectors in developed countries, and men entrepreneurs in developing and developed countries. A more fruitful analysis may involve a sub-group analysis of whether and how the relationships in the model differ across these entrepreneurship contexts.

Fourthly, the cross-sectional design used in this study limits the study's ability to make causal inferences. It would, therefore, be useful for future research to employ research designs (e.g. natural experiments and longitudinal design) to make predictive claims on the extent to which firm resilience contributes to variation in entrepreneurial well-being (e.g. Buyl *et al.*, 2019).

Fifthly, the study relied on a single source, self-reported data from women entrepreneurs. The data are comparable to those used in related studies (e.g. Stephan *et al.*, 2023; Iyengar *et al.*, 2021) and are appropriate for the research setting (Flynn *et al.*, 2018). While this study employed several procedural and statistical measures to minimize potential common method bias concerns, future research may explore other innovative approaches to obtain data from multiple sources or at different periods in the form of multiple-informant and multi-time research designs.

Finally, there are limitations to the study's measurement of firm resilience and entrepreneurial well-being. The use of performance data to measure firm resilience, as done in this study and past studies (Li *et al.*, 2023; Buyl *et al.*, 2019), captures latent organizational resilience instead of specific resilience manifestations, such as firms' ability to absorb, recover from, or adapt to SCDs (Arslan *et al.*, 2022; Protogerou *et al.*, 2022; Essuman *et al.*, 2023). Further, future studies should consider capturing such specific resilience manifestations. Moreover, the study captured two core dimensions of entrepreneurial well-being. However, there are other dimensions of the construct (e.g. psychological well-being) that future studies can consider to offer a more comprehensive insight into the relationships between firm resilience and entrepreneurial well-being.

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