Inter-firm relations and resource-based performance: a contingent relational view of small-scale farmers in Zambia

Ayobami Adetoyinbo and Dagmar Mithöfer
Department of Agricultural Economics, Agrifood Chain Management,
Humboldt-Universität zu Berlin, Berlin, Germany

Abstract

Purpose – Effective and flexible organizational models have become an avenue for driving smallholder competitiveness in the agricultural sector. However, little is understood about the processes by which resource-constrained actors deploy their organizational networks to generate and retain value in rapidly changing agrifood environments. This study examines the moderating effects of business contingencies on the interplay between organizational relationships and the resource-based performance of small-scale farmers in a developing country.

Design/methodology/approach – The authors propose a novel conceptual framework grounded in the relational view, netchain and contingency theories. Cross-sectional data obtained from 330 maize farmers in rural Zambia were analyzed using variance-based structural equation modeling, which involves mediation-moderation analysis.

Findings – The results show that all relational networks – vertical, horizontal and lateral – positively mediate the effects farm resources and social capital have on farmers' performance. However, these effects change depending on the predominant agency situations. Specifically, asymmetric power from customers and reputable competitors weakens the positive effect of closer horizontal relationships on business performance, while the positive effect of tighter informal vertical relationships on farmers' performance weakens under conditions of high affective trust. Moreover, the gender-based multigroup analyses highlight variations in the contingent relational view of men- and women-headed households.

Research limitations/implications – The study relies on cross-sectional data from one agribusiness sector in Zambia, thus generalizations should be cautious.

Originality/value – The uniqueness of this study lies in the proposed theoretical framework and new empirical insights, which extend the scope of the relational view to small-scale farming households in developing countries.

Keywords Relational view, Contingency theory, Organizational relationships, Farm performance, Maize farmers, Africa, Zambia

Paper type Research paper

1. Introduction

Development strategies by governments, agricultural research centers and other agencies have focused on providing strategic resources to increase agricultural productivity and market participation among farming households in developing countries (Devaux *et al.*, 2018).

This is notable for many sub-Saharan African (SSA) countries where agriculture is important for pro-poor economic growth (Adetoyinbo *et al.*, 2022; Ragasa and Mazunda, 2018). Yet, many small-scale farmers, particularly women, remain uncompetitive in the agrifood system (de Brauw and Bulte, 2021), implying that the overall impact of such interventions is low (Devaux *et al.*, 2018).

The formation of closer vertical (i.e. contract farming) and horizontal (i.e. collective action) organizational models is increasingly recognized as a complementary strategy for improving competitive performance among agrifood actors (Adetoyinbo *et al.*, 2023; Bellemare and Bloem, 2018; Bizikova *et al.*, 2020; Mwambi *et al.*, 2016). However, the process through which resource-constrained farmers in SSA generate and retain relational rent through alliances is complex. Farmers interact with numerous partners that provide unrelated resources (e.g. information, and services) and perform various tasks (Barzola Iza *et al.*, 2020; de Brauw and Bulte, 2021; Dentoni *et al.*, 2020). Thus, they must either forge new relationships or adjust existing ones to access resources each partner offers. Many smallholder farmers, however, lack or have limited control over strategic resources required to develop or alter alliances and generate economic rent.

Moreover, the imperfect business environments under which farmers interact and operate may obscure competitive performance. Contextual factors such as power asymmetry and (dis)trust influence how values are created and appropriated, as well as which resources and alliances contribute to better outcomes (Adetoyinbo *et al.*, 2023; Eckerd *et al.*, 2021; Odongo *et al.*, 2017; Owot *et al.*, 2022, 2023). Such complexities raise a critical concern about how resource-constrained actors can deploy organizational networks to generate and retain rents in uncertain business environments (Dentoni *et al.*, 2020).

Several studies have analyzed how strategic resources (Díez-Vial and Fernández-Olmos, 2013; Grande *et al.*, 2011) and organizational relationships (Meemken and Bellemare, 2020; Mojo *et al.*, 2017; Mwambi *et al.*, 2016; Ragasa and Mazunda, 2018) influence agribusiness performance. However, these studies are dyadic [1] and fail to examine the implicit mechanisms through which resources and relational collaborations jointly enhance competitive performance in dynamic business environments. Relevant non-dyadic studies (Kayser *et al.*, 2015; Otter *et al.*, 2014) and those that analyze the joint influence of resources and organizational networks on agribusiness performance (Irfan and Wang, 2019) have examined established industries in developed and emerging countries. This results in scarce empirical evidence for smallholders in developing countries.

To our knowledge, only Adetoyinbo *et al.* (2023) examine how business contingencies and strategic resources influence various organizational relationships, which in turn determine financial performance among artisans in Nigeria. Nonetheless, like previous studies (Kayser *et al.*, 2015; Otter *et al.*, 2014; Ramirez *et al.*, 2021), business contingencies (e.g. market dynamism, dis(trust) and power inequality) were conceptualized to have direct influences on organizational parameters, without considering the possible moderating effects they may have on the interplay between resources, organizational networks and agribusiness performance. Additionally, the indirect (mediation) effects of strategic resources on agribusiness performance through organizational instruments were overlooked. Such conceptual limitations exist because extant studies were based on contingency and resource-based theories, which identify "organizational fit" and "firm-specific resources" as the only drivers of competitive performance, but ignore the importance of relational resources offered by various alliances.

This study expands on previous literature by examining how strategic resources and organizational networks jointly influence the performance of small-scale farmers in uncertain agribusiness conditions. Using primary cross-sectional data from 330 small-scale farming households in rural Zambia for whom maize constitutes the most valuable crop, this study answers the following questions: Which resources and alliances enhance farm performance? What are the implicit mechanisms through which they contribute to superior farm

performance? And under which market and agency conditions are they useful and viable? Zambia is an interesting case because efforts by public and private actors have been geared to improve the productivity and competitiveness of small-scale farmers through resource-providing interventions and organizational re-adjustments (Blekking *et al.*, 2021; Lewis and Wilkie, 2020; McElwee and Wood, 2018). The majority of interventions have focused on maize, the most significant staple food, which accounts for more than 41% of the country's farm income and 60% of its national calorie intake (Manda *et al.*, 2018; Simtowe and De Groote, 2021). As private contracts, agricultural cooperative membership and extension services were encouraged to deliver strategic resources (e.g. credit, entrepreneurial training) and resolve existing marketing challenges, the Food Reserve Agency (FRA) was established to subsidize production and stabilize market conditions in the maize sector (Mason *et al.*, 2013). Despite this, Zambian maize production and productivity remain lower than their potential, with production by uncompetitive and poor farming households (Minah and Carletti, 2019; Simtowe and De Groote, 2021).

In addition to enhancing our knowledge of how to improve the resource-based performance of small-scale farmers in Zambia, this study contributes to the existing literature in four ways. First, we propose an innovative conceptual framework based on the relational view (Dyer and Singh, 1998) and netchain approach (Lazzarini *et al.*, 2001) to uncover how farmers generate relational rents from different alliances. Rather than relying on the paradigm of "organizational fit" and "firm-specific resources," we argue that the relational resources farmers obtain from their alliances are vital for their agribusiness performance. Second, we estimate a partial least squares structural equation model to provide the first empirical evidence of how strategic resources and different relational collaborations directly and indirectly influence business performance. Third, we extend the relational view framework by investigating the moderating effect business contingencies such as power asymmetry and trust have on how relational rent is generated and preserved by small-scale farmers. The contextual perspectives of the relational view are underdeveloped (Dyer *et al.*, 2018) and there is no empirical evidence on how business contingencies shape relational rent (Dentoni *et al.*, 2020), especially among smallholder farmers in SSA. Finally, we conduct a gender-based multi-group analysis to determine whether the contingent relational pathways of farmers differ with the gender of their household heads.

The study is structured as follows. In Section 2, we present the conceptual framework, empirical evidence and hypotheses. We outline the research methods in Section 3 and the results in Section 4. The discussion is presented in Section 5 and the conclusion in Section 6.

2. Conceptual framework, empirical evidence and hypotheses
2.1 The relational view
Figure 1 shows our conceptual framework, which is based on the relational view, netchain approach and contingency theory. The relational view is a theoretical framework that shows the interface between social network perspectives and the resource-based view (Dyer and Singh, 1998). Rather than focus on firm resources, the relational view argues that supernormal performances are driven by resources embedded in inter-firm relations and only achieved when alliances shift from market governance. The theory posits three conceptual dimensions in understanding how organizational structures drive resource-based performance: firm-specific *asset/resources/capabilities*; *inter-firm relations* that underpin various governance mechanisms from which knowledge is routinely shared and complementary network resources are exchanged and developed; and *performance* measures.

2.1.1 Firm-specific resources. Firm-specific resources are defined following the resource-based view as valuable, rare and inimitable material and immaterial assets with the potential

to create better performances (Barney, 2001) [2]. As these (internal) resources are integral for value creation (Gulati, 1999), firms must put them into productive use in combination with the external resources obtained from dyad/network alliances. Among farming households, farm-specific resources are heterogeneous assets and capabilities that drive agribusiness performance but to which farmers have uneven access (Grande et al., 2011). These include physical assets such as natural resources (e.g. farmland), human resources (e.g. business skills) and financial status (e.g. credit access) (Adetoyinbo et al., 2023; de Brauw and Bulte, 2021).

The relational view also considers social capital a critical resource for the formation of inter-firm relations and the generation of relational rent (Dyer and Singh, 1998; Gölgeci et al., 2019). Social capital is a bundle of firm-specific resources that reflects how information, influence and solidarity are made available to partners (Gulati, 1999; Lee et al., 2001). At the individual level, it ensues from the pattern of network relationships that firms form. The value of social capital is rooted within social networks, norms and organizational trust, which ease coordination and collaboration for better organizational performance (Grootaert and Narayan, 2004; Pennings et al., 1998).

2.1.2 The netchain approach to inter-firm relations. The netchain approach disaggregates inter-firm relations into different dyad and network alliances and explains their sources of value and competitiveness (Lazzarini et al., 2001). It focuses on the routines and processes by which dyad/network relationships drive relational rent (Duschek, 2004) [3]. The framework accounts for organizational interdependencies by combining supply chain analysis that emphasizes *sequential interdependence* (i.e. vertical relationships) and network analysis that captures *pooled and reciprocal interdependence* (i.e. horizontal relationships) (Lazzarini et al., 2001). However, the netchain approach focuses on supply chain actors and neglects the third relationship that exists with external partners. As done by Adetoyinbo et al. (2023), we extend the framework by adding the third relationship (i.e. lateral partnerships with external actors) following the stakeholder theory (Freeman, 2010).

2.1.3 Business performance. Business performance refers to the indicators or criteria upon which products, production processes and exchange efficiency are evaluated (Aramyan et al., 2007). This metric is used to inform decision-makers about how implemented network structures, chain management and business processes have advanced the business relative to initial business goals. This study relies on *"efficiency"* indicators that depict critical financial metrics (e.g. supply level and profit) for small-scale farmers.
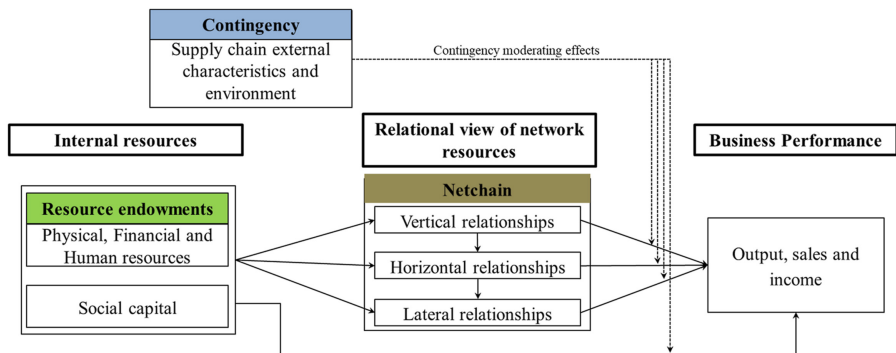
Figure 1.
Conceptual framework based on the relational view, netchain approach and contingency theory

Source(s): Authors' elaboration

2.2 Contingency theory

Contingency theory contends that superior organizational performance ensues when organizational features fit the business situations in which firms operate (Donaldson, 2001). It affirms the principle of "equifinality" that no one best organizational feature exists and that contingencies can create opportunities, constraints and threats depending on how they influence the nexus between various inter-firm collaborations and business performance (Arora *et al.*, 2016; Wang *et al.*, 2015). The unpredictable nature of agrifood systems and the opportunistic behavior of participating actors often subject farming households to high power asymmetry and distrust (de Brauw and Bulte, 2021; Jie *et al.*, 2015). Power asymmetry refers to variation in the capacity of actors to affect the business decisions and relational outcomes of other actors (Mintzberg, 1983). It is "mediated" if influential actors deliberately deploy their influence by promising incentives and rewards or threatening penalties. However, "nonmediated" power captures the perception of less powerful partners about the attributes of other parties (Reimann and Ketchen, 2017; Sridharan and Simatupang, 2013).

Trust is the inclination of one trading partner to depend on another partner (Morgan and Hunt, 1994). It exists when a partner has confidence in another partner's capability, dependability and veracity. Trust can be cognitive- or affect-based (Jeffries and Reed, 2000). Cognitive-based trust concerns the technical capability and the obligations of partners to perform. It is informed by actors' predictability, previous actions, dependability and fairness. Conversely, affect-based trust is emotion-based and rooted in the care and concern for trading partners' well-being.

2.3 Empirical evidence and hypotheses

2.3.1 The interplay between farm resources, inter-firm relations and business performance. Literature shows that farm resources (e.g. farm holdings, experience and financial position) and social capital positively influence the formation of tighter organizational relationships (Abdul-Rahaman and Abdulai, 2020; Dentoni *et al.*, 2020; Mwambi *et al.*, 2016) and business performance (Grande *et al.*, 2011; Zahra, 2010). Farm-specific resources drive inter-firm relations in two ways. First, before close alliances are formed, collaborating partners consider the kind and level of resources other partners possess and determine whether they are strategically useful to maintain or attain superior performance (Duschek, 2004; Dyer and Singh, 1998; Lee *et al.*, 2001). Previous studies observed that actors, particularly those with scarcer resources, are inclined to interact closely with other partners because these organizations provide productive assets and capabilities (e.g. resources and skills training) that they generally lack (Lotfi *et al.*, 2021; Minah and Carletti, 2019). However, only farmers with critical elements of social capital (e.g. network diversity, activities and information exchanges) are positioned to discover these opportunities and effectively liaise with relevant partners to access them.

Second, supply chain networks mediate interplay between firm-specific resources and performance measures (Lazzarini *et al.*, 2001). Superior rent (or low transaction cost) is achieved by forging suitable alliances that leverage farm resources and capabilities. This requires a shift in governance structures toward tighter vertical coordination, such as relational and formal contracting, and/or from loose to closer network interdependence, which are necessary to facilitate partners' joint exchange and utilization of resources (Dyer *et al.*, 2018; Dyer and Singh, 1998). Since past literature showed that having strategic resources such as physical (e.g. farmland) and human (e.g. experience) resources and social capital (e.g. social networks) drives farmers toward tighter inter-firm relations (e.g. contracts and cooperatives) (Meemken and Bellemare, 2020; Mojo *et al.*, 2017; Zahra, 2010), we expect the following hypotheses.

H1. Farm resources and social capital positively influence inter-firm relations

Furthermore, the decision to forge closer network relationships is determined by the features of existing supply chain interactions (i.e. supplier–buyer) (Lazzarini *et al.*, 2001). Farmers facing highly dynamic business situations often require vast information, resources and competence that informal vertical relationships may not offer. Since such interactions are not restricting and small-scale actors generally lack the required resources and competencies (Adetoyinbo *et al.*, 2022; Michler and Wu, 2020), the situation drives them to search for alternative and complementary opportunities from horizontal and lateral relationships. Adetoyinbo *et al.* (2023) find strong interdependence between informal vertical and network structures among artisan processors in Nigeria.

H2. Farmers' vertical, horizontal and lateral relationships are interdependent

Considering our definition of resources and the intricate manner in which superior financial performances are attained (Aramyan *et al.*, 2007; Barney, 2001), we argue that farm resources and social capital underpin business performance (Adetoyinbo *et al.*, 2023; Gölgeci *et al.*, 2019; Grande *et al.*, 2011), but are unlikely to be the main drivers of superior performance (Díez-Vial and Fernández-Olmos, 2013; Dyer *et al.*, 2018). Instead, we expect that each supply chain relationship will interdependently mediate the positive effects of farm resources and social capital on performance (Lotfi *et al.*, 2021). Previous studies have shown that firms' resources positively influence closer organizational relationships, which in turn improve market and financial performances (Leuschner *et al.*, 2013; Odongo *et al.*, 2016; Wang *et al.*, 2015).

H3. Farm resources and social capital positively influence business performance

H4. Inter-firm relations mediate the effect of farm resources on business performance

H5. Inter-firm relations mediate the effect of social capital on business performance

2.3.2 The moderating effect of business contingencies. Business contingencies arise from industry and alliance-specific contexts (Delbufalo, 2012; Eckerd *et al.*, 2021; Jie *et al.*, 2015; Stevens *et al.*, 2015). They moderate the performance effects of firm resources and organizational strategies by determining the situations under which firm resources are valuable for generating economic rent and when supply coordination is fit for maximizing and preserving business performance (Dyer *et al.*, 2018). Previous literature shows that business contingencies moderate the effectiveness of resources and inter-firm collaborations (Delbufalo, 2012; Odongo *et al.*, 2016; Wang *et al.*, 2015).

H6. Business contingencies moderate the effect of farm resources and social capital on business performance

H7. Business contingencies moderate the effect of inter-firm relations on business performance

3. Research methods

3.1 Sampling

The study was conducted in three Zambian provinces: Central, Eastern and Muchinga (see Figure A1). Survey respondents were selected using a multi-stage sampling procedure. In the first stage, four districts and eight chiefdoms were purposively chosen based on the level of smallholder agricultural production and the concentration of public and private organizations (Lewis and Wilkie, 2020). We selected two districts, Petauke and Lundazi, in the Eastern province and Serenje and Mpika in the Central and Muchinga provinces, respectively. Then, two chiefdoms were chosen per district. In the second stage, we chose two farm clusters per chiefdom using a stratified random sampling method based on market distance. Each farm cluster contained an average of 100 farming households, all of which

were surveyed. Overall, a total of 745 farming households were sampled, of which 330 households that considered maize their most valuable crop were retained for the analysis.

3.2 Data collection

Data for this study were obtained from farming households in February–March 2022 using a standardized questionnaire implemented by trained enumerators via face-to-face interviews. The survey tool was first pre-tested with farmers that reside in different locations to our study areas and the corrected version was applied using mobile tablets. Information such as socioeconomic characteristics (e.g. age and farm experience), farm resources (e.g. credit access and business practices), social capital, organizational structures (e.g. vertical, horizontal and lateral), business environment (power relations and trust) and farm performances of the farming households was obtained for the 2020/2021 agricultural season.

3.3 Analytical methods

3.3.1 Exploratory factor analysis. A set of exploratory factor analyses was estimated using the principal component factor to identify suitable factors for the constructs (Cudeck, 2000). The factor analysis was estimated using the varimax method without specifying the number of factors. We checked the quality of the estimation using criteria such as factor loadings, significance, signs and eigenvalues, and dropped items that did not meet the minimum threshold. The extracted factors and their quality measures– presented in Table 1 show that farm resources (RESOURCES) were measured using three factors. Two factors capture the business skills of household heads (McKenzie and Woodruff, 2017) and whether they had access to credit. We included the mean of RESOURCES (and of other constructs) by averaging individual responses for the construct. Social capital (SOCIAL) was measured using two dimensions– "density of groups and networks" and "sources of information" (Grootaert and Narayan, 2004). The first dimension was created by summing the number of groups/networks to which respondents belong while the second dimension consisted of two items generated by summing the number of sources from which respondents obtain general and market/agricultural information.

Vertical (VERTICAL), horizontal (HORIZONTAL) and lateral relationships (LATERAL) were captured using binary variables (Otter *et al.*, 2014). VERTICAL was explained by five factors while HORIZONTAL was explained by four variables and LATERAL by three variables. We measure business performance (PERFORMANCE) using items that capture quantity supplied, income and revealed sales value (Aramyan *et al.*, 2007). Business environments were measured using a seven-point Likert scale that ranged from strongly disagree to strongly agree. Power asymmetry (POWER) was captured using four statements (Adetoyinbo *et al.*, 2023; Otter *et al.*, 2014), whereas trust (TRUST) was measured using a one-factor approach (Gaur *et al.*, 2011).

3.3.2 Partial least squares structural equation modeling (PLS-SEM). Following the explorative factor analysis, we take advantage of PLS-SEM to test our exploratory theoretical frameworks from a predictive viewpoint. PLS-SEM is useful for estimating associations between several observed and latent variables in complex structural models (Hair *et al.*, 2012; Sarstedt *et al.*, 2022). Five main steps outlined in the Supplementary file were followed to test the hypotheses in this study.

3.4 Common-method bias

This research approach is prone to common-method bias because data were provided by the same respondents (Lindell and Whitney, 2001). We dealt with this in two ways. First, items were randomly sequenced in the questionnaire to minimize the possibility that themes in

Constructs	Items	Factor loading[+]	Eigenvalue	Cronbach's α	CR	AVE
RESOURCES	Average business practices score	0.860	2.327	0.849	0.906	0.761
	Credit access	0.766				
	Mean of RESOURCES	0.982				
SOCIAL	Group membership in generic local groups	0.547	2.104	0.654	0.791	0.513
	Number of other sources of general information at the local level	0.818				
	Number of sources of market and agricultural information at the local level**	0.393				
	Mean of SOCIAL	0.987				
VERTICAL	Forge tight relationships with five major trading partners or less	0.671	3.145	0.695	0.812	0.503
	Forge relational contract – long-term informal relationship without written contracts	0.769				
	Sold to COMACO[†]	0.160				
	Sold to Government	0.676				
	Mean of VERTICAL	0.995				
HORIZONTAL	Membership in cooperative associations	0.967	2.224	0.712	0.767	0.511
	Information from cooperative associations	0.297				
	Market information from cooperative association	0.260				
	Mean of HORIZONTAL	0.992				
LATERAL	Access to agricultural extension service	0.880	2.000	0.717	0.847	0.666
	Access to NGOs	0.475				
	Mean of LATERAL	0.999				
EASTERN	Eastern province	1	1	1	1	1
MUCHINGA	Muchinga province	1	1	1	1	1
EDUC	University education	1	1	1	1	1

Table 1.
Overview of factors included in the model and their quality criteria

(*continued*)

Constructs	Items	Factor loading[+]	Eigenvalue	Cronbach's α	CR	AVE
PERFORMANCE	Stated maize quantity supplied	0.906	2.069	0.929	0.950	0.828
	Revealed value of maize supplied	0.942				
	Stated income from maize	0.804				
	Mean of PERFORMANCE	0.979				
POWER	There is unequal bargaining/ negotiating power between you and your customers	0.703	3.065	0.833	0.884	0.610
	Some farmers supply large quantities of your crops to the market	0.785				
	Some people have a very high reputation in your farming business	0.746				
	Certain actors understand the business idea or interactions with customers better	0.625				
	Mean of POWER	0.997				
TRUST	In contact with your customers, you never had the feeling of being misled	1	1	1	1	1

Note(s): CR=Composite reliability. AVE = Average variance extracted. †COMACO denotes Community Markets for Conservation – an organization with a market-driven approach for conservation in the study area. COMACO provides major markets for rural farmers and rewards them for conserving their natural resources. [+]All the factor loadings are standardized and significant at $p<10\%$. Factor loadings, Cronbach's α, CR and AVE are estimated from the PLS-SEM while eigenvalue is generated from the explorative factor analyses. **Cooperative membership and information sources from trading partners were omitted due to potential collinearity problems
Source(s): Authors' elaboration based on PLS-SEM estimations

Table 1.

our model were asked in parallel [4]. Second, we estimated Harman's single variable to check if the model's variance came from one variable (Podsakoff *et al.*, 2003). Since only 12.32% of the model's variance is explained (Tables A2–3), we conclude that common-method bias is likely not a drawback, and respondents could not formulate a mental model of our structural path.

4. Results
4.1 Descriptive statistics
Table 2 summarizes the main socioeconomic features and farm performance of the respondents. The statistics show that 71% of farming households are headed by men [5]. On average, household heads are 40 years old, with farming experience of six years. Farming households cultivate an average of 1.46 ha, suggesting they are small-scale. Regarding

performance, they supply an average of 1.06 tons of maize valued at 2,731 Zambian Kwacha (~152 USD). Additional data show that male- and female-headed households differ in socioeconomic characteristics and farm performance. Although their farm experience is generally equal, male-headed households cultivate more farmland and supply more maize with a higher value than female-headed households. These statistics are consistent with those reported among Zambian maize farmers in previous studies (Manda *et al.*, 2018; Minah and Carletti, 2019; Simtowe and De Groote, 2021) [6].

| Variables | Mean (N = 330) | St. Dev | Household heads | | p-value |
			Male (N = 238)	Female (N = 92)	
Gender of household head (Male = 1)	0.71	0.45			
Age of household head (Years)	40.28	12.87	41.07 (12.36)	38.23 (13.96)	0.036
Farm experience (Years)	6.52	7.10	6.29 (6.78)	7.11 (7.91)	0.826
Cultivated land (Ha)	1.46	0.33	1.61 (3.03)	1.08 (1.19)	0.051
Maize supplied (kg)	1032.37	1337.71	1124.21 (1444.32)	794.78 (978.51)	0.022
Sales (Zambian Kwacha)	2731.68	3679.28	2957.33 (3931.66)	2147.94 (2864.54)	0.036

Note(s): Standard deviations are presented in parentheses
Source(s): Authors' elaboration based on survey data

Table 2.
Socioeconomic characteristics and farm performance of the respondents

4.2 Hypothesis testing

Table 3 presents the standardized estimates of the research model. We first checked the validity and reliability of our structural model. The summary statistics of the indicators and the quality measures are presented in Table 2 and the Supplementary file (Tables A2–11). All the measurement criteria – such as Cronbach's alpha, composite reliability and average variance extracted – are within the recommended thresholds (Sarstedt *et al.*, 2022), implying that the model is considered valid and reliable (Hair *et al.*, 2012).

The results show empirical support for the general hypothesis that RESOURCES and SOCIAL drive PERFORMANCE through inter-firm relations (see Figure A2 for the graphical results). First, we find strong evidence that RESOURCES and SOCIAL positively influence inter-firm relations (H1). Specifically, RESOURCES positively influence VERTICAL, HORIZONTAL and LATERAL while SOCIAL positively influences VERTICAL and LATERAL.

Further results show statistical support for H2, which suggests that organizational relationships are interdependent. VERTICAL positively influences HORIZONTAL, while HORIZONTAL in turn shows a positive effect on LATERAL. Our results also reveal strong empirical support for H3. Both RESOURCES and SOCIAL positively influence PERFORMANCE, implying that PERFORMANCE is resource-based. Other results show preliminary support for H4 and H5, as both VERTICAL and HORIZONTAL have direct positive effects on PERFORMANCE.

The results from the mediation analysis that verifies H4 and H5 are presented in Table 4. They reveal strong evidence that inter-firm relationships mediate the effects of RESOURCES and SOCIAL on PERFORMANCE, hence confirming H4. Specifically, VERTICAL, HORIZONTAL and LATERAL positively mediate the effect of RESOURCES on PERFORMANCE. We also found support for H5 as VERTICAL and LATERAL mediate the relationship between SOCIAL and PERFORMANCE. Lastly, control variables such as location – EASTERN and MUCHINGA – positively influence PERFORMANCE.

Variable	VERTICAL	HORIZONTAL	LATERAL	PERFORMANCE	PERFORMANCE (moderation model)		
					Model 1	Model 2	Model 3
RESOURCES	0.183 (0.002)	0.169 (0.002)	0.098 (0.065)	0.186 (0.001)	0.214 (0.000)	0.223 (0.000)	0.231 (0.000)
SOCIAL	0.110 (0.048)	−0.090 (0.183)	0.175 (0.006)	0.172 (0.013)	0.160 (0.008)	0.176 (0.007)	0.166 (0.007)
VERTICAL		0.146 (0.008)		0.225 (0.000)	0.215 (0.000)	0.217 (0.000)	0.212 (0.000)
HORIZONTAL			0.339 (0.000)	0.168 (0.001)	0.169 (0.001)	0.180 (0.001)	0.179 (0.001)
LATERAL				−0.008 (0.893)	−0.021 (0.735)	0.001 (0.985)	−0.013 (0.852)
EASTERN				0.187 (0.000)	0.192 (0.001)	0.170 (0.001)	0.190 (0.001)
MUCHINGA				0.243 (0.000)	0.260 (0.000)	0.261 (0.000)	0.268 (0.000)
EDUC				0.106 (0.110)	0.106 (0.110)	0.103 (0.103)	0.104 (0.103)
POWER					−0.058 (0.293)		−0.017 (0.768)
TRUST						−0.127 (0.045)	−0.111 (0.105)
POWERxRESOURCES					0.036 (0.564)		0.026 (0.678)
POWERxSOCIAL					0.076 (0.241)		0.056 (0.380)
TRUSTxRESOURCES						0.064 (0.226)	0.048 (0.352)
TRUSTxSOCIAL						0.069 (0.349)	0.059 (0.393)
POWERxVERTICAL					−0.028 (0.521)		0.004 (0.923)
POWERxHORIZONTAL					−0.124 (0.060)		−0.122 (0.054)
POWERxLATERAL					0.069 (0.208)		0.075 (0.181)
TRUSTxVERTICAL						−0.101 (0.060)	−0.108 (0.055)
TRUSTxHORIZONTAL						−0.047 (0.468)	−0.013 (0.822)
TRUSTxLATERAL						−0.003 (0.964)	−0.018 (0.783)
r2	0.042	0.054	0.154	0.224	0.236	0.235	0.240

Note(s): *p*-values are presented in parentheses. The results are based on survey data from 330 farming households for which maize constitutes the main field crop. Models 1–3 are based on results from the moderation analysis. All interactions in the moderation model are standardized and mean-centered to avoid multicollinearity

Source(s): Authors' elaboration based on results from the PLS-SEM

Table 3.
Standardized path
coefficients of the
structural model

Statistics	PERFORMANCE ← VERTICAL ← RESOURCES	PERFORMANCE ← VERTICAL ← SOCIAL	PERFORMANCE ← HORIZONTAL ← RESOURCES	PERFORMANCE ← HORIZONTAL ← SOCIAL	PERFORMANCE ← LATERAL ← RESOURCES	PERFORMANCE ← LATERAL ← SOCIAL
Indirect effect	0.063	0.040	0.047	−0.015	0.027	0.025
Standard error	0.020	0.020	0.016	0.012	0.014	0.015
p-value	0.001	0.042	0.004	0.193	0.048	0.093

Source(s): Authors' elaboration based on mediation analysis of the survey data from 330 farming households for which maize constitutes the main field crop

Table 4.
Mediation effects of inter-firm relations

Models 1–3 in Table 3 presents the moderation effects of business contingencies on the RESOURCES–PERFORMANCE link and the nexus between inter-firm relationships and performance. The results show no empirical support for H6, with POWER and TRUST not significantly moderating the effects of RESOURCES and SOCIAL on PERFORMANCE. Additional results, however, reveal empirical support for H7, as POWER moderates the effect of HORIZONTAL on PERFORMANCE and TRUST moderates the interplay between VERTICAL and PERFORMANCE. Specifically, in Model 3 and as shown in Figure 2, POWER negatively moderates the influence of HORIZONTAL on PERFORMANCE, while TRUST negatively moderates the interplay between VERTICAL and PERFORMANCE. Overall, the explained variance of PERFORMANCE increased from 22.40% in the original model to 24.00% in the moderation model.

Finally, we examined whether the path coefficients of the model differ by the gender of household heads. The result is summarized in Tables A12-13 and Figure A3 and shows that the effect of RESOURCES on VERTICAL is larger among male-headed households than female-headed households. Although the positive effect of residency in Muchinga on PERFORMANCE is greater among female-headed households, TRUST shows a stronger negative moderating effect on the RESOURCES–PERFORMANCE link among female-headed households.

4.3 Posthoc analysis and replication in the soybean and vegetable sectors

To ascertain whether the model suffers from reverse causality, we estimated a switched model by making PERFORMANCE exogenous and testing whether the switched model offers a better fit. We found that the average variance explained in the original model reduced from 22.40% to 13.90% in the switched model, implying that the initial model was a better fit [7].

Furthermore, we evaluated potential endogeneity issues using the Gaussian copula method (Hult *et al.*, 2018). This involves the estimation of the Kolmogorov–Smirnov test with Lilliefors correction and regression models that incorporates the Gaussian copula of constructs. The test reveals that RESOURCES is potentially endogenous since it has a non-normal distribution and significant Gaussian copula (Hult *et al.*, 2018). We address this by estimating two-stage least squares and control function regression models, using the average business score at the district level as an instrument for RESOURCES. The instrument was created by totaling the business scores of households in each district (without the household considered) and dividing by the total number of households in that district. The average district-level business score is correlated with RESOURCES but not with PERFORMANCE, thus representing a valid instrument (Tables A15–16). The results summarized in Table A17 indicate that the effects of the constructs are consistent with those in the original model.

Moreover, the model was tested on farming households for which soybean and leafy vegetables are most valuable. The results in Tables A18–19 reveal that the magnitude and significance of construct effects vary. For soybean, RESOURCES positively influences VERTICAL and HORIZONTAL, while SOCIAL positively influences LATERAL. In the vegetable model, RESOURCES positively influences HORIZONTAL, while SOCIAL positively influences all the inter-firm relations. In both models, only RESOURCES positively influences PERFORMANCE, with no evidence that inter-firm relations mediate the interaction between RESOURCES, SOCIAL and PERFORMANCE.

5. Discussion

In this study, we develop a conceptual framework and examine how internal resources influence inter-firm relations and both, in turn, lead to better competitiveness in dynamic business environments. Our findings, in line with earlier studies (Dentoni *et al.*, 2020;
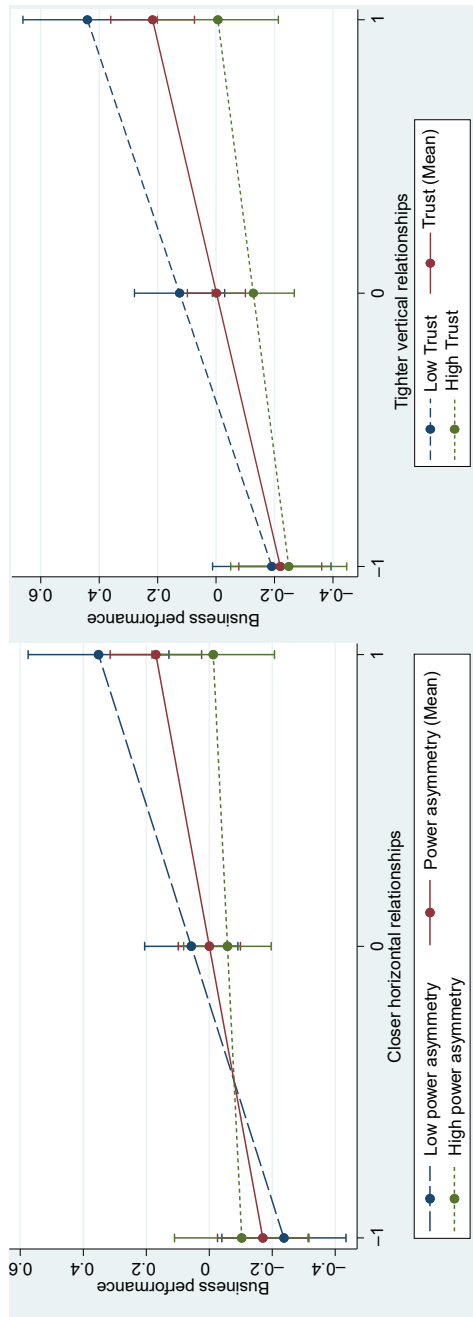
Figure 2.
Moderating effects of
power asymmetry and
trust on interfirm
relations-business
performance link.
Power asymmetry and
trust are standardized
and mean-centered to
avoid multicollinearity

Source(s): Authors' elaboration based on survey data

Meemken and Bellemare, 2020; Minah and Carletti, 2019), show that RESOURCES and SOCIAL drive closer inter-firm relations. This indicates that ownership or access to strategic farm-specific resources (e.g. physical assets and social networks) is a precondition for the formation of closer relational networks such as formal contracts and farmer organizations.

On the interdependence of organizational instruments, we find that VERTICAL positively influences HORIZONTAL, which in turn positively influences LATERAL. This result is consistent with findings from previous studies (Adetoyinbo *et al.*, 2023; Otter *et al.*, 2014), which suggest that supply chain relationships and network structures forged by smallholders are interdependent.

Regarding the mechanisms through which resources and alliances contribute to farm performance, we find that farm-specific resources (e.g. business skills, credit access and social capital) have direct positive effects on farmers' performance, similar to previous studies (Adetoyinbo *et al.*, 2023; Grande *et al.*, 2011). Further results from the mediation analysis reveal that each relationship (e.g. vertical, horizontal and lateral) that farmers forge positively mediates the influence RESOURCES and SOCIAL have on PERFORMANCE, implying that these farm-specific resources contribute directly and indirectly to farm performance through different relational pathways. Specifically, farmers' social capital leads to higher rent when tighter vertical and lateral relationships are forged. They also earn higher values when they combine their farm resources (e.g. business skills and credit) with relational assets (e.g. near-site collection centers); routine knowledge and information (e.g. improved seeds and market information); and informal hierarchical governance structures (e.g. relational contracts marked by guaranteed market and stable prices) customized for them by their trading partners (Lewis and Wilkie, 2020; McElwee and Wood, 2018; Simtowe and De Groote, 2021) [8].

Concerning the market conditions under which inter-firm relations are useful and viable, our moderation models reveal that POWER negatively moderates the HORIZONTAL–PERFORMANCE link, suggesting that the attributes of existing producer and cooperative groups do not fit asymmetric power situations. Given that VERTICAL and HORIZONTAL are strongly interdependent, the coercive power and enforcement exerted by major buyers (e.g. COMACO and FRA) seem to reach individual farmers through the cooperatives. Farmers may react by incurring extra costs to gather complementary information on rewards and threats, which negatively impact their financial performance. Moreover, due to the lack of self- or third-party enforcement in relational contracts (Michler and Wu, 2020), cooperating farmers may lower risks by devoting less effort to productive activities and value exploration in case powerful buyers possibly introduce quotas and evade promised contingent rewards. Another possible explanation is the nonmediated power of influential cooperative members, which creates opportunities for elite capture, and rent extraction without coercion (Courtois and Subervie, 2014; Dyer *et al.*, 2018; Sridharan and Simatupang, 2013). Due to their high cooperative dependency, risk-aversion and inadequate resources, maize farmers may face higher switching and transaction costs that negatively affect their farm performance.

Equally, we found that TRUST negatively moderates the effect of VERTICAL on PERFORMANCE. Although the alliance shows a direct positive effect on PERFORMANCE, we argue that the attributes of current vertical relationships that include relational contracts between farmers and their trading partners do not fit business environments characterized by high affect-based trust. Dynamically, repeated transactions naturally increase relational trust over an alliance's life cycle. However, as partnerships mature, strong affective trust may lead to high relational satisfaction and comfort that cause farming households to become complacent and overly dependent on their partners (Dyer *et al.*, 2018). This may undermine the performance effect of relational contracts by eroding farmers' ability to become entrepreneurial and alert toward alternative information sources and calculated risks necessary for the generation of relational rent (de Brauw and Bulte, 2021). Additionally, the

dysfunctional elements of excessive affective trust can have unintended adverse effects on business performance by causing buyers to reduce the monitoring of their suppliers and rewards for superior performances. Thus, this result challenges the general notion that high trust leads to better business performance (Odongo *et al.*, 2016; Owot *et al.*, 2023), but supports previous studies that show that high trust intrinsically contains condition for misuse, which negatively influences alliance performance (Delbufalo, 2012; Pryor *et al.*, 2023; Stevens *et al.*, 2015; Villena *et al.*, 2019).

The multi-group analysis reveals that male- and female-headed households vary in their relational view in two ways. First, the effect of RESOURCES on VERTICAL is lower among female-headed households than male-headed households. Confirming the notion of a gender gap in contracting (Bellemare and Bloem, 2018), this result can be attributed to the preference trading partners have for contracting with men rather than poorer women that do not possess or lack authority over family resources (e.g. credit and business skills) vital for guaranteed supply. Second, compared to male-headed households, we found that high affect-based trust has more deleterious effects on how female-headed households deploy RESOURCES to generate economic rent. This implies that the negative effect of high affective trust on farm performance is more pronounced among female-headed households in the study area.

6. Conclusion

This study uses a framework based on the relational view, netchain approach and contingency theory to examine the interplay between various inter-firm relations and the resource-based performance of small-scale farmers in dynamic business environments. The results reveal that farm-specific resources such as business practices, credit and social capital positively influence farm performance and these effects are mediated by individual organizational relationships (i.e. vertical, horizontal and lateral) that farming households form. However, we found that the positive effects of closer organizational relationships on farm performance weaken depending on predominant business contingencies. Specifically, the effectiveness of collective actions erodes under high power asymmetry, while high affect-based trust weakens the efficacy of tighter supplier–buyer relationships. Finally, we further find two main distinctions in the contingent relational view of male- and female-headed households.

The overall contribution of this study lies in our research framework and empirical insights that extend the scope of extant literature, which is dyadic, resource-focused and less dynamic (Dyer *et al.*, 2018; Lotfi *et al.*, 2021). Notably, this study offers the first empirical evidence of the implicit processes through which farm-specific resources contribute to superior performance via inter-firm relations among small-scale farmers in a developing country.

Some practical lessons can be drawn from this study. To enhance competitive performance, farmers must put their business skills, financial capital and social capital into more productive use and simultaneously form strong and complementary inter-firm relations with governance mechanisms beyond market coordination. Specifically, farmers must forge tighter supplier–buyer relationships with trading partners and cooperate closely with their competitors to leverage better business performance. This, however, holds in business environments where power relations are balanced and trust levels are optimal. To alleviate the negative moderation of power asymmetry on business performance, powerful cooperating members would need to use their influence to reduce the mediated power from their trading partners. Likewise, more efficient governance structures can be introduced to limit nonmediated power in existing cooperatives and equitably leverage rents to less powerful members.

Furthermore, our study shows that affect-based trust limits the effectiveness of relational contracts between farmers and their trading partners, and the valuable use of farm resources among female-headed households. To avoid building high affect-based trust and limit its unintended negative consequences, partners transacting with farmers can negotiate the terms of their relational contracts and commitments regularly using frequently rotated negotiators (Jeffries and Reed, 2000). Proactively, female household heads with low entrepreneurial status and business aspirations should be trained in how to productively utilize their business skills, capitalize on strong interpersonal trust and generate higher relational rent.

From a policy perspective, policymakers should recognize that the viability and usefulness of strategic farm resources depend on their complementarities with relational resources and business context. Thus, policymakers should ensure that the resources they provide farmers both complement the relational resources in their existing networks and also fit their business situations. This also holds for less-developed soybean and leafy vegetable sectors in Zambia. Since smallholder competitiveness is resource-based, policymakers should encourage the adoption of standard business practices through smallholder training. Likewise, policymakers should make credit facilities easily accessible and inexpensive for smallholders and encourage connection with resource-providing social networks within and outside the industry. Organizationally, purposeful multi-stakeholder platforms can be established to support existing cooperative groups with infrastructural and institutional facilities that would enhance information exchange and trust-building among members, and between members and their trading partners (Barzola Iza *et al.*, 2020; Dentoni *et al.*, 2020).

Several caveats prevail. This study relied on a snapshot of one agribusiness sector in Zambia thus, generalizations of our results to other sectors should be cautious. Since business contexts such as power relations and trust change with time, future studies can test our conceptual framework using panel datasets from other agribusiness sectors and countries.

Notes

1. This describes interaction between two actors.

2. The authors use firm-specific resources interchangeably with farm-specific resources, since the focus is on small-scale farmers.

3. Above-normal value (or profit) is generated via interorganizational relationships and by joint idiosyncratic augmentations of partners, but is unattainable by firms in segregation (Duschek, 2004; Dyer and Singh, 1998).

4. Respondents (i.e. household heads and/or their spouses) with in-depth knowledge and who are responsible for households' farming activities and agribusiness decisions were interviewed. To improve the reliability of the data, the authors recruited enumerators who understood the local dialects spoken in the study areas and assured the respondents of their anonymity.

5. Prior studies show that 18–36% of farming households in Zambia are headed by women (Blekking *et al.*, 2021; Manda *et al.*, 2018), which could be due to the matrilineal system followed in some villages.

6. There is no significant difference in the socioeconomic characteristics of households retained for this study and those who do not consider maize as the main crop (Table A1).

7. Similar results were found for the switched moderation model.

8. The soybean and vegetable models, however, show that only RESOURCES influence farm performance, with no mediating effects via inter-firm relations. Compared to the maize sector, market structures in these sectors are coordinated via loose coordination mechanisms (i.e. market governance) (Figures A4–5). Hence, farmers are unable to generate superior performance because relation-specific resources and investment are minimal and non-existent, which restricts the shared ownership and development of relational resources for value creation.

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Supplementary file
The supplementary material for this article can be found online.

About the authors
Ayobami Adetoyinbo is Postdoctoral Researcher at the Thaer-Institute of Agricultural and Horticultural Sciences, Humboldt-Universität zu Berlin. He is an award-winning researcher, with a research focus on supply chain management, organizations of supply chains, agrifood chain development and the interplay between social and institutional changes in agriculture and rural development. Dr. Adetoyinbo holds a doctorate in Agricultural Economics from the University of Göttingen and a master's degree from the University of Hohenheim. Ayobami Adetoyinbo is the corresponding author and can be contacted at: ayobami.adetoyinbo@hu-berlin.de

Dagmar Mithöfer received her Ph.D. in Economics (focus on Development and Agricultural Economics) at the Leibniz University of Hannover (Germany). She is Professor in Agrifood Chain Management at the Thaer-Institute of Agricultural and Horticultural Sciences at Humboldt-Universität

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zu Berlin. Her research focuses on agrifood chain development and management; sustainability standards; sustainability and business management; impact assessments; and rural development. Her field of specialization further includes the organization of supply chains and linkages between actors in local, regional and international markets.