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CHAPTER 3

Building Resilience Enterprises in Resource-Constrained Environments: How Entrepreneurial Supply Chain Competencies Matter

Nathaniel Boso, Dominic Essuman, Elvis Abima Koka, and Listowel Owusu Appia

Introduction

Rethinking resilient enterprises in terms of their ability to "bounce forward" and thrive during unexpected disruptive events continues to gain traction among supply chain (SC) and entrepreneurship scholars

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(Wieland et al., 2023), particularly those interested in the interface between SC management and entrepreneurship (Ketchen & Craighead, 2020, 2021). In this scholarly discourse, an emphasis is placed on the strategic and practical importance of venture entrepreneurial resilience in addressing various SC disruptions (Iyengar et al., 2021). Venture entrepreneurial resilience refers to the ability of an entrepreneurial venture to create and exploit value-creating resources and capabilities during disruptive events (Iyengar et al., 2021). Unlike existing analyses of resilience at the firm or SC levels, venture entrepreneurial resilience reflects the transformational and adaptive features of the resilience concept, which has received limited scholarly attention (Holgado et al., 2024; Wieland et al., 2023).

Venture entrepreneurial resilience is particularly important for small businesses facing SC disruptions in resource-constrained settings where lack of value-enhancing capabilities can be a major source of venture demise. While disruptive conditions may justify the need to orchestrate international transformation of operations, they also present major limitations for entrepreneurs (Iyengar et al., 2021). Thus, an important question that requires scholarly attention but remains largely unexplored is: how can entrepreneurs operating in disruptive and resource-constrained SC conditions develop and strengthen venture entrepreneurial resilience? Prior research has shown that entrepreneurial competency—knowledge, skills, personality traits of an entrepreneur, and their ability to perform a job successfully (Man et al., 2002)—helps enhance financial, social, and environmental performance of small businesses (Aftab et al., 2022; Sakib et al., 2022). In building on these prior studies, a related stream of research has emerged with an introduction of the notion of entrepreneurial SC (ESC) competency, which is essentially an adaptation of the broader notion of entrepreneurial competency to the SC setting (Hsu et al., 2011). This extension recognizes that entrepreneurial

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success is rarely achieved in isolation; instead, it is deeply embedded in interactions with external stakeholders such as suppliers, distributors, customers, and logistics partners (Derwik & Hellström, 2017). While evidence suggests that ESC competency can help improve performance of small businesses (Derwik & Hellström, 2017; Hsu et al., 2011), there is a lack of empirical understanding of how it influences venture entrepreneurial resilience. Importantly, knowledge on which specific elements of ESC competency drive venture entrepreneurial resilience, particularly in resource-constrained environments, is lacking. Accordingly, this study draws insights from the dynamic managerial capabilities (DMC) theory to address this deficiency in the SC literature by examining how the various dimensions of ESC competency drive venture entrepreneurial resilience.

A central proposition of the DMC theory is that individuals in managerial positions (e.g., entrepreneurs) vary in their ability to modify their firms' resource base and operations in response to changes in the business environment to thrive and survive (Adner & Helfat, 2003). The theory identifies human capital, social capital, and cognition as foundations of dynamic managerial capability (Helfat & Martin, 2015). From this theoretical platform, this paper study seeks to answer the question: how can ESC competencies function as DMCs to drive entrepreneurial resilience in resource-constrained settings? By exploring this question, this study contributes to an understanding of the most important competencies entrepreneurs need to succeed during disruption situations in resource-constrained environments, particularly small business entrepreneurs navigating underdeveloped SCs in developing countries.

By leveraging this framework and drawing insights from the DMC theory, this study offers actionable insights into how these ESC competencies may be used to build venture entrepreneurial resilience. Ultimately, this chapter offers both theoretical and practical contributions. Theoretically, the chapter advances an understanding of the ESC competency and venture entrepreneurial resilience relationship by positioning these competencies as dynamic capabilities that may explain heterogeneity in the success of entrepreneurial ventures in resource-constrained contexts. Practically, the chapter provides actionable guidelines that entrepreneurs and policymakers can use to foster essential competencies required to build resilient entrepreneurial ventures.

Theoretical Foundation and Hypotheses

DMC Perspective on ESC Competencies

DMC theory is an extension of dynamic capabilities theory, focusing on the individual manager or a team of managers as the unit of analysis to explain the sources of heterogeneity in strategic adaptation and performance at the firm level (Helfat & Martin, 2015). The theory defines DMCs as "the capabilities with which managers create, extend, and modify the ways in which firms make a living" (Helfat & Martin, 2015, p. 1281). In small enterprises, entrepreneurs typically double as managers, undertaking long-, medium-, and short-term managerial decisions and actions. This makes DMC theory critical for examining how their behavioral attributes (e.g., competencies) may affect organizational outcomes (Man et al., 2002; Teece, 2012), including venture entrepreneurial resilience (Iyengar et al., 2021; Martinelli et al., 2018).

In advancing DMC theory, Adner and Helfat (2003) proposed managerial human capital, social capital, and cognition as the foundational attributes of DMCs, arguing that each contributes to managers' ability to perform dynamic capability functions, including sensing threats and opportunities, seizing opportunities, and reconfiguring resources in response to environmental changes. As synthesized in Helfat and Martin (2015), research applying and elaborating on this theoretical perspective has considered many aspects or underpinnings of DMCs. For example, the literature suggests that managerial human capital is grounded in education and experience; managerial social capital is derived from social or relational ties and characteristics; and managerial cognition comprises beliefs, conceptual and mental schemas, perception interpretation, reasoning, attention, and emotion regulation (Beck & Wiersema, 2013; Helfat & Martin, 2015; Helfat & Peteraf, 2015).

This research conceptualizes ESC competencies as DMCs that enable entrepreneurs to orchestrate venture entrepreneurial resilience responses during SC disruptions. The ESC competencies literature (Hsu et al., 2011) builds on research regarding entrepreneurial competencies (Man et al., 2002). Combining interview insights with the literature on the interface between entrepreneurship and SC management, Hsu et al. (2011) proposed that ESC competencies comprise innovation, risk-taking, proactiveness, relational abilities, and coordination abilities. While this conceptualization of ESC competencies is context based, the authors' operationalization of the concept overlooks the boundary-spanning

context of SCs for which they analyzed ESC competencies. This chapter, thus, follows Man et al.'s (2002) conceptualization of entrepreneurial competencies, derived from an extensive analysis of pertinent literature, and incorporates the SC context to conceive and operationalize ESC. Man et al. (2002) proposed entrepreneurial competencies that include conceptual, opportunity, relationship, organizing, strategic, and commitment competencies. We argue that, when applied to SCs, these competencies reflect the extent to which entrepreneurs in entrepreneurial ventures can orchestrate entrepreneurial actions within the firm and across networks of suppliers and customers.

Linking ESC Competencies to Venture Entrepreneurial Resilience

Disruption to SCs is a major turbulence phenomenon that threatens organizational stability by inducing socio-economic losses, such as lost sales, profit, and damage to reputation (Essuman et al., 2024). Such events, therefore, question the desirability and long-term survival of existing operating and business models (Bode et al., 2011; Wieland & Durach, 2021). Thus, whereas the engineering and single-equilibrium views on the resilience concept emphasize the need for organizations to retain existing structures and configurations of how firms currently earn a living during SC disruptions, the socio-ecological view encourages entrepreneurs to engage in strategic adaptation actions that enable their enterprises to establish new stability domains and means of creating and delivering market value (Wieland & Durach, 2021). As analyzed in this study, venture entrepreneurial resilience follows this socio-ecological view of the resilience concept. Specifically, we analyze venture entrepreneurial resilience as the ability of an entrepreneurial firm to introduce new products or services, enter new markets, adopt new processes, and deploy new technologies in response to SC disruptions (Iyengar et al., 2021; Wieland & Durach, 2021).

Prior research suggests that entrepreneurs not only interpret and respond to SC disruptions differently (e.g., conserving versus changing existing business operations) but also vary in their ability to enact responses that achieve venture entrepreneurial resilience (Dankyira et al., 2024; Pérez-Nordtvedt et al., 2014). Building on this thinking, this study argues that ESC competencies can help entrepreneurs develop positive attitudes toward SC disruptions while enabling them to capitalize on such events to drive venture entrepreneurial resilience. In what follows next, we

elaborate on how the dimensions of ESC competencies constitute specific aspects of DMCs that drive venture entrepreneurial resilience.

Conceptual competency refers to entrepreneurs' ability to comprehend and navigate complex entrepreneurial risks and opportunities within their SCs (Man et al., 2002). We argue that conceptual competency affords entrepreneurs with a cognitive model for analyzing, interpreting, and developing solutions to SC disruptions. SC disruptions are not only complex and dynamic, but managing them is also challenging due to the often ambiguous linkages between disruption responses and resilience outcomes (Bode et al., 2011). This is particularly relevant for fostering venture entrepreneurial resilience, which, unlike short-term resilience outcomes (e.g., recovery), is inherently long term (Wieland & Durach, 2021). In this context, entrepreneurs need an appropriate mental framework to quickly and effectively analyze and classify different SC disruption types, determining whether short-term or long-term responses are required to achieve the desired resilience outcomes (Essuman et al., 2022).

We contend that although SC disruptions introduce uncertainty and risk, strong conceptual competency enables entrepreneurs to better understand these challenges and identify the "silver linings" of such events (Yan et al., 2022). Conversely, entrepreneurs lacking conceptual competency may feel overwhelmed, focusing primarily on the visible threats within SCs while overlooking opportunities for business transformation. Specifically, these entrepreneurs are more likely to develop a threat interpretation bias, which limits their strategic responses and hinders the development of venture entrepreneurial resilience (Dankyira et al., 2024; Pérez-Nordtvedt et al., 2014). Therefore, we posit that:

> **H1**: Entrepreneurs with a strong conceptual competency lead ventures that demonstrate greater entrepreneurial resilience during SC disruptions.

Opportunity competency refers to entrepreneurs' ability to recognize and develop market opportunities within their SCs (Man et al., 2002). This competency encompasses both the sensing and seizing dimensions of dynamic capabilities, which are critical for orchestrating strategic adaptation (Helfat & Martin, 2015). From DMC perspective, it is a crucial aspect of managerial cognition that can enable entrepreneurs to interpret and act on SC disruptions as opportunities for business improvement (Dankyira et al., 2024).

While conceptual competency facilitates the effective calibration of SC disruptions and responses, reducing the likelihood of resource conservation and the preservation of existing products and operations, opportunity competency can foster more proactive and risk-taking responses. Given the significant resource constraints that small businesses in developing countries face, along with the high costs often associated with strategic change or entrepreneurial actions during disruptions, opportunity competency can play a vital role in mitigating threat-rigidity behaviors (Pérez-Nordtvedt et al., 2014). This competency can enable entrepreneurs to seek external resources to support strategic change rather than becoming overly risk-averse. Overall, we expect entrepreneurs with a strong opportunity competency not only better at seeing opportunities in SC disruptions but also better at searching for and securing resources to invest in business improvement opportunities arising from SC disruptions. Therefore, we posit that:

H2. Entrepreneurs with strong opportunity competency lead ventures that demonstrate greater entrepreneurial resilience during SC disruptions.

As with opportunity competency, commitment competency can drive venture entrepreneurial resilience in resource-constrained environments. This competency refers to entrepreneurs' ability to devote time and resources to managing their SCs (Man et al., 2002). Commitment competency reflects a risk-taking ability and aligns with the opportunity-seizing dimension of DMC (Helfat & Martin, 2015). Entrepreneurs with strong commitment competency can counteract the resource conservation behaviors that often characterize entrepreneurs in resource-constrained settings, tendencies that undermine information search, exploration, and innovation behaviors (Dankyira et al., 2024). As commitment competency increases, entrepreneurs become deeply invested in their businesses, making them more determined to ensure their ventures succeed and yield returns on their commitment, especially in times of disruption (Bernard & Barbosa, 2016; Sakib et al., 2022). While the solutions and actions necessary for achieving venture entrepreneurial resilience are inherently long term (Wieland & Durach, 2021), commitment competency can play a critical role in sustaining investment in these strategies (Man et al., 2002). Therefore, we posit that:

H3. Entrepreneurs with strong commitment competency lead ventures that demonstrate greater entrepreneurial resilience during SC disruptions.

Strategic competency refers to entrepreneurs' ability to plan and execute long-term SC goals (Man et al., 2002). As this competency increases, entrepreneurs are more likely to prioritize responses that offer long-term solutions for their ventures rather than short-term, efficiency-driven measures. Entrepreneurs with a strong strategic competency tend to be more opportunistic and pursue growth-orientations necessary for creating a new venture or growing an existing business or product (Bird, 2019). Moreover, this competency enables entrepreneurs to engage in and execute strategic plans for their SCs. Developing and executing strategic plans encourages entrepreneurs to rely on relevant business information. Gathering such information for strategic planning helps entrepreneurs prepare for disruptions, develop contingency measures, and engage in proactive responses to reduce their vulnerability to potential SC disruptions. While strategic planning is uncommon among small businesses in developing countries, it is crucial for enacting strategic adaptations (Agyapong et al., 2021). Therefore, in such settings, entrepreneurs with strong strategic competency may have a leverage in leading ventures that exhibit entrepreneurial resilience. Therefore, we posit that:

H4. Entrepreneurs with strong strategic competency lead ventures that demonstrate greater entrepreneurial resilience during SC disruptions.

Organizing competency refers to entrepreneurs' ability to coordinate different parts, processes, and resources within their SCs (Man et al., 2002). This competency is crucial for opportunity seizing and resource reconfiguration (Blyler & Coff, 2003) and facilitates opportunity exploitation (Sirmon et al., 2011). In particular, organizing competency enables entrepreneurs to manage their SCs as a coherent whole and operate them smoothly. Entrepreneurs with strong organizing competency can quickly mobilize not only internal resources but also external resources from SC partners. Moreover, they can collaborate with these partners to reconfigure and leverage external resources in order to exploit new opportunities during SC disruptions (Sirmon et al., 2011). Thus, we argue that:

H5. Entrepreneurs with strong organizing competency lead ventures that demonstrate greater entrepreneurial resilience during SC disruptions.

Relationship competency refers to entrepreneurs' ability to build and manage relationships with suppliers and customers effectively (Man et al., 2002). This competency reflects the social capital dimensions of DMC (Helfat & Martin, 2015). By helping entrepreneurs develop trust and commitment with SC members, relationship competency becomes crucial for business success. This is especially true for small businesses in developing countries, where informal relationships are often prioritized in SCs. Relationship competency may drive venture entrepreneurial resilience, as it enables entrepreneurs to quickly learn about looming SC disruptions while also helping them access external resources needed to initiate and sustain resilience-building actions (Nikookar & Yanadori, 2022). Supporting this argument, prior research suggests that relational ties within and beyond SCs are essential for building SC resilience capabilities (Asamoah et al., 2020; Nikookar & Yanadori, 2022). Therefore, we posit that:

H6. Entrepreneurs with strong relationship competency lead ventures that demonstrate greater entrepreneurial resilience during SC disruptions.

Methods

Research Design

This study used survey data from owner-managers of small business ventures in the agricultural value chains in Ghana. The agricultural sector is vital to Ghana's economy, and agriculture-based businesses contribute significantly to the country's economic development (Abbeam et al., 2018). However, the sector is plagued by several challenges, such as limited access to finance, technology, and other resources, as well as weather and market-related challenges (Antwi-Agyei & Stringer, 2021). Consequently, the agriculture business environment is characterized by high operational turbulence, failure, and closure. The field study focused on entrepreneurs within the Ashanti and Greater Accra regions due to large clusters of agribusinesses in these two regions of Ghana. The study included firms in food and animal production to ensure the results provide a comprehensive understanding of the sector's dynamics.

Given the challenges in obtaining a comprehensive sampling frame in Ghana, we used a convenience sampling approach to identify and select respondents for this study. While convenience sampling can introduce potential bias, this study mitigates such concerns by ensuring that the selected firms were not based on a predetermined list of agri-small businesses with distinct characteristics that could introduce bias in the results. Additionally, willingness to participate may help minimize social desirability bias.

The questionnaires were administered to over 1000 agripreneurs in the target regions, and over the 8-week data collection period, 433 usable questionnaires were retrieved. This marks an estimated 43.3% response rate. Most respondents (79.2%) had attained tertiary education, while 20.8% had no tertiary education. Regarding marital status, 77.4% of the respondents were married, and 22.6% were unmarried. Regarding business type, 51.3% operated agro-plant businesses, while 48.7% managed agro-animal enterprises. The sample was predominantly male (65.6%), with females representing 34.4% of the respondents. The age distribution was relatively balanced, with 50.6% of respondents below 40 years and 49.4% above 40 years. On average, entrepreneurs had 10 years of business management experience (SD = 6), with values ranging from 2 to 40 years. The number of full-time employees in these businesses varied between 0 and 85, averaging 21 employees (SD = 18).

Operationalization and Measurement of Constructs

Venture entrepreneurial resilience. Drawing on Iyengar et al.'s (2021) analysis of the literature and their use of a single-dummy indicator for entrepreneurial resilience, this study developed a five-item scale to measure the construct. The items assess the extent to which the entrepreneur's venture was able to introduce new products or services, enter new markets, adopt new processes, employ new technologies, and establish new enterprises following SC disruptions. The entrepreneurs were first asked to indicate the SC disruptions they had experienced, after which they used a 6-point scale (ranging from "1 = none" to "6 = more than 4 times") to rate the items for venture entrepreneurial resilience.

ESC competencies. The study used multi-item scales for each dimension of the six aspects of ESC competencies. The items were derived from Man et al. (2002)'s definitions and characteristics of the manifestations of these competencies. The item modifications were done to reflect

SC contexts. All items were measured on a 5-point scale (1 = strongly disagree, 5 = strongly agree).

The study also included several control variables to account for factors that could influence venture entrepreneurial resilience. These variables were selected based on their theoretical relevance and empirical support in entrepreneurship and supply chain literature. Entrepreneur's education was measured as a binary variable that indicates whether the entrepreneur has obtained tertiary education (1 = tertiary education, 0 = no tertiary education), given that higher educational attainment is often associated with enhanced cognitive skills and strategic decision-making capabilities, which could influence resilience. Marital status (1 = married, 0 = other) was included because marital support systems can provide emotional and financial stability, potentially affecting entrepreneurial outcomes. Gender (1 = male, 0 = female) was controlled for due to existing evidence that gender differences can influence entrepreneurial approaches and access to resources, thereby ultimately affecting resilience. Entrepreneur's age (1 = above 40 years, 0 = below 40 years) was considered to capture variations in experience and risk tolerance, as older entrepreneurs may have more experience and resources but could be less inclined to take risks.

Firm-level controls included firm type and firm size. The firm type was categorized as crop based (1) or animal based (0) to capture sectoral differences that could affect supply chain complexity, market opportunities, and resilience requirements. Firm size, measured by the number of employees, was included because larger firms typically have more resources, structured operations, and established supply chain networks, which could influence venture entrepreneurial resilience.

Data Analysis and Results

Reliability and Validity Assessment

We performed covariance-based confirmatory factor analysis (CFA) to assess the reliability and validity of the measurement model. A multi-factor CFA model comprising all items for venture entrepreneurial resilience and ESE competencies was estimated. The model had a satisfactory fit to the data: $\chi^2 = 481.87$, df = 188, $\chi^2/\text{df} = 2.55$, RMSEA = 0.060, NNFI = 0.925, CFI = 0.939, SRMR = 0.048 (Hair et al., 2019). The factor loadings, their t-values, and associated psychometric statistics are shown in Table 3.1.

Table 3.1 Results of reliability and validity assessment (CFA)

Item/constructs	*Loadings*	*T-value*
Opportunity competency (AVE = 0.58, CR = 0.80). In the last three years, I have been able to		
Perceive unmet customer needs	0.80	Fixed
Actively look for products and services that meet customer needs	0.74	14.95
Seize high quality opportunities in supply and demand markets	0.75	15.18
Relationship competency (AVE = 0.54, CR = 0.78). In the last three years, I have been able to		
Negotiate effectively with suppliers and customers	0.73	Fixed
Maintain ongoing informal relationship with suppliers and customers	0.80	13.49
Communicate with suppliers and customers effectively	0.69	12.33
Conceptual competency (AVE = 0.55, CR = 0.79). In the last three years, I have been able to		
Take reasonable business-related risks in my supply chain	0.86	Fixed
Treat new supply chain problems (e.g., disruption) as opportunity	0.71	14.98
Apply ideas, issues, and observations to different supply chain scenarios	0.66	13.74
Organizing competency (AVE = 0.57, CR = 0.80). In the last three years, I have been able to		
Plan the end-to-end operations of my supply chain	0.84	Fixed
Work with supply chain partners to align interests and goals	0.79	13.92
Ensure my supply chain operations are running smoothly	0.64	12.26
Strategy competency (AVE = 0.56, CR = 0.79). In the last three years, I have been able to		
Align current supply chain issues with long-term goals	0.78	Fixed
Reorganize my supply chain strategies to align with long-term goals	0.84	15.52
Monitor and reorganize my supply chain performance against long-term goals	0.61	11.89
Commitment competency (AVE = 0.54, CR = 0.70). In the last three years, I have been able to		
Dedicate to making my supply chain operations function properly	0.77	Fixed
Refuse to let my supply chain operations fail whenever possible	0.70	7.71
Venture entrepreneurial resilience (AVE = 0.65, CR = 0.90). Please indicate the frequency at which your business engaged in the following actions as a response to the supply chain disruptions it experienced during the last two years:		
Introducing new products/services	0.82	Fixed
Entering new markets with existing/new product/services	0.80	18.67
Introducing new ways of doing things	0.79	18.47

(continued)

Table 3.1 (continued)

Item/constructs	*Loadings*	*T-value*
Employing new technologies (e.g., methods, tools)	0.85	20.29
Establishing a new business enterprise	0.79	18.46

Notes CA = Cronbach's alpha, CR = Composite reliability, AVE = Average Variance Extracted

The results show the items exhibit good internal consistency and convergent validity: the composite reliability values are greater than 0.70, and the above average variance extracted (AVE) values are larger than 0.50 (Hair et al., 2019) (Table 3.2). Also, the lowest AVE (= 0.54) is greater than the highest shared variance (= 0.337) between the scales, demonstrating discriminant validity (Hair et al., 2019).

Hypothesis Testing

We used multiple regression analysis to test the research hypotheses. The results are shown in Table 3.3. Results indicate that conceptual competency (β = 0.289, 95% CI [0.090, 0.490]) and commitment competency (β = 0.262, 95% CI [0.080, 0.443]) positively relate to venture entrepreneurial resilience. However, opportunity competency (β = –0.050, 95% CI [–0.230, 0.143]), strategic competency (β = –0.052, 95% CI [–0.272, 0.163]), organizing competency (β = –0.063, 95% CI [–0.230, 0.116]), and relationship competency (β = –0.085, 95% CI [–0.278, 0.109]) do not relate to venture entrepreneurial competency. The results, therefore, support H1 and H3 but not H2, H4, H5, and H6.

Implications for Theory Development

The study's results confirm the contention that specific competencies (i.e., conceptual and commitment competencies) are significantly and positively related to venture entrepreneurial resilience. Conceptual competency, which relates to an entrepreneur's ability to generate innovative ideas and strategic insights, reflects the sensing capability in DCT. Conceptual competency may help entrepreneurs to "bounce forth" in the face of SC disruptions by supporting the development of novel ideas (Iyengar et al., 2021). This competency is indispensable in agricultural business

Table 3.2 Correlation matrix and construct descriptives

Variable	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*
1. Education													
2. Marital status	0.104*												
3. Business type	–0.089	0.080											
4. Years of managing business	–0.322**	0.210**	0.040										
5. Gender of respondents	0.144**	–0.078	–0.171**	–0.063									
6. Age of the entrepreneur	–0.074	0.424**	0.095*	0.408**	–0.042								
7. Opportunity competency	0.148**	0.108*	–0.023	0.080	–0.067	0.095*							
8. Relational competency	0.044	–0.037	0.007	0.054	–0.073	0.029	0.439**						
9. Conceptual competency	0.249**	0.131**	0.078	0.003	–0.071	0.089	0.581**	0.460**					
10. Organizing competency	–0.063	–0.006	–0.055	0.216**	–0.023	0.059	0.238**	0.240**	0.194**				
11. Strategic competency	0.123*	0.103*	0.000	0.109*	–0.067	0.139**	0.532**	0.384**	0.483**	0.282**			
12. Commitment competency	–0.034	–0.032	0.013	0.043	–0.017	0.013	0.285**	0.310**	0.248**	0.258**	0.280**		
13. Entrepreneurial resilience	0.184**	0.092	–0.210**	–0.009	0.039	0.046	0.109*	0.055	0.190**	0.021	0.088	0.146**	

Variable	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*
Mean	–	–	–	9.93	–	–	3.59	3.83	3.56	3.93	3.64	3.88	3.17
Standard deviation	–	–	–	6.292	–	–	0.82	0.69	0.75	0.64	0.65	0.68	1.19

Note * $p < 0.05$ level (2-tailed); ** $p < 0.01$ level (2-tailed)

Table 3.3 Results of multiple regression analyses

	Dependent variable: venture entrepreneurial resilience			
Control Variables	β	t	*LLCI*[†]	*ULCI*[†]
Entrepreneurs' education (1 = tertiary, 0 = no tertiary)	0.363	2.284*	0.092	0.646
Marital status (1 = married, 0 = Other)	0.188	1.259	–0.096	0.470
Business management experience	0.005	0.444	–0.016	0.024
Firm type (1 = Crop based, 0 = animal based)	–0.550	–4.874**	–0.769	–0.340
Gender (1 = male, 0 = female)	–0.013	–0.111	–0.252	0.226
Age (1 = above 40 years, 0 = below 40 years)	0.077	0.595	–0.173	0.343
Firm size	0.002	0.678	–0.004	0.008
Main Effects				
Opportunity competency	–0.050	–0.567	–0.230	0.143
Relationship competency	–0.085	–0.899	–0.278	0.109
Conceptual competency	0.289	2.884**	0.090	0.490
Organizing competency	–0.063	–0.678	–0.230	0.116
Strategic competency	–0.052	–0.498	–0.272	0.163
Commitment competency	0.262	3.004**	0.080	0.443
R^2	0.129			
F	4.755			
Intercepts	1.797			

Note LLCI = lower-level confidence interval; ULCI = upper-level confidence interval; † 95% Confidence interval

operations, where challenges like climate variability and market fluctuations require entrepreneurs to adapt and innovate (Banson et al., 2016; Kwaramba et al., 2022). Conceptual competency enables small entrepreneurs to reinterpret challenges as opportunities for innovation. For example, entrepreneurs in the agriculture business sector can adopt climate-resilient farming techniques or explore new market channels. For agricultural small businesses, conceptual competency is crucial for maintaining agility, re-evaluating traditional practices, and capitalizing on emerging opportunities. In addition, conceptual competency enables adaptive learning, allowing entrepreneurs to draw lessons from past disruptions and integrate these insights into future planning (Saleh et al., 2024). This self-reliant approach to learning and adaptation is crucial in environments where external support structures are weak and institutional frameworks are underdeveloped (Kovid et al., 2021).

Commitment competency captures an entrepreneur's resolve and tenacity in leveraging resources to seize opportunities (Man et al., 2002). This competency is crucial for maintaining resilience under conditions of adversity (Pulka et al., 2021). Commitment competency allows entrepreneurs to consistently adapt their operational routines, thus upholding flexible supply chain strategies vital for long-term viability. Entrepreneurs with high commitment competency are more effective in implementing strategic adjustments, securing stakeholder support, and addressing operational challenges (Sakib et al., 2022). This commitment is vital for enabling small firms to withstand economic downturns, labor shortages, and infrastructural challenges, which are common in the agricultural sectors of developing nations.

However, contrary to expectations of the study, opportunity competency, relationship competency, organizing competency, and strategy competency do not directly and individually explain variation in venture entrepreneurial resilience. An important implication of this finding is that it might not be beneficial for small business entrepreneurs in the agricultural value chain in Ghana to engage in a wholesale development of ESC competencies as the preliminary evidence from this study shows that it may be more beneficial to prioritize conceptual and commitment competencies to ensure resilience of entrepreneurial ventures. Thus, unlike prior research that suggests that ESC competencies are correlated concepts that may uniformly contribute to variation in organizational outcomes (Hsu et al., 2011), this chapter suggests that there is a need to view the six competencies as distinct manifestations that may differentially drive organizational outcomes such as venture entrepreneurial resilience. Besides, it may be argued that the dimensions of ESC competencies may operate in complementary and substitutive functions, suggesting that they may compensate or substitute for their individual strengths and shortcomings. A theoretical implication, therefore, is that a configurational approach to theorizing about the conceptual domain of ESC competency and its nomological net may be needed to extend the findings captured in this chapter.

Another possible explanation is that while the ESC competencies are important for business operations, their relation to venture entrepreneurial resilience may be contingent on external factors such as the stability of the supply chain, access to financial resources, and institutional support. This suggestion aligns with prior research that proposes

that competencies related to business expansion and external partnerships may play a more indirect role in fostering resilience (Korber & McNaughton, 2018). Thus, modeling the link between ESC competencies and resilience from a contingency perspective may allow scholars to theorize about the potential venture-specific factors and external environment forces that may condition the strength and direction of the relationship between ESC competencies and venture entrepreneurial resilience.

Implications for Policy and Practice

The findings also provide important practical implications for entrepreneurs engaged in agricultural business ventures. First, the direct association between conceptual competency and venture entrepreneurial resilience highlights the importance of business owners and managers cultivating robust problem-solving abilities and the capability to spot opportunities during supply chain disruptions. Training programs that boost conceptual competency of entrepreneurs—like workshops in strategic foresight, scenario planning, and innovation management—can play a vital role. Such programs may help empower entrepreneurs to envisage long-term possibilities, develop flexible business models, and optimize limited resources to maintain operations during challenges. Besides, agricultural business entrepreneurs stand to gain from training programs that enhance their ability to adapt concepts, tackle emerging issues, and innovate under disruptive conditions. These programs should seek to equip entrepreneurs with the essential knowledge and tools to transform disruptions into growth opportunities, allowing them to sustain operations and foster lasting resilience.

Second, the significant role of commitment competency suggests that entrepreneurs' dedication to maintaining a smooth functioning of their supply chain operations is critical for resilience. This implies that agriculture business entrepreneurs should cultivate a resilient mindset by prioritizing operational continuity despite environmental, financial, or logistical challenges. Entrepreneurs should adopt proactive strategies such as diversifying supply sources, strengthening relationships with reliable supply chain partners, and investing in adaptive technologies that can help mitigate disruptions. Additionally, fostering a culture of commitment among employees and supply chain partners through capacity-building initiatives, clear communication of goals, and contingency planning can

ensure that operations continue smoothly during periods of uncertainty. By demonstrating a strong commitment to overcoming obstacles, agricultural business entrepreneurs may enhance their capacity to withstand external shocks and build trust and reliability within their supply chain networks, further contributing to long-term resilience and competitive advantage.

Third, the finding that not all elements of ESC competency contribute to venture entrepreneurial resilience outcome implies that agriculture business entrepreneurs must prioritize their investments in building ESC competencies. While evidence points to conceptual and commitment competencies as key drivers of venture entrepreneurial resilience, entrepreneurs also need to explore the conditions under which the other elements of ESC competency may be leveraged to drive venture resilience. For example, could it be that the extent to which organizing competency contributes to venture entrepreneurial resilience may be dependent upon the degree of stability of the agricultural SC within the venture operates? This is just one of the critical questions that entrepreneurs must explore in an effort to enhance the resilience benefits of the elements of ESC competency.

Policymakers and development agencies can support these efforts by designing initiatives that strengthen commitment through mentorship programs, networking opportunities, and knowledge-sharing platforms tailored to the agricultural context. Additionally, development agencies and financial institutions should recognize the role of intangible capabilities like conceptual and commitment competencies when assessing funding applications by entrepreneurs in the agriculture business sector. Since many entrepreneurs in developing economies face financing challenges, investment decisions should focus on existing physical assets and consider the entrepreneur's strategic vision and innovation potential. Providing innovation grants or performance-based financing to firms that demonstrate strong conceptual planning could encourage resilience-building practices that require minimal capital but have high strategic value.

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