

Supply Chain Relationship Quality Outlook of Women-Owned Agribusinesses in Ghana

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Policymakers and funders have recently developed a keen interest in the agricultural supply chains of women-owned businesses (WOBs) in developing countries. Advocates for "women in agriculture" believe that WOBs face more significant institutional, economic, and managerial hurdles in their supply chains, making them vulnerable supply chain actors. Such issues can impair WOBs' ability to nurture and sustain supply chain relationship quality. However, not only are supply chain relationship quality-related policy interventions for WOBs lacking but the framers and implementers of such interventions also do not have empirical knowledge to guide them.

This research offers initial empirical evidence that gauges the relationship quality outlook for WOBs' supply chains in a segment of Ghana's agricultural sector. In ensuring the reliability and validity of results, the study used varied sets of conceptual frames and indicators to capture supply chain relationship quality from the perspective of 300 women entrepreneurs in agricultural supply chains in the Ashanti region of Ghana.

The results suggest that both the supplier and customer network portions of the supply chains of the WOBs studied have a satisfactory level of supply chain relationship quality. Specifically, the supply chains of these businesses generally exhibit moderate levels of relationship strength (i.e., long-term relationship orientation, commitment, collaboration, coordination, and information sharing) and relationship well-being (i.e., satisfaction and happiness). Other results show dysfunctional relationship issues, including complaints, conflicts, tension, cheating, dishonesty, and bondage, are lower across multiple supply chain scenarios.



Again, supply chain relationship quality differs in magnitude across (1) supply and customer relationships and (1) relationships involving larger and smaller actors in supply and customer markets. Additionally, relationship strength complements relationship wellbeing, but both are lower in supply chains that report greater levels of dysfunctional relationship issues. Furthermore, the study's results suggest that high relationship strength factors or low dysfunctional relationship factors might be insufficient for WOBs to enhance relationship well-being in their supply chains.

The research report discusses the implications of the above results for policymakers along these themes: 1) broadening the scope of institutional support projects for WOBs to incorporate supply chain relationship development; 2) resourcing WOBs in designing and implementing supply chain governance mechanisms; 3) creating and sustaining effective and efficient legal systems to drive supply chain governance mechanisms and relationship quality; 4) increasing WOBs' access to handy information and communication technologies to foster supply chain relationship quality; 5) instituting measures that allow WOBs to generate superior economic rents from supply chain relationship quality.

TABLE OF CONTENTS

EXECUTIVE BRIEF	i
TABLE OF CONTENTS	·ii
LIST OF TABLES	iv
LIST OF FIGURES	v
DEFINITIONS OF KEY TERMS	vi
ABBREVIATIONS	vii
1- INTRODUCTION	1
2 - CONCEPTUAL FRAMEWORK AND RESEARCH OBJECTIVES	4
3 - METHODOLOGY OF THE STUDY	6
3.1 Empirical Setting	6
3.2 Research Sample	7
3.3 Research Design and Data Collection	8
3.4 Questionnaire Development	8
4 - STUDY RESULTS	9
4.1 Demographic information	9
4.2 Relational Resources in WOBs' Supply Chains	12
4.3 Dysfunctional Relationships in WOBs' Supply Chains	18
4.3.1 Complaints	19
4.3.2 Conflicts, tension, dishonesty, and cheating	21
4.3.3 Modern Slavery	24
4.4. Relationship Well-being of WOBs' Supply Chains	25
4.4.1 Satisfaction	25
4.4.2 Happiness	26
4.4.3 Satisfaction and happiness, dysfunctional relationships, and	
relational resources	27
5 - KEY FINDINGS, POLICY IMPLICATIONS, AND CONCLUSIONS	28
5.1 Key Findings	29
5.1.1 Supply chain relationship strength	28
5.1.2 Dysfunctional supply chain relationships	29
5.1.3 Supply chain relationship well-being	30
5.2 Policy and Practical Implications	31
5.2.1 Integrate supply chain relationship development into institutional	
support projects	31
5.2.2 Institute supply chain governance mechanisms	32
5.2.3 Create and sustain effective and efficient legal systems	32
5.2.4 Support access to handy communication technologies	33
5.3 Concluding Remarks	33
	35
APPENDIX: QUESTIONNAIRE ITEMS	39

LIST OF TABLES

Table 1. Individual entrepreneur characteristics 10)
Table 2. Business characteristics	I
Table 3a. WOBs' customer characteristics	I
Table 3b. WOBs' supplier characteristics	2
Table 4a. Differences in relational resources across larger and smaller supplier	
relationships14	ŧ
Table 4b. Differences in relational resources across larger and smaller customer	
relationships14	ł
Table 4c. Differences in relational resources across larger supplier and customer	
relationships15	5
Table 4d. Differences in relational resources across smaller supplier and customer	
relationships	5
Table 5a. Correlations between relational resource dimensions in supplier relationship	
contexts	7
Table 5b. Correlations between relational resource dimensions in customer relationship	
contexts	3
Table 6a. Level of cheating, dishonesty, tension, and conflicts	
in supplier relationships 22	2
Table 6b. Level of cheating, dishonesty, tension, and conflicts in customer	
relationships 22	2
Table 7a. Correlations between dysfunctional relationship dimensions in supplier relationship	
contexts	3
Table 7b. Correlations between dysfunctional relationship dimensions in customer relationship	
contexts	ł
Table 8. WOBs' perception of the degree to which members in their supply chains are	
happy	3
Table 9. How relational resources and dysfunctional relationship issues relate to relational well-	
being	3

LIST OF FIGURES

Figure 1. Conceptual framework of supply chain relationship quality	5
Figure 2. Extent to which WOBs believe relational resources characterize their	
relationship with suppliers	13
Figure 3. Extent to which WOBs believe relational resources characterize their relationship with customers	
Figure 4. Extent to which WOR accessive that complete the prosterior their relationship	13
with suppliers	18
Figure 4b. Frequency of complaints from WOBs' smaller suppliers in the last	
months	19
Figure 5a. Extent to which WOBs perceive that complaints characterize their relationship with sustamers	
	20
Figure 5b. Frequency of complaints from WOBs' smaller customers in the last 12	
months	21
Figure 6. WOBs' satisfaction with suppliers	25
Figure 7. WOBs' satisfaction with customers	26
	-

DEFINITIONS OF KEY TERMS

- · Women-owned businesses: Business enterprises owned and managed by women.
- Focal business: Women-owned businesses whose supply chains were of interest to this study. The study collected data from the perspective of the focal business.
- **Suppliers:** Individuals or entities that supply products or materials to the focal business.
- Key suppliers: Primary raw material suppliers whose relationships the focal business actively manages.
- Smaller suppliers: Suppliers that the focal business perceives as having weaker bargaining power.
- Larger suppliers: Suppliers that the focal business perceives as having stronger bargaining power.
- Customers: Individuals or entities that buy the focal business' products.
- Key customers: Customers that buy in large quantities or frequently.
- Smaller customers: Customers that the focal business perceives as having weaker bargaining power.
- Larger customers: Customers that the focal business perceives as having stronger bargaining power.
- Supply chain relationship quality: The strength of the relationship between businesses and their supply chain members and how well the relationship meets members' needs and expectations.
- Functional supply chain relationships: The degree to which supply chain relationships have relational resources and show positive affectivity. Functional supply chain relationships equal strong supply chain relationship quality.
- Dysfunctional supply chain relationships: The degree to which supply chain relationships are associated with negative emotional states, exploitation, and opportunism. Dysfunctional supply chain relationships equal poor supply chain relationship quality.

ABBREVIATIONS

GPD: Gross Domestic Product
IFC: International Financial Corporation
USAID: US Agency for International Development
WOB: Woman-owned Business
WOBs: Women-owned Businesses

1 - INTRODUCTION



2019). Evidence suggests that women entrepreneurs comprise about 58% of Africa's self-employed population, accounting for 13% of the continent's gross domestic product (World Economic Forum 2022a).

One African country with a promising context for studying WOBs is Ghana. Though Ghana ranks among the top three countries with the most women business owners globally (The Mastercard Index of Women Entrepreneurs 2022), about 85.1% of its WOBs operate in vulnerable contexts (The Mastercard Index of Women Entrepreneurs 2020). One such context is the agricultural supply chains (World Economic Forum 2020b), where about 52% of the country's female population produce, process, distribute, or market food crops (Britt et al. 2020).

The local agricultural sector fulfills more than 90% of Ghana's food needs (World Economic Forum 2020b), contributing 19.7% to the country's GPD in 2021 (The World Bank 2022). Moreover, WOBs level-up gaps in Ghana's agricultural supply chains ignored by mainstream entrepreneurs and large businesses. Specifically, besides feeding local and urban consumers, WOBs in the country's agricultural sector supply essential raw materials to industrial organizations and add to the country's export revenues from agricultural produce. Ultimately, these WOBs drive job and wealth creation and create economic and social value for families and local communities.

Nonetheless, as in most developing countries, there are multiple constraints to WOBs' growth and performance in Ghana, especially in underdeveloped and low-resource settings such as agricultural supply chains (The Mastercard Index of Women Entrepreneurs 2022; IFC 2021; World Economic Forum 2020b). For example, WOBs in Ghana's agricultural supply chains face more significant institutional barriers, limiting their right to own and independently use properties and access to funding, raw materials, advanced technologies, and markets (Muntaka et al. 2021; International Institute for Environment and Development 2022). These issues suggest that WOBs are weaker and more vulnerable actors in the country's agricultural supply chains (Muntaka et al. 2021). Moreover, as micro and small businesses, WOBs typically lack economic and bargaining power while dealing with larger suppliers and customers. Furthermore, due to the lower education level of their owner-managers, WOBs do not have proper managerial competencies; therefore, they are likely to deploy informal approaches in dealing with suppliers and customers (Essuman et al. 2021a; Coy et al. 2020).

Although the abovementioned issues raise questions about how well WOBs build and manage relationships with suppliers and customers, existing policy and research analyses and insights focus on business- and entrepreneur-level issues (The Mastercard Index of Women Entrepreneurs 2022; IFC 2021; World Economic Forum 2020b). Additionally, extant literature and policies on "women in supply chains" are limited to (1) the conditions and managerial positions of women workforce and (2) the relationships between WOB suppliers and larger companies (Paiva et al. 2020). While focusing on the supply markets of large companies, scholars and policymakers have been interested in how large businesses can contribute to developing minority and disadvantaged suppliers such as WOBs (Bateman et al. 2020; Paiva et al. 2020). However, in treating WOBs as suppliers, the literature says little about issues bordering on WOBs' supply chain relationships involving larger or smaller actors.



This study addresses the above deficiencies in the literature on WOBs and women in supply chains. It specifically sheds empirical insights on the supply chain relationship quality of WOBs in agricultural supply chains in Ghana. Supply chain relationship quality refers to the strength of the relationship between businesses and their supply chain members and how well the relationship meets members' needs and expectations (Su et al. 2008). Supply chains with strong relationship quality are rich in relational resources, such as long-term relationship orientation, collaboration, coordination, and information sharing (Su et al. 2008; Fynes et al. 2005a). Moreover, members in such supply chains are more satisfied and happier doing business together and are less likely to experience complaints, conflicts, or opportunistic tendencies, such as dishonesty and cheating (Li 2021; Fynes et al. 2005a).

Supply chain relationship quality is critical for fostering the business growth and survival of WOBs. Research findings show that it enhances supply chain- and firm-level performance outcomes, such as innovation performance (Li 2021), operational performance (Nyaga et al. 2011; Fynes et al. 2005b), and strategic performance (Nyaga et al. 2011; Therefore, while helping WOBs in Ghana's agricultural sector to expand or reinforce the relationship quality of their supply chains is prudent, policymakers must first understand the current state of such businesses' supply chain relationship quality.

2 - CONCEPTUAL FRAMEWORK AND RESEARCH OBJECTIVES

Supply chain relationship quality is a multifaceted construct. However, researchers disagree on its conceptual dimensionality (Li 2021). For example, some conceptualizations of supply chain relationship quality reflect "relationship strength", which scholars believe manifests in different ways, including trust, commitment, long-term relationship orientation, communication/information sharing, cooperation, and adaptation (Li 2021; Su et al. 2008). Other perspectives on supply chain relationship quality emphasize "relationship well-being" or the lack of dysfunctional relationship issues such as opportunistic behaviors (Li 2021).

Therefore, to ensure the reliability and validity of the study's results and conclusions, we capture the relationship quality of WOBs' supply chains from multiple perspectives tapping into functional and dysfunctional relationships (Figure 1). Functional relationships have more excellent relational resources (i.e., relationship strength) and meet members' expectations (i.e., relationship well-being). In contrast, dysfunctional relationships are associated with negative emotional states (e.g., tension), exploitation (e.g., bondage), and opportunism (e.g., cheating). Therefore, we expect relationship strength to increase with relationship well-being and relationship well-being to decrease with increases in dysfunctional relationship indicators.

Precisely, we measure the relationship strength aspect of supply chain relationship quality in terms of collaboration, coordination, information sharing (volume and quality), commitment, and long-term relationship orientation. Second, we measure relationship well-being in terms of satisfaction and happiness. Finally, the third set of the study's indicators captures issues reflecting dysfunctional relationships: complaints, conflicts, tension, dishonesty, cheating, and bondage.

We use the above conceptual understanding and empirical data to address twofold objectives:

- 1. To examine the extent to which supply chain relationship quality characterizes women-owned agricultural businesses in Ghana
- 2. To examine the interrelationships among the components of supply chain relationship quality in women-owned agricultural businesses in Ghana



Figure 1. Conceptual framework of supply chain relationship quality.

3 - METHODOLOGY OF THE STUDY

3.1 Empirical Setting

The broad setting for the study is Ghana's agricultural sector. In 2019, the sector was valued at US\$11.5 million, accounting for 18.5% of the country's GDP. Estimates are that the agricultural industry employs over 50% of Ghana's workforce (GIPC 2021). In particular, 52% of the sector's workforce are women (Britt et al. 2020). Moreover, about 95% and 85% of agro-processing and food distribution actors are women (Wrigley-Asante et al. 2019). These figures demonstrate that Ghana's agricultural supply chain is primarily the domain of women.

The research population comprises WOBs in agricultural supply chains in the Ashanti region of Ghana. The region is one of Ghana's 16 political and administrative regions, with 20 district assemblies, six municipal assemblies, and one metropolitan assembly.¹ The Ashanti region's population was 5,440,463 as of 2021 (Ghana Statistical Service 2022), 65% of which derives their livelihood from agriculture.²

Agriculture is the Ashanti region's dominant economic activity (Asibey et al. 2020). The region has excellent prospects for commercial agriculture in multiple areas: production, distribution, and marketing of cocoa, citrus, oil palm, coffee, yam, cassava, rice, plantain, vegetables, poultry, piggery, and cattle (GIPC 2021; Asibey et al. 2020). However, previous research shows changing production focus and motivation among actors in these supply chains. For example, Asibey et al. (2020) find that, due to low producer price for cocoa, agricultural supply chains in the region have in recent years been dominated by the production and commercialization of palm oil and food crops such as plantain, cassava, yam, and cocoyam.

^{1. ://}mofa.gov.gh/site/directorates/regional-directorates/ashanti-region

^{2.} Ministry of Food and Agriculture. https://mofa.gov.gh/site/directorates/regional-directorates/ashanti-region_

Several institutional (e.g., challenges in accessing land, capital, and farm inputs), infrastructure (e.g., poor transport network), and natural events (e.g., pest and diseases, droughts, irregular rain patterns) factors affect the activities and performance of WOBs in the Ashanti region's agricultural supply chain (Asibey et al. 2020; Wrigley-Asante et al. 2019). For instance, Wrigley-Asante et al. (2019) find women farmers, compared to male farmers, are more disadvantaged in accessing and deploying critical resources for managing changing climate conditions in the Ashanti region.

3.2 Research Sample

We used a pragmatic approach to generate a suitable sample for the study. The process started with the researchers contacting a regional agriculture extension officer to help us access chairpersons of farm-based organizations (FBOs) in two regional districts (Atwima Mponua and Adansi Asokwa). By focusing on FBOs, we limited the sample to women who engage in commercial agricultural activities. Also, our contacts with the agriculture extension officer and the chairpersons of the FBOs allowed us to focus on geographical areas with stronger women's participation in agriculture. Moreover, we considered only two regional districts due to logistical constraints (e.g., poor transportation infrastructure) in accessing rural communities in the Ashanti region.

Working with the chairpersons of the FBOs and local assembly officers, and through referrals, we reached out to 314 women FBO members who owned and managed micro and small businesses in 13 communities (*Atwima Mponua*: Akomferi, Bayerebon, Pakyi, Debra Camp, Antwi Agyei Krom, Anwiafutu, Adeambra, Kansakrom, Nagoole; *Adansi Asokwa*: Nyankomasu, Fumso, Ansa, and Aboabo). Out of the 314 WBOs we engaged, we considered 300 who indicated they were the sole owners of their agri-businesses and had at least one year of business experience in the sector. Tables 1, 2, and 3 capture the individual-, business-, and supply chain-level characteristics of the sample, respectively.

3.3 Research Design and Data Collection

The study was interested in capturing a snapshot of the relationship quality of WOBs' supply chains. Therefore, we employed a cross-sectional survey design to collect data from May to June 2022. Because the target respondents are mainly located or operate in rural communities and have a low educational background, we used face-to-face, interviewer-administered procedures to acquire data. The interviewees were conducted in Twi by four carefully trained, native Twi-spoken enumerators, who are also fluent in English, have at least a bachelor's degree, and had extensive earlier experience administering survey instruments in similar contexts.

The enumerators participated in two fieldwork training sessions: the first prepared them for the pilot survey, and the second focused on the main study. The training focused on the content of the survey instruments (consent form and questionnaire) but not the study's variables or questions, to minimize the chances of the enumerators influencing the responses. In addition, the trainer guided the enumerators to develop the same understanding of each item and scale in the questionnaire in Twi and English. The trainer was a postdoctoral researcher with relevant experience. He worked under the guidance of the lead researcher to train the enumerators, supervise the fieldwork, and develop the dataset.

3.4 Questionnaire Development

We followed a three-stage process to generate the survey questionnaire. The first stage was desk research involving reviewing the literature to understand supply chain relationship quality and generating a pool of indicators to capture it. The second stage involved the project advisors and other experienced supply chain scholars reviewing the indicators, the measurement scales, and the draft questionnaire. We conducted two rounds of reviews in this stage to refine various aspects of the questionnaire. Finally, we piloted the revised questionnaire on 10 target respondents in the third stage. The data from the pilot study showed no major concerns, except that we further revised the questionnaire items, scales, and preambles to enhance clarity and brevity.

The Appendix presents the final indicators and the measurement scales used to measure the various aspects of supply chain relationship quality. The survey required the respondents to mention the degree to which each element of relationship quality characterizes the following portions of their supply chains: 1) relationship with smaller suppliers, 2) relationship with larger suppliers, 3) relationship with smaller customers, and (4) relationship with larger customers.

4 - STUDY RESULTS

This chapter presents the study's results. We used descriptive statistics tools (e.g., means, frequency) to profile the sample and generate results to address research objective one. On the other hand, we used Pearson correlation³ analysis to generate insights to address research objective two. The chapter organizes the results under four sections: demographic information, supply chain relationship resources, dysfunctional supply chain relationship, and supply chain relationship well-being.

4.1 Demographic information

As shown in Table 1, about 95.0% of the sample had no formal education or only received primary education. Additionally, the sample includes mainly entrepreneurs who are married (59.9%), Christians (93.3%), aged 40 years or more (78.8%), and engage in other businesses other than the primary one of interest in this study (66.1%). Moreover, most of the sample had been in agriculture for about 23 years.

Table 2 and Table 3 show the business information of the study's sample. The sample comprises smallholder farmers; only 7% are agro-processors or middle persons (e.g., aggregators). On average, these businesses had operated for about 17 years and mainly focused on tuber/root crops (81%), cocoa (70%), or grains (54%). They also employ primarily uneducated, part-time workers, averaging approximately four.

^{3.} Measures the strength and direction of linear relationship between two (continuous) variables.

Furthermore, as given in tables 3a and 3b, most of the sample source raw materials locally (99.3%) and target local customers (91.3%). The sample businesses deal with smaller and larger customers and suppliers. However, unlike on the supply side, they typically do business with smaller customers. Moreover, on average, each business has three key customers and three key suppliers.

Variable/Category		Frequency	%
Entrepreneur's education level	No formal education Primary school Secondary/Technical/Vocational school Tertiary	88 198 11 3	29.3 66.0 3.7 1.00
Entrepreneur's religious affiliation	Christianity Islam Traditional African Other	279 16 3 1	93.3 5.4 1.0 0.3
Entrepreneur's marital status	Married Single Divorced Separated Cohabitation Widow	179 19 26 4 16 55	59.9 6.4 8.7 1.3 5.4 18.4
Entrepreneur's age (years)	Less than 20 20 to 29 30 to 39 40 to 49 50 or more	0 15 48 82 152	0.0 5.1 16.2 27.6 51.2
Own other businesses?	Yes No	197 101	66.1 33.9
Number of other businesses owned	1 2	189 8	95.9 4.1

Table 1. Individual entrepreneur characteristics

	Min	Max	Mea n	SD
Entrepreneurial experience (years) in the agricultural sector in Ghana	1	59	22.5	12.3
<u>(N = 295)</u>				

Note: SD = standard deviation.

Table 2. Business	characteristics
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Variable/Category		Frequency	%
	Farm-based	279	93.0
Vertical position in the supply chain	Middle person (e.g., aggregators)	5	1.7
	Supplier of farm inputs	0	0.0
	Agro-processor	16	5.3
	Livestock	6	2.0
	Fisheries	2	0.7
	Vegetables	80	26.7
The number of businesses that deal in	Fruits	10	3.3
	Grains	162	54.0
	Tuber/root crop	244	81.3
	Сосоа	210	70.0
	Palm nut/oil	6	2.0

Table 2. continued

Variable		Min	Max	Mean	SD
Focal business age (years)		1	51	17.0	10.9
Focal business workforce structure (number of employees)	Full-time employees (N = 132) Part-time employees (N = 281) Relatives (N = 88) Female employees (N = 124) Employees with formal education (up to secondary school or equivalent) (N = 56)	1 1 1 1	10 30 8 10 9	2.6 3.9 2.4 2.2 2.1	1.7 2.9 1.6 1.3 1.5

Note: SD = standard deviation.

Table 3a. WOBs' customer characteristics

Customer markets	Frequency		%
Only local customers	274		91.3
Local and foreign customers	26		8.7
Characteristic	Mean	Min	Max
Number of key customers (N = 297)	3.5	1	20
Number of smaller customers (N = 250)	4.1	1	120
Number of larger customers (N = 281)	2.6	1	14
Number of institutional customers (N = 167)	1.3	1	6

Table 3b	. WOBs'	supplier	charac	teristics

Supply markets	Frequency		%
Only local sources	291		99.3
Local and foreign sources	2		0.7
Characteristic	Mean	Min	Max
Number of key suppliers (N = 294)	2.7	1	10
Number of smaller suppliers (N = 191)	2.1	1	8
Number of larger suppliers (N = 262)	2.2	1	7

4.2 Relational Resources in WOBs' Supply Chains

This section presents results about critical relational resources that the respondents' supply chains have. It specifically details the amount of, and interrelationships among, these resources in supplier and customer relationships. As shown in Figure 2 and Figure 3, the study results suggest that relational resources, including collaboration, coordination, information sharing, commitment, and long-term relationship orientation, appear adequate in the supplier and customer network portions of the supply chains of the businesses that participated in the study.

Whereas the intensity of collaboration, coordination, and information-sharing activities is believed to be "small", levels of commitment and long-term relationship orientation are considered "moderate" in the respondents' relationships with smaller and larger suppliers. Additionally, the study finds a similar pattern of the extent of these relational resources in the respondents' relationships with smaller and larger.



Figure 2. Extent to which WOBs believe relational resources characterize their relationship with suppliers

Note:

• Each relational resource is rated on a five-point scale: 1 = Not at all; 2 = To a very small extent; 3 = To a small extent; 4 = To a moderate extent; 5 = To a great extent.



Relationship with larger customers (N = 290 to 292) Relationship with smaller customers (N = 263 to 261)

Figure 3. Extent to which WOBs believe relational resources characterize their relationship with customers Note:

• Each relational resource is rated on a five-point scale: 1 = Not at all; 2 = To a very small extent; 3 = To a small extent; 4 = To a moderate extent; 5 = To a great extent.

The study explored whether and how relational resources differ across various supply chain contexts: relationships with larger versus smaller suppliers, relationships with larger versus smaller customers, and relationships with suppliers versus customers. The results reveal that, except for information sharing, collaboration, and coordination, commitment and long-term relationship orientation are significantly higher in WOBs' relationships with smaller suppliers than in their relationships with larger suppliers (see Table 4a). In contrast, the results show that all relational resource dimensions are significantly greater in WOBs' relationships with larger customers than in their relationships with smaller suppliers with smaller suppliers with larger customers than in their relationships with smaller suppliers are significantly greater in WOBs' relationships with larger customers than in their relationships with smaller suppliers with smaller suppliers with larger customers than in their relationships with smaller suppliers with smaller suppliers with larger customers than in their relationships with smaller smaller suppliers with smaller suppliers with larger customers than in their relationships with smaller customers (see Table 4b).

Table 4a. Differences in relational resources	across larger a	and smaller s	supplier
relationships.			

Delational and a second	Relationship	Relationship	Differenc 95% CI			
dimensions	with larger suppliers (L)	with smaller suppliers (S)	e between L and S	Lower	Upper	Ν
Collaborative relationship	2.95	3.09	-0.14	-0.317	0.028	166
End-to-end coordination	2.79	2.84	-0.05	-0.215	0.119	166
Volume of information flow	2.56	2.53	0.03	-0.111	0.172	166
Quality of information flow	2.60	2.52	0.07	-0.083	0.227	166
Commitment	3.83	4.07	-0.24	-0.394	-0.088	166
Long-term relationship orientation	3.98	4.14	-0.16	-0.313	-0.012	166

Note: CI = confidence interval.

Table 4b. Differences in relational	resources	across	larger	and smaller	customer
relationships.					

Relational resource	Relationship Relationship		Difference	95% C		
dimensions	with larger	with smaller	between L	Lowe	Uppe	Ν
	customers (L)	customers (3)	and 3 scores	r	r	
Collaborative relationship	3.06	2.65	0.42	0.260	0.573	257
End-to-end coordination	3.35	2.59	0.76	0.588	0.942	255
Volume of information flow	2.76	2.21	0.55	0.394	0.707	256
Quality of information flow	2.71	2.30	0.40	0.238	0.570	255
Commitment	4.02	3.69	0.33	0.169	0.484	254
Long-term relationship orientation	4.15	3.78	0.38	0.208	0.542	256

Note: CI = confidence interval.

Additionally, the study finds that collaboration, coordination, commitment, and long-term relationship are significantly lower in WOBs' relationships with larger suppliers than in their relationships with larger customers. However, the volume and quality of information flows are considerably higher in WOBs' relationships with larger suppliers than in their relationships with larger customers (Table 4c). The study also finds that information sharing, commitment, and long-term relationship orientation levels are significantly higher in smaller supplier relationships than in smaller customer relationships. Meanwhile, collaboration and coordination levels are similar across smaller supplier and customer relationships (Table 4d).

Table 4c. Differences in relational resources across larger supplier and customerrelationships.

Relational resource	Relationship	Relationship	Difference	95% C		
dimensions	with larger customers (L)	with smaller customers (S)	between L and S scores	Lowe r	Uppe r	Ν
Collaborative relationship	3.06	2.65	0.42	0.260	0.573	257
End-to-end coordination	3.35	2.59	0.76	0.588	0.942	255
Volume of information flow	2.76	2.21	0.55	0.394	0.707	256
Quality of information flow	2.71	2.30	0.40	0.238	0.570	255
Commitment	4.02	3.69	0.33	0.169	0.484	254
Long-term relationship orientation	4.15	3.78	0.38	0.208	0.542	256

Note: CI = confidence interval.

Table 4d. Differences in relational resources a	across smaller supplier and c	ustomer
relationships.		

Relational resource	Relationship	Relationship	Differenc	fferenc 95% CI		
dimensions	with smaller suppliers (L)	with smaller customers (S)	e between L and S	Lower	Upper	Ν
Collaborative relationship	3.09	2.92	0.16	-0.045	0.371	184
End-to-end coordination	2.90	2.80	0.10	-0.099	0.295	183
Volume of information flow	2.59	2.15	0.44	0.238	0.642	184
Quality of information flow	2.60	2.30	0.29	0.078	0.509	184
Commitment	4.09	3.88	0.21	0.023	0.392	183
Long-term relationship orientation	4.15	3.96	0.18	0.000	0.370	184

Note: CI = confidence interval.

The study examined how relational resources are related in the different supply chain relationship contexts presented in the preceding paragraphs. The results generally indicate that supplier relationships with a greater level of one resource exhibit a more substantial degree of other resources. This finding holds for WOBs' supply chains involving larger or smaller suppliers (Table 5a). However, the strength of associations between most aspects of relational resources in the research setting is weak (i.e., the correlation coefficients are below 0.30) in WOBs' supply chains involving larger or smaller suppliers to increase these resources concurrently, or particular issues limit their ability to leverage one relational resource to drive others.

There are reasons and evidence to believe relational resources would complement each other (Lo et al. 2018; Tsai and Hung 2016). For example, long-term relationship orientation helps align exchange parties' interests and goals; therefore, it should engender collaboration, coordination, and information-sharing efforts. Because these efforts facilitate the attainment of shared relationship goals, they are expected to reinforce long-term relationship orientation. However, the study's results show that, in the context of smaller supplier relationships, long-term relationship has a weak positive association with commitment (r = 0.17, p < 0.05) and insignificant associations with collaboration (r = 0.13, p > 0.05) and coordination (r = 0.12, p > 0.05). Moreover, information sharing is a crucial ingredient for well-functioning collaborative arrangements. Similarly, as collaboration involves joint activities and resource sharing, it should permit supply chain partners to share business information. Yet, the study's results show that, in the context of relationships with larger suppliers, collaboration has a weak positive association with information-sharing quality (r = 0.19, p < 0.05) and an insignificant association has a sociation with information-sharing volume (r = 0.10, p > 0.05).

Another intriguing bit of the results is that the strength of positive associations between the relational resources differs across larger and smaller supplier relationships. For example, long-term relationship orientation has stronger positive correlations with all other relational resource types in a larger supplier relationship context than in a smaller supplier relationship context. Additionally, unlike in larger supplier relationship contexts, coordination has insignificant associations with commitment and long-term orientation in small supplier relationship contexts. These results, therefore, indicate that the larger versus small supplier relationship types may moderate the interrelationships between the relational resources.

 Table 5a. Correlations between relational resource dimensions in supplier

 relationship contexts.

Relational resources		1	2	3	4	5	6
1.	Collaborative relationship		0.61**	0.35**	0.33**	0.19**	0.13
2.	End-to-end coordination	0.46**		0.47**	0.47**	0.02	0.12
3.	Volume of information flow	0.10	0.35**		0.76**	0.21**	0.24**
4.	Quality of information flow	0.19**	0.36**	0.80**		0.19**	0.17*
5.	Commitment	0.24**	0.22**	0.27**	0.38**		0.39**
6.	Long-term relationship orientation	0.27**	0.21**	0.25**	0.33**	0.51**	

Notes:

1. Values below the principal diagonal are correlations between relational resource dimensions in larger supplier relationship contexts (N = 265).

2. Values above the principal diagonal are correlations between relational resource dimensions in smaller supplier relationship contexts (N = 193).

3.* p < 0.05; ** p < 0.01.

Consistent with the results for the supplier relationship contexts, the data reveal positive correlations between most of the relational resource dimensions in larger and smaller customer relationship contexts. However, the strength of correlations is generally low (Table 5b). Moreover, the study finds that the magnitude of associations between the relational resources varies between larger and smaller customer relationship contexts. The results suggest that long-term relationship orientation positively correlates with the other relational resource dimensions in larger and smaller customer relationship contexts, where long-term relationship orientation has lower and insignificant correlations with some relational resource dimensions (e.g., collaboration and coordination).

Re	lational resources	1	2	3	4	5	6
1	Collaborative relationship		0.64**	0.11	0.19	0.40**	0.43**
2	End-to-end coordination	0.42**		0.12	0.13*	0.25**	0.25**
3	Volume of information flow	0.14*	0.49**		0.64**	0.16**	0.23**
4	Quality of information flow	0.16**	0.45**	0.75**		0.25**	0.30**
5	Commitment	0.24**	0.38**	0.30**	0.34**		.618**
6	Long-term relationship orientation	0.31**	0.39**	0.29**	0.35**	0.53**	

Table 5b. Correlations between relational resource dimensions in customer relationship contexts.

Notes:

Values below the principal diagonal are correlations between relational resource dimensions in larger customer relationship contexts (N = 290 to 292).

Values above the principal diagonal are correlations between relational resource dimensions in smaller customer relationship contexts (N = 260 to 263).

* p < 0.05; ** p < 0.01.

4.3 Dysfunctional Relationships in WOBs' Supply Chains

This section presents results highlighting the levels of negative emotional states (e.g., complaints, tension), opportunism (e.g., dishonesty, cheating), or exploitation (e.g., debt bondage) within the respondents' relationships with suppliers and customers.



Figure 4a. Extent to which WOBs perceive that complaints characterize their relationship with suppliers



Figure 4b. Frequency of complaints from WOBs' smaller suppliers in the last 12 months.

4.3.1 Complaints

Figure 4a indicates that complaints are generally low in WOBs' relationships with larger and smaller suppliers. Specifically, 80.3% of the WOBs believe complaints do not define relationships with smaller suppliers, whilst 75.8% of these businesses believe complaints are absent in their relationships with larger suppliers. On a scale of 1 to 5, where 1 indicates "absence of complaints", the average complaints associated with larger and smaller supplier relationships were 1.39 (standard deviation = 0.81) and 1.33 (standard deviation = 0.77), respectively. Notwithstanding, almost half of the respondents admit that their smaller suppliers sometimes complain about product pricing, credit period, and lack of upfront payment for supplies (Figure 4b). The research results also indicate that complaints do not substantially define WOBs' relationships with smaller or larger customers, especially in the former case (Figure 5a). Specifically, as many as 78.7% and 75.6% of the respondents believe that complaints do not characterize their relationships with smaller and larger customers, respectively. However, the remaining respondents believe that minimal complaints occur in their relationships with smaller and larger customers.

Regarding WOBs' relationships with smaller customers, the data show that at least a third of the respondents have not recorded customer complaints about product pricing, discount offers, or credit terms in the last 12 months (Figure 5b). However, about a third of the respondents have "sometimes" had smaller customers complaining about these three terms of sales. Moreover, the data suggest that WOBs experience more complaints from smaller customers regarding discounts and credits.



Figure 5a. Extent to which WOBs perceive that complaints characterize their relationship with customers



Figure 5b. Frequency of complaints from WOBs' smaller customers in the last 12 months

4.3.2 Conflicts, tension, dishonesty, and cheating

Consistent with the findings on complaints, the results presented in tables 6a and 6b suggest that conflicts, tension, dishonesty, and cheating are pretty low in supply and customer network relationships in the study's context. For example, at least 70% of the respondents believe these dysfunctional relationship issues do not exist in their relationships with larger and smaller suppliers and customers. However, the results also indicate that such dysfunctional relationship manifestations differ in magnitude. Specifically, the data show that the odds of conflicts and tension occurring are smaller than the probability of dishonesty and cheating occurring in all relationship contexts. For example, between 88% and 90% of the respondents indicate that conflicts or tension do not characterize their relationships with smaller or larger customers and suppliers, whilst between 70% and 73% of them recognize cheating or dishonesty as uncharacteristic of their relationships with smaller and larger customers and suppliers.

		Percent of responses					
Dysfunctional relationship dimension	Relationship context	Not at all	To a very small extent	To a small extent	To a moderat e extent	To a great extent	
Cheating	Larger supplier relationships (N = 265)	73.6	15.8	7.5	1.5	1.5	
	Smaller supplier relationships (N = 193)	72.5	17.6	6.7	1.6	1.6	
Dishonesty	Larger supplier relationships (N = 265)	73.6	17.0	4.5	3.4	1.5	
	Smaller supplier relationships (N = 193)	70.5	15.5	9.8	2.6	1.6	
Tapaian	Larger supplier relationships (N = 265)	89.8	7.5	1.5	1.1	0.0	
rension	Smaller supplier relationships (N = 193)	90.2	4.1	4.7	1.0	0.0	
Conflicts	Larger supplier relationships (N = 264)	90.5	4.5	4.2	0.8	0.0	
	Smaller supplier relationships (N = 192)	88.0	8.9	3.1	0.0	0.0	

Table 6a. Level of cheating, dishonesty, tension, and conflicts in supplier relationships

Table 6b. Level of cheating, dishonesty, tension, and conflicts in customer relationships

		Percent of responses					
Dysfunctional relationship dimension	Relationship context	Not at all	To a very small extent	To a small extent	To a moderat e extent	To a great extent	
Cheating	Larger customer relationships (N = 291)	71.1	12.7	10.7	3.8	1.7	
	Smaller customer relationships (N = 263)	73.4	13.7	6.8	3.8	2.3	
Dishonesty	Larger customer relationships (N = 291)	72.5	15.8	5.8	3.8	2.1	
	Smaller customer relationships (N = 263)	69.6	13.7	11.4	4.2	1.1	
Tapaian	Larger customer relationships (N = 291)	92.4	5.2	1.7	0.3	0.3	
rension	Smaller customer relationships (N = 263)	90.5	5.3	3.8	0.0	0.4	
Conflicts	Larger customer relationships (N = 289)	88.9	9.0	1.7	0.3	0.0	
	Smaller customer relationships (N = 263)	88.6	8.0	3.0	0.0	0.4	

The study also finds that the dysfunctional relationship manifestations have significant positive associations in all supply chain relationship contexts (Tables 6a to 7b). This is because critical indicators of opportunism, dishonesty, and cheating undermine relationship trust and commitment and thus have the potency to trigger tension, conflicts, and complaints. In turn, relationship conflicts, tension, and complaints can weaken trust and loyalty, inducing dishonesty and cheating. The data suggest that, although levels of complaints, conflicts, tension, dishonesty, and cheating are low in the firms' relationships with suppliers, increases in any of these adversarial relationship issues are likely to be accompanied by upsurges in any other. In particular, dishonesty and cheating, followed by conflicts and tension, are more likely to increase together in larger and smaller supplier contexts. Moreover, the study also finds that complaints, conflicts, tension, and dishonesty, and between complaints and conflicts are greater in larger customer relationships than in smaller customer relationships.

Table 7a. Co	orrelations	between	dysfunctional	relationship	dimensions	in supplier
relationship	contexts					

Dysfunctional relationship	Cheating	Dishonesty	Tension	Conflicts	Complaints
dimensions					
Cheating		0.74**	0.35**	0.38**	0.20**
Dishonesty	0.69**		0.38**	0.44**	0.19**
Tension	0.49**	0.39**		0.53**	0.19**
Conflicts	0.52**	0.34**	0.55**		0.33**
Complaints	0.39**	0.44**	0.26**	0.37**	

Notes:

1. Values below the principal diagonal are correlations between relational resource dimensions in larger supplier relationship contexts (N = 264 to 265).

2. Values above the principal diagonal are correlations between relational resource dimensions in smaller supplier relationship contexts (N = 192 to 193).

3.** p < 0.01.

Dysfunctional relationship dimensions	Cheating	Dishonesty	Tension	Conflicts	Complaints
Cheating		0.49**	0.34**	0.25**	0.33**
Dishonesty	0.60**		0.29**	0.28**	0.48**
Tension	0.30**	0.31**		0.25**	0.31**
Conflicts	0.22**	0.33**	0.26**		0.25**
Complaints	0.29**	0.42**	0.30**	0.41**	

Table 7b. Correlations between dysfunctional relationship dimensions in customer relationship contexts

Notes:

1. Values below the principal diagonal are correlations between relational resource dimensions in larger customer relationship contexts (N = 289 to 291).

2. Values above the principal diagonal are correlations between relational resource dimensions in smaller customer relationship contexts (N = 263).

3.** p < 0.01.

4.3.3 Modern Slavery

The study finds that modern slavery matters relating to bondage are minimal in the respondents' relationships with suppliers and customers. Specifically, 93.8% of the respondents entirely disagree that some suppliers can sue them in court should they stop buying from them. In comparison, 97.9% of them do not experience debt bondage.

Regarding relationships with customers, 96.7% of the respondents do not think any of their customers can press a lawsuit against them should they stop supplying them with products. Relatedly, 98.6% of the respondents who may be highly indebted to some customers believe they can sell products to other customers who offer better deals.

4.4. Relationship Well-being of WOBs' Supply Chains

The study assessed supply chain relationship well-being as the degree of relationship satisfaction and relationship happiness in WOBs' supplier and customer relationships. The results for relationship satisfaction are reported first, followed by the results for relationship well-being. Next, the section presents results on how these relationship well-being variables are related to relational resources and dysfunctional relationship manifestations.

4.4.1 Satisfaction

As plotted in figures 6 and 7, the study finds that the WOBs are largely satisfied with their relationships with diverse groups of customers and suppliers. Only up to 10% of the respondents are either "very dissatisfied" or "dissatisfied" with key, smaller, or larger customers or suppliers. Nonetheless, the results also suggest that the magnitude of WOBs' relationship satisfaction tends to vary across customer and supplier categories. For example, the data show that 48.8% of the WOBs are "very satisfied" with key suppliers, and 35.4% and 29.3% are "very satisfied" with smaller and larger suppliers, respectively. A mean analysis indicates the level of WOBs' satisfaction was greatest for relationships with key suppliers. Moreover, the results reveal no significant differences in relationship satisfaction for the different supplier groups.



Figure 6. WOBs' satisfaction with suppliers

Moreover, the results indicate that, whereas 51.2% of the respondents are "very satisfied" with key customers, 36.2% and 29.6% are "very satisfied" with smaller and larger customers, respectively. The level of WOBs' satisfaction with customers is greatest for relationships with key customers, followed by relationships with smaller customers, and then relationships with large customers. A pair-wise comparison reveals that WOBs' satisfaction with larger customers was significantly lower than their satisfaction with either key or smaller customers. In addition, WOBs' satisfaction with key customers is significantly greater than their satisfaction with smaller customers.



Figure 7. WOBs' satisfaction with customers

4.4.2 Happiness

The results in Table 8 indicate the level of supply chain relationship happiness the respondents perceive. The respondents generally experience above-moderate levels of relationship happiness across larger and smaller supplier and customer relationship contexts. At least 40% and 35% of the respondents describe the level of relationship happiness in their supply chains as "moderate" and "great", respectively. In contrast, less than 20% of them appear unhappy with their relationships with suppliers and customers. These results corroborate the findings on relationship satisfaction (figures 6 and 7), generally indicating well-functioning supply chain relationships for WOBs that participated in the study.

	Percent of responses	6							
	Happiness level in larger supplier relationships (N = 265)	Happiness in smaller supplier relationships (N = 190)	Happiness in larger customer relationships (N = 289)	Happiness in smaller customer relationships (N = 261)					
Not at all	1.9	1.1	0.3	3.1					
To a very small extent	3.4	0.5	2.4	6.1					
To a small extent	10.6	4.7	8.7	9.2					
To a moderate extent	46.0	55.3	39.4	46.4					
To a great extent	38.1	38.4	49.1	35.2					

Table 8. WOBs' perception of the degree to which members in their supply chainsare happy



4.4.3 Satisfaction and happiness, dysfunctional relationships, and relational resources

Whereas relational resources nourish and emerge from relationship satisfaction and happiness, dysfunctional relationship issues are indicative drivers and outcomes of dissatisfied and unhappy relationships. Thus, the study analyzed whether these assumptions are valid in the study's setting. Table 9 shows the correlations, indicating the extent and how relational resources and dysfunctional relationship issues related to relationship satisfaction and happiness.

The results generally indicate relationships with high relational resources or low dysfunctional relationship issues experience greater satisfaction and happiness. Notwithstanding, the results reveal low correlations between satisfaction (or happiness) and relational resources (or dysfunctional relationship issues). These results, while unexpected, raise concerns about why WOBs' supply chains have limited capacity to convert relational resources into enhanced relationship well-being or achieve improved relationship well-being in low conditions of dysfunctional relationship issues. We speculate that some unaccounted factors in this study may explain these results. For example, while relationship well-being is desirable, economic actors (e.g., entrepreneurs) primarily seek economic rewards. The level of economic rents that exchange relationships generate can moderate or mediate the actors' interpretation and perception

of relationship well-being. Specifically, we anticipate high relational resources or low dysfunctional relationship issues should trigger superior economic rents for improved relationship well-being outcomes.

Table 9. How relational resources and dysfunctional relationship issue	es relate to
relational well-being	

	Larger suppli	er	Smaller suppl	lier	Larger custon	ner	Smaller custo	mer	
	relationships	a	relationships	0	relationships		relationships °		
Relationship quality dimensions	Relationship	Relationship	Relationship	Relationship	Relationship	Relationship	Relationship	Relationship	
	satisfaction	happiness	satisfaction	happiness	satisfaction	happiness	satisfaction	happiness	
Collaborative relationship	0.19	0.24"	0.19"	0.23"	0.19"	0.28**	0.13*	0.40	
End-to-end coordination	0.20	0.26~	0.34"	0.19*	0.04	0.29**	0.20**	0.22	
Volume of information flow	0.11	0.14	0.23"	0.24"	-0.03	0.20**	0.04	0.25	
Quality of information flow	0.17**	0.24~	0.24"	0.25	0.03	0.18"	-0.03	0.27**	
Commitment	0.21	0.45**	0.19*	0.38"	0.15	0.37**	0.03	0.56**	
Long-term relationship orientation	0.24**	0.53**	0.19"	0.47"	0.23**	0.55"	-0.02	0.68**	
Cheating	-0.29**	-0.25**	-0.18*	-0.07	-0.18**	-0.24**	-0.18**	0.01	
Dishonesty	-0.18**	-0.19**	-0.26**	-0.11	-0.25**	-0.31**	-0.25**	-0.02	
Tension	-0.16**	-0.20**	-0.10	-0.12	-0.09	-0.00	-0.10	0.03	
Conflicts	-0.05	-0.15*	-0.13	0.02	-0.00	-0.10	-0.06	0.06	
Complaints	-0.02	-0.15*	-0.07	-0.06	-0.25**	-0.21**	-0.14*	-0.11	

Notes: aN = 263 to 265; bN = 185 to 263; cN = 279 to 291; dN = 244 to 263; ** p < 0.05; ** p < 0.01.

5 - KEY FINDINGS, POLICY IMPLICATIONS, AND CONCLUSIONS

WOBs in agricultural supply chains are critical socio-economic actors in Ghana and beyond. However, past empirical studies show that WOBs' contributions, survival, and growth partly depend on the relationship quality of their supply chains. Yet, globally, there is a lack of evidence and policy on relationship quality issues within WOBs' supply chains.

Beginning with the growing assumption that WOBs are vulnerable supply chain players, especially in low-resource and institutionally void settings, we studied the relationship quality of WOBs' supply chains in Ghana's agricultural sector. The study's analysis of cross-sectional data from 300 WOBs operating in diverse agricultural supply chains in the Ashanti region of Ghana offers initial empirical insights important for policy decisions and actions. This chapter summarizes the study's key findings and presents policy implications while highlighting the study's limitations.



5.1 Key Findings

Assessment of three different constructs (relationship strength, relationship well-being, and dysfunctional relationship) capturing supply chain relationship quality indicates a satisfactory relationship quality of the participating WOBs in the Ashanti region, Ghana. Our results further reveal that different aspects of relationship quality differ in magnitude across supplier and customer relationships and larger and smaller supply chain actor contexts. Moreover, the study's results show that dysfunctional relationship manifestations hurt supply chain relationship strength and well-being. Additionally, the results indicate that the relationship strength and well-being of WOBs' supply chain are complementary. Notwithstanding, these dimensions of supply chain relationship quality generally have weak correlations.

5.1.1 Supply chain relationship strength

- Relationship strength aspects, including commitment and long-term relationship orientation, appear moderate in all supply chain scenarios: WOBs' relationships with (1) smaller suppliers, (2) larger suppliers, (3) smaller customers, and (4) larger customers.
- Other dimensions of relationship strength, including collaboration, coordination, and information-sharing, are perceived to be generally weaker.
- All relationship strength manifestations tend to be complementary across supply chain scenarios.
- All relationship strength indicators look greater for supplier relationships than customer relationships.
- WOBs in supply chains that possess more substantial relational resources (e.g., long-term orientation, commitment, collaboration) appear happier and more satisfied.

5.1.2 Dysfunctional supply chain relationships

- About eight out of 10 WOBs think complaints are uncharacteristic of their relationships with smaller suppliers, whilst nearly seven out of 10 believe complaints are absent in their relationships with larger suppliers.
- As high as 79% and 76% of WOBs perceive that complaints do not describe their relationships with smaller and larger customers, respectively.
- About nine out of 10 WOBs do not experience debt or relationship bondage in relationships with either suppliers or customers.
- About seven out of 10 WOBs entirely disagree that conflicts, tension, dishonesty, or cheating are defining elements of their relationships with either smaller or larger suppliers or customers.
- Whereas about three out of 10 WOBs perceive conflict and tension in all supply chain relationship situations, just about one out of 10 experience dishonest and cheating behaviors in their supply chains.
- WOBs that report low levels of dysfunctional relationship issues (e.g., complaints, dishonesty, cheating) are less satisfied or happy with their relationships with customers and suppliers.

5.1.3 Supply chain relationship well-being

- At least seven out of 10 WOBs are either "satisfied" or "very satisfied" with their relationships with smaller or larger customers or suppliers.
- WOBs are more satisfied with relationships with larger customers than relationships with smaller customers.
- WOBs' satisfaction with key customers is significantly greater than that of smaller ones.
- WOBs' satisfaction level does not differ significantly between relationships with larger and smaller suppliers.

- The average WOB is moderately happy with its relationship with smaller or larger customers and suppliers.
- The correlations between relationship well-being variables and relational resources and dysfunctional relationship factors are generally low in all supply chain contexts.

5.2 Policy and Practical Implications

This study's results suggest that the supply chains of women-owned agricultural businesses in Ghana have the potential to develop and sustain healthy and beneficial relationships. Still, the results indicate that more effort is needed to strengthen relational resources, keep dysfunctional relationship issues low, and transform these positive relationship qualities into superior relationship well-being outcomes. In what follows, we discuss four broad policy interventions that can enrich supply chain relationship quality for WOBs in Ghana's agricultural sector.

5.2.1 Integrate supply chain relationship development into institutional support projects

State and non-government institutions, including corporate organizations, support WOBs in diverse ways (e.g., access to finance and market) but currently have little to offer these businesses in developing healthy and productive supply chain relationships. Therefore, corporate organizations should broaden the scope of their social responsibility goals and projects to include training and financing technologies that support developing long-term, efficient, and effective relationships for WOBs' supply chains. Policymakers and development practitioners can encourage WOBs to invest more time and energy in building long-term relationships with their suppliers and customers. Training programs that improve WOBs' social or relationship issues while collaborating effectively with their supply chain partners, coordinating business processes, and sharing business information appropriately. Ultimately, policymakers and development practitioners should direct intervention programs toward helping WOBs leverage relational resources to improve economic rewards to drive and sustain relationship well-being outcomes in their supply chains.

5.2.2 Institute supply chain governance mechanisms

Past studies show that businesses that deploy formal contacts and informal relationshipbuilding tactics successfully develop and sustain more robust and beneficial supply chain relationships (Essuman et al. 2021b; Cao and Lumineau 2015). Ghana's collectivist culture can support WOBs' social interactions with their supply chain partners to inspire trust and commitment to pursuing collective goals and interests (Essuman et al. 2021b). However, while informal relationship-building is insufficient for driving supply chain relationship quality and benefits (Essuman et al. 2021b; Cao and Lumineau 2015), WOBs lack the proper managerial competencies to develop and execute appropriate contractual arrangements. Institutions interested in the activities of small businesses, women entrepreneurs, or the agricultural sector can expand or deepen their services (e.g., training support) to address this challenge facing WOBs in agricultural supply chains in the country. These institutions may include local government agencies, the National Board for Small-Scale Industries, the Women in Agricultural Development Directorate, the Ghana Association of Women Entrepreneurs, the Ministry of Food and Agriculture, and other international partners such as USAID, The Mastercard Index of Women Entrepreneurs, and the International Institute for Environment and Development.

5.2.3 Create and sustain effective and efficient legal systems

Business enterprises perceive Ghana's legal systems are weak and inhibitive to productive economic activities. Due to inefficient judicial processes, businesses spend significant time and money enforcing contracts or resolving commercial disputes (World Bank Group 2020). These issues promote behaviors (e.g., cheating, dishonesty, impunity, conflicts) that threaten supply chain relationship quality. Additionally, such problems can make exchange parties lose confidence in the value of formal contracts or social interactions for harnessing supply chain relationship quality (Essuman et al. 2021b). Therefore, the government should take decisive steps to fix the bottlenecks in the country's legal enforcement systems, particularly in rural communities where there is a lack of transparency in the applications of commercial and business laws and voids in law enforcement processes.

5.2.4 Support access to handy communication technologies

Functional supply chain relationships are predicated on technologies that help real-time information sharing and visibility, collaborative support engagements, enable coordinated processes, and help monitor and quickly respond to supply chain problems. However, earlier studies (e.g., Muntaka et al. 2021) and a forthcoming CARISCA survey revealed limited access to and usage of basic communication and information technologies and infrastructure in agricultural supply chains in rural communities in Ghana. Therefore, policymakers and stakeholders of WOBs should roll out access to information systems (devices and internet) and training interventions to address this challenge.

5.3 Concluding Remarks

The study uses diverse conceptual lenses and primary data from the Ashanti region's agricultural sector to gauge the relationship quality of various portions of WOBs' supply chains. The study explores long-held assumptions about the vulnerability of WOBs in agricultural supply chains in Ghana and elsewhere and the high tendency of these businesses to be exploited or experience supply chain relationship-building challenges. Contrary to these assumptions, the study's results reveal some encouraging indices on WOBs' supply chain relationship quality in the research setting.

The study's findings have significant policy implications (see Section 5.2) but also limitations. Therefore, readers and users of this research report should consider the study's limitations while interpreting and drawing inferences from the findings. The main limitations of the study are as follows:

First, the study's data come from a section of agricultural supply chains in the Ashanti region of Ghana. Therefore, the reported results do not capture a holistic outlook of the relationship quality issues in WOBs' agricultural supply chains in the country or the supply chains of other sectors. As such, future studies can focus on country-wide agricultural supply chains or agricultural supply chains in other regions.

Second, over 90% of the sample are into farming or have local suppliers or customers. Therefore, the findings do not extend to other WOBs down the country's agricultural supply chains (e.g., aggregators, processors, and exporters).

Third, qualitatively, this study's findings suggest a similar level of relationship quality for the relationships that WOBs have with either larger or smaller suppliers or customers. However, considering the empirical setting, the above limitation suggests it is less likely for the WOBs to directly deal with 'larger' or more powerful supply chain actors, who may be more exploitative or better positioned to support WOBs. Therefore, we recommend future research to replicate this study by focusing on women aggregators, processors, and exporters that do business with predetermined large companies.

Fourth, the study uses cross-sectional data, limiting our ability to understand the dynamics of the issues of interest over time. We guess that changes in environmental hostility or munificence levels in the country may determine how actors in agricultural supply chains behave and deal with others. As in other supply chains, actors in Ghana's agricultural supply chains have faced severe economic hardships and disruptions in the last three years due to the Covid-19 pandemic and Russia-Ukraine conflicts. These adverse conditions and resulting economic and social stress can deteriorate relationship quality in the country's agricultural supply chains. Therefore, we call for more surveys to build time-series data to detect whether and how supply chain relationship quality in agricultural supply chains involving WOBs changes over time.

Lastly, the study focuses on relationship-level issues but uses data from the perspective of only the focal businesses (i.e., WOBs). All aspects of the data point to similar conclusions. However, we believe future studies using data from different WOBs' supply chain tiers can generate richer conclusions.

We hope the study's findings and limitations offer helpful pathways for future studies to broaden the current understanding of the supply chain relationship quality of WOBs in different contexts.

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SECTION A	: ABOUT YOU
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SECTION C: ABOUT RELATIONSHIP WITH SUPPLIERS

>> Do you source all your raw materials from Ghana?
>> How many key suppliers (i.e., suppliers of primary raw materials whose relationship you actively manage) do you
have?
>> How many smaller suppliers (i.e., those smaller than your business or are not in the position to bargain better than you) do you have?
>> How many larger suppliers (i.e., those bigger than your business or are in a position to bargain better than you) do you have?

	Very	Sati	sfied	Som	eho	Diss	atisfie	1	Very	Not										
How satisfied are you with your	satisfie			W	r		d	dis	satisfie	applicable										
relationships with	d			satis	fied				d											
- your key suppliers?	[]] []	[]			[] []		[]	[]										
- your smaller suppliers?	[]	[]	[]]	[]		[]		[]		[]		[]		[]			[]	[]
- your larger suppliers	[]] []	[]		[]		[]		[]										
In the last 12 months, how often have y	/our	Neve	Som	etime	01	ten	Ver	y –	Alway	Not										
smaller suppliers complained about:		r		S			ofter	n	S	applicable										
 the price at which you buy their supp 	lies	[]		[]		[]	[]		[]	[]										
 the time it takes for you to settle you 	r debts	[]		[]		[]	[]		[]	[]										
 you failing to pay them upfront 		[]		[]		[]	[]		[]	[]										

>> Some of my suppliers can press a lawsuit against me should I stop buying from them: \Box Yes \Box No \Box Unsure \Box

>> I am highly indebted to some of my suppliers to the extent that I cannot buy from other suppliers who have better offers/deals

🗆 True

False

Kindly use the scale below to score the statements that follow:

Indicate (by writing) the extent to which	your relationship with larger	your relationships with smaller
each of the following characterizes	suppliers:	suppliers:
 Collaborative relationship 		
End-to-end coordination		
3. Cheating		
Dishonesty		
5. Tension		
6. Conflicts		
Complaints		
Volume of information flow		
Quality of information flow		
10. Commitment		
11. Long-term relationship orientation		
12. Happiness		

SECTION D: ABOUT YOUR RELATIONSHIP WITH CUSTOMERS

>> Do you sell all your products locally? □ Yes □ No > If not, what percentage of your sales is generated from overseas markets?

>> How many key customers (those who buy in large quantities or frequently) do you have?

>> How many smaller customers (those who are not in a position to bargain better than you) do you have?

>> How many larger customers (those who are in a position to bargain better than you) do you have?

>> How many institutional customers (or organizational buyers) do you have?

	Very	Sati	sfied	Som	eho	Diss	atisfie		Very
How satisfied are you with your relationships with	satisfie			W	r		d	dis	satisfie
	d			satis	fied				d
- your key customers?	[]	[]	[]			[]		[]
- your smaller customers?	[]	[]	[]]		[]		[]
- your larger customers?	[]	[]	[]			[]		[]
In the last 12 months, how often have your smaller		Neve	Som	etime	01	ten	Very	/	Alway
customers complained about:		r		s			ofter	n	S
- the pricing of your products?		[]	[[]]	[]		[]
- discount offers?		[]	[[]]	[]		[]
- your credit terms?		[]		[]		[]	[]		[]

>> Some of my customers can press a lawsuit against me should I stop supplying them with products
Ves I No □ Unsure

>> I am highly indebted to some of my customers to the extent that I cannot sell products to other customers who offer better deals: True

False

Kindly use the scale below to score the statements that follow:

Indi	icate (by writing) the extent to which	your relationship with	your relationships with minority
eac	h of the following characterizes	powerful customers:	customers:
1.	Collaborative relationship		
2.	End-to-end coordination		
3.	Cheating		
4.	Dishonesty		
5.	Tension		
6.	Conflicts		
7.	Complaints		
8.	Volume of information flow		
9.	Quality of information flow		
10.	Commitment		
11.	Long-term relationship orientation		
12.	Happiness		

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