Factors affecting the relationship quality between coffee farmers and local traders: A case study in a highland commune of Dak Lak, Vietnam

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ABSTRACT

The study examined factors affecting the relationship quality between coffee farmers and local traders. This study used data collected from 201 coffee farmers. The results showed that there were five factors affecting the relationship quality, including collaboration, perceived price, profit/risk sharing was power asymmetry, and effectiveness communication. Profit/risk sharing was the most important factor positively influencing the relationship quality between coffee farmers and local traders while power asymmetry negatively affected the relationship quality. The study also indicated that relationship quality positively impacted farmers' profit and relationship continuity intention between coffee farmers and local traders. Findings could be considered in making programs to develop the agricultural supply chain, especially to the coffee market in Vietnam.

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1. Introduction

Coffee is one of Vietnam's key export agricultural products with a turnover of over three billion USD, accounting for 15% of the country's total agricultural exports. Coffee production has created employment for thousands of rural laborers and greatly contributed to the economic and social development of Dak Lak province (Nguyen & Bokelmann, 2019). Relationship quality maintains business relationships between farmers and buyers, ensures the sustainable development of coffee production, and contributes to economic development of Dak Lak province. In coffee production and consumption, relationship quality helps to limit the disadvantages of nature, provides safe and high-quality food, and increases the competitiveness of products in the market.

Relationship quality helps maintain long-term relationships. Relationship quality is an important aspect of maintaining and evaluating relationships between buyers and sellers. Relationship quality is the awareness of relationship through three components: trust, satisfaction, and commitment. This relationship enables a competitive advantage for farmers to achieve superior business performance in the marketplace. In the agricultural supply chain, relationship quality enables farmers to bond with their buyers regarding production inputs and outputs (Schulze et al., 2006). There are many reasons for which relationship quality among supply chain's partners can reduce monitoring costs, increase cooperation and help stakeholders to deal with difficulties in coffee production (Bandara et al., 2017). Furthermore, improved rela-

tionship quality contributes to business performance for stakeholders (Baihaqi & Sohal, 2013). However, the lack of linkages in coffee production and consumption still remains because relationship quality has not been improved in this industry. The relationships are relatively loose and not legally binding. Therefore, it is necessary to study the determinants of relationship quality to strengthen and enhance the relationship.

Research on relationship quality focuses mainly on advanced economies (Schulze et al., 2006; Schulze & Lees, 2014; Lees & Nuthall, 2015), but has received little attention in transition economies. At the same time, factors affecting relationship quality in the coffee industry have different characteristics compared to those of other industries (Gërdoçi et al., 2017; Nandi et al., 2018). In Vietnam, most studies mainly focus on analyzing factors affecting the linkage between farmers and buyers in the agricultural sector (Nga & Niem, 2017). Some other studies discuss factors influencing small-scale farmers' choice of buyers (Nguyen & Bokelmann, 2019; Pham et al., 2019). The research on relationship quality has different research streams, but there has been no consensus on the conceptualization and construct measurement. Most studies suggest that trust, satisfaction, and commitment are the three dimensions of relationship quality in agricultural supply chains. Studies on factors affecting relationship quality between farmers and local traders have been very limited. Studies have mainly focused on factors that influence relationship quality with little regard to the effectiveness of specific management measures. Therefore, this study is conducted to examine factors affecting the relationship quality between farmers and local traders. The paper also offers some suggestions for better management of the relationship to ensure stable coffee production and consumption, and improve farmers' income.

2. Materials and Methods

2.1. Empirical studies on relationship quality

Relationship quality is a concept of the relationship marketing theory, which originated by Dwyer (1987) and built into the theoretical system of relationship quality by Crosby (1990). Recent studies have determined that relationship quality improves the relationship between buyers and suppliers (Schulze et al., 2006; Schulze & Lees, 2014), maintains the sustainability of relationship, and strengthens cooperative partnership (Fischer, 2013).

To measure and assess the relationship quality, researchers have employed three fundamental aspects on relationship quality, including satisfaction, trust, and commitment (Crosby et al., 1990). Satisfaction describes the situation when the purchasing process meets the needs, expectations, and goals of the parties. Suppliers' satisfaction with other partners helps build stable relationships (Schulze & Lees, 2014). Satisfaction leads to trust and relationship maintenance. Trust creates cooperation in buying and selling relationships, which in turn leads to successful relationship building (Dwyer et al., 1987; Crosby et al., 1990). Trust has widely been discussed in the distribution channel literature (Ebrahim-Khanjari et al., 2011; Capaldo, 2014). Commitment is a measure of the desired relationship and the willingness to maintain and strengthen it. Commitment represents a partner's belief that the alliance with the second partner is important and worth protecting (Nyaga et al., 2010). Thus, commitment is a very crucial measure in a long-term relationship between partners (Chen et al., 2011).

The relationship between farmers and their buyers enables farmers to connect with other stakeholders in the agricultural supply chain (Schulze et al., 2006). Commitment thrives when supply chain partners maintain the relationship for the long term (Chen et al., 2011). Satisfaction also leads to less litigation and relationship termination. Satisfaction among partners leads to the exchange of ideas, thereby allowing them to resolve their issues amicably (Nyaga et al., 2010). Literature has shown various directions for relationship quality research. Previous studies have determined that relationship quality improves the relationship between buyers and suppliers, maintains the sustainability of relationships, and strengthens cooperative partnership.

2.2. Factors affecting relationship quality

Previous studies indicate that factors affecting relationship quality are often mentioned as collaboration, perceived price, profit/risk sharing, power asymmetry, effectiveness communication. Close cooperation helps stakeholders to effectively balance supply and demand, and to enhance mutual benefits, thereby strengthening the relationship quality (Lees & Nuthall, 2015).

Price satisfaction positively affects the development of relationship quality (Jena et al., 2011; Sun et al., 2018). The profit/risk sharing factor is considered as a measure to reinforce the relationship quality (Lages et al., 2005; Sun et al., 2018). In a B2B relationship, power asymmetry implies that stronger partners are more likely to push the weaker partners to make more favorable decisions for them (Lees & Nuthall, 2015; Bandara et al., 2017). This leads to diminished quality of the relationship between farmers and local traders. Effectiveness communication positively affects the relationship quality between the farmers and local traders. Effectiveness communication is to guide and ensure that stakeholders are fully informed in the most responsive manner (Schulze et al., 2006; Kac et al., 2016).

The relationship continuity intention and farmers' profit factor are considered as a direct and positive result from relationship quality (Jena et al., 2011). A quality relationship requires the desire to maintain long-term relationship stability. Relationship continuity intention is considered a positive outcome of a quality relationship (Schulze et al., 2006). Relationship quality helps stabilize production, makes coffee easier to sell in the market, and increases coffee farmers' income. Thus, the relationship between buyers and sellers has become increasingly important in enhancing business performance (Baihaqi & Sohal, 2013).

From the transaction cost economics (TCE) perspective, a lot of literature deals with the various forms of governance structures in supply chains, with an emphasis on vertical integration. This paper intends to develop and empirically test a farmer-buyer relationship in terms of relational governance. In this paper, TCE theory and relational theory are combined to study the relationship quality between coffee farmers and local traders in the coffee supply chain.

Given above findings, seven hypotheses have been defined as follows:

H_1: Collaboration positively affects the relationship quality between farmers and local traders.

H_2: Perceived price positively affects the relationship quality between farmers and local traders.

H_3: Profit/risk sharing positively affects the relationship quality between farmers and local traders.

H_4: Power asymmetry negatively affects the relationship quality between farmers and local traders.

H_5: Effectiveness communication positively affects the relationship quality between farmers and local traders.

H_6: Relationship quality positively affects farmers' profit.

H_7: Relationship quality positively affects the relationship continuity intention between farmers and local traders.

Based on the literature review and theoretical framework, a model of factors affecting the relationship quality between coffee farmers and local traders is proposed:

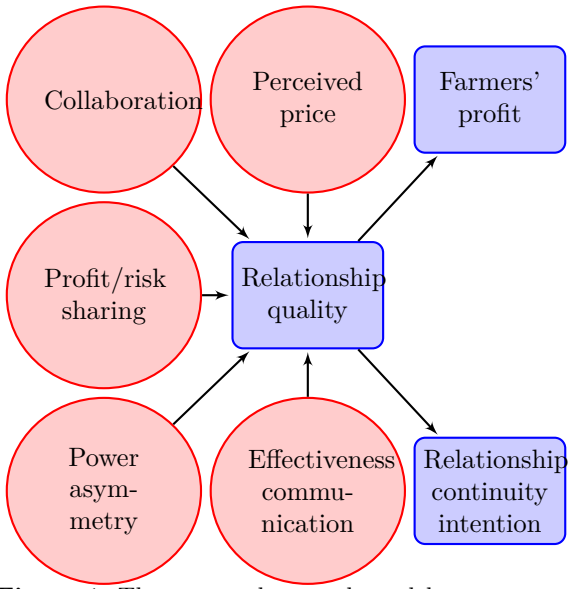

Figure 1. The proposed research model.

In Figure 1, the factors affecting the relationship quality in the proposed research model are mentioned as: (1) Collaboration, (2) Perceived price, (3) Profit/risk sharing, (4) Power asymmetry, (5) Effectiveness communication. At the same time, the relationship continuity intention and farmers' profit factor are considered as a positive result from relationship quality.

2.3. Research methods

2.3.1. Selection of study area

Ea kiet, a highland commune in the Cu M'Gar district of Dak Lak province, is chosen for this study (Figure 2). Due to its unique geographical

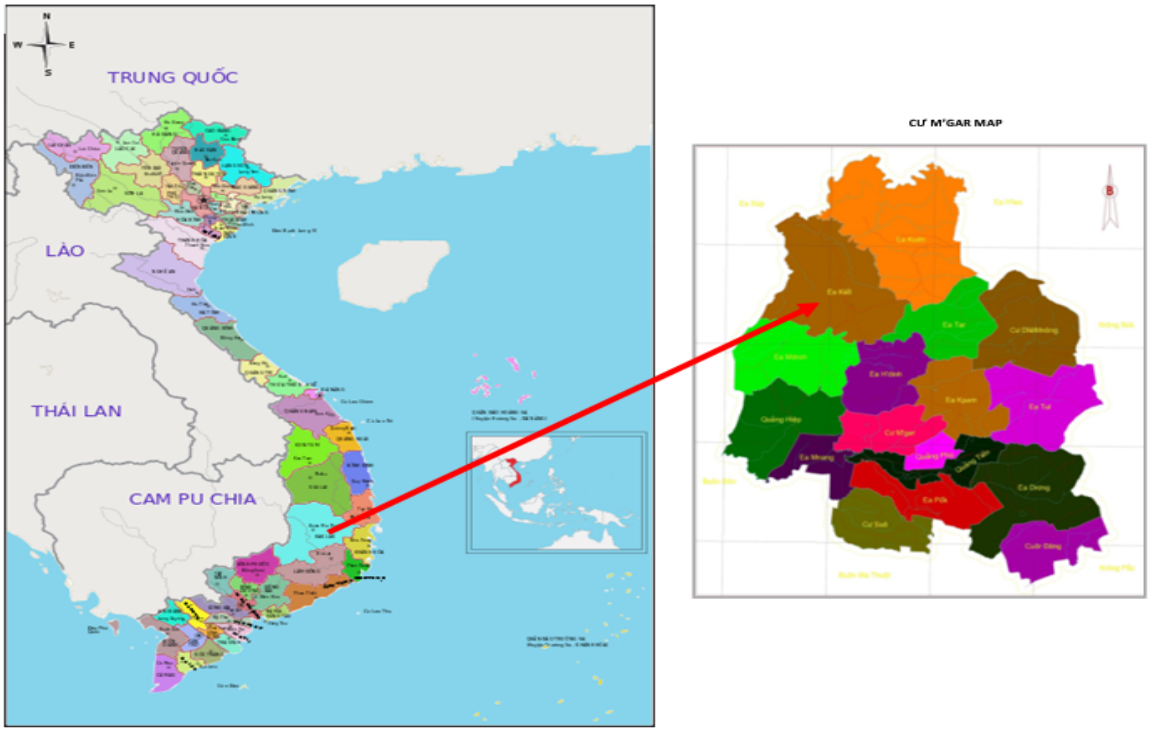

Figure 2. Study area.
Source: Statistical office of Cu M'Gar district, 2020.

location with high altitude and favorable natural conditions with rich basaltic soil, Ea Kiet commune is one of the largest coffee-producing localities in Dak Lak. Coffee production employs rural laborers and greatly contributes to the economic and social development of the region. Local authorities have developed a model that encourages the coordination of production and distribution between smallholder farmers and industrial coffee processors. In addition, transactions between farmers and local traders in Ea Kiet represent the whole Central Highlands region.

2.3.2. Data collection

According to Hair et al. (1998), the ratio between the number of observations and the number of variables should be 5:1. Therefore, the minimum sample size must be 170. We used in-person survey method to approach 201 coffee farmers who have been selling their products to local traders. Most respondents are small-scale farmers (coffee-growing area < 2 ha). The sample was selected using quota sampling. The surveyed households were selected according to the total number of coffee-producing households in each village and the coffee-producing area of the households. The statistical analysis has been conducted using SPSS and AMOS software.

2.3.3. Data analysis

Exploratory factor analysis (EFA) was conducted once the scales meet the reliability requirements. Confirmatory Factor Analysis (CFA) was utilized for evaluating the scale's convergent validity and discriminant validity. Finally, Structural Equation Model (SEM) was applied to estimate the research model and the proposed hypotheses. To assess the factors that might influence the relationship quality, a five-point Likert scale was used, where 1 = total disagreement and 5 = total agreement.

3. Results and Discussions

3.1. Socioeconomic characteristics of coffee farmers

Descriptive statistics show that the average age of coffee farmers is 42 years old with the highest age group of 35 - 45 (32.8%) and 45 - 55 (28.9%).

Table 1. Socioeconomic characteristics of coffee farmers

Variables		Quantity	Percent (%)	Total
1. Gender	Male	181	90	201
	Female	20	10	
2. Age	< 25	11	5.4	201
	25 - 35	47	23.4	
	35 - 45	66	32.8	
	45 - 55	58	28.9	
	> 55	19	9.5	
3. Education	1 - 5	41	20.4	201
	6 - 9	63	31.3	
	10 - 12	78	38.8	
	> 12	19	9.5	
4. Ethnic	Kinh	178	88.6	201
	Other	23	11.4	
5. Farm size	< 0.5 ha	68	33.8	201
	0.5 - 2 ha	125	62.2	
	> 2 ha	8	4.0	

The percentage of males involved in coffee production constitutes 90% of the total number of households. The average education level is 9 in this study (Table 1).

The average farm size is 1.3 ha. The number of farmers with coffee land smaller than 0.5 ha, from 0.5 - 2 ha, and more than 2 ha account for 33.8%, 62.2%, and 4.0% of the total farmers, respectively. The coffee harvest at Ea Kiet always lasts about one month, from late November to early December. Most coffee farmers obtain a gross margin of 60 to 80 million VND/ha/crop year. Coffee farmers achieve an average productivity of 2 - 3 tons/ha. In local coffee bean market, local traders still acquire the largest share of the market supply.

3.2. Scale reliability assessment in the research model

This study uses Cronbach's Alpha to test the strictness and correlation of items in the scale. Four observed variables were deleted because corrected item-total correlation is below 0.3 (Gliem & Gliem, 2003). The results show that the eight factors with 30 variables ensure reliability and can be used for the next step.

The result of EFA has guaranteed tests: (1) Reliability of variables (Factor loading > 0.5); (2) Eigenvalue = 1.098 > 1; (3) Research model's suitability test (0.5 < KMO = 0.836 < 1); (4) Bartlett's test for correlation of variables (Sig. = 0.000 < 0.05); (5) Cumulative variance test = 67.65% > 50% (Gerbing & Anderson, 1988; Cudeck, 2000). EFA results form 8 constructs in the study (Table 2).

The result of CFA reveals that all goodness-of-fit measures exceed the recommended acceptance levels (Chi-square = 675.114; df = 377 (P = 0.000); CMIN/df = 1.791 (< 3). All factor loadings are above 0.5 and statistically significant. Therefore, the observed variables are closely related to their representative factors. Furthermore, other goodness-of-fit indices are also met (TLI = 0.907; CFI = 0.920; GFI = 0.831 and RMSEA = 0.063 (< 0.08)). As a result, it can be concluded that the model well fits the data (Steiger, 1990).

The result of CFA confirms the unidimensionality and convergent validity of eight scales. It demonstrates that the composite reliability of the unidimensional scales is greater than 0.7 and the average variance extracted (AVE) is greater than 0.5 (Table 3). Therefore, all scales meet the requirements of reliability and convergent validity (Fornell & Larcker, 1981).

To satisfy the discriminant validity requirement, the AVE for two constructs should exceed the squared correlation between them. There is no correlation between any two constructs that is higher than either of the square root of constructs' AVEs. At the same time, maximum shared variance (MSV) is less than average variance extracted (AVE) (MSV < AVE). This pro-

Table 2. The factor loadings

Factors	Sign[1]	Factor loadings							
		1	2	3	4	5	6	7	8
Effectiveness communication	EC1	0.872							
	EC2	0.789							
	EC3	0.795							
	EC4	0.981							
Farmers' profit	FP1		0.629						
	FP2		0.946						
	FP3		0.861						
	FP5		0.854						
Relationship quality	RQ1			0.768					
	RQ2			0.814					
	RQ3			0.749					
	RQ4			0.970					
Power asymmetry	PA1				0.693				
	PA2				0.681				
	PA3				0.710				
	PA4				0.913				
Perceived price	PP1					0.741			
	PP2					0.655			
	PP3					0.706			
	PP4					0.854			
Relationship continuity intention	CI1						0.573		
	CI2						0.814		
	CI3						0.657		
	CI4						0.869		
Collaboration	CN1							0.787	
	CN2							0.868	
	CN3							0.776	
Profit/risk sharing	RS1								0.737
	RS2								0.751
	RS3								0.924
Eigenvalues		8.145	3.725	2.752	2.135	1.953	1.644	1.347	1.098
Cumulative variance = 67.65%		26.072	11.563	8.068	6.165	5.343	4.445	3.384	2.617
Cronbach's Alpha		0.916	0.899	0.907	0.856	0.823	0.848	0.853	0.844

[1]EC: effectiveness communication; FP: farmers' profit; RQ: relationship quality; PA: Power asymmetry; PP: perceived price; CI: relationship continuity intention; CN: collaboration; RS: profit/risk sharing.

Table 3. Results of reliability and convergent

Component scales	Number of observed variables	Composite reliability (CR)	Average variance extracted (AVE)
Collaboration (CN)	3	0.855	0.663
Perceived price (PP)	4	0.825	0.542
Profit/risk sharing (RS)	3	0.846	0.648
Power asymmetry (PA)	4	0.858	0.603
Effectiveness communication (EC)	4	0.919	0.740
Relationship quality (RQ)	4	0.909	0.714
Relationship continuity intention (CI)	4	0.849	0.585
Farmers' profit (FP)	4	0.905	0.706

Table 4. Results of discrimination validity

Component scales	Number of observed variables	Average variance extracted (AVE)	Maximum Shared Variance (MSV)
Collaboration (CN)	3	0.663	0.367
Perceived price (PP)	4	0.542	0.108
Profit/risk sharing (RS)	3	0.648	0.158
Power asymmetry (PA)	4	0.603	0.343
Effectiveness communication (EC)	4	0.740	0.033
Relationship quality (RQ)	4	0.714	0.218
Relationship continuity intention (CI)	4	0.585	0.367
Farmers' profit (FP)	4	0.706	0.215

vides support for discriminant validity among the constructs (Table 4).

3.3. Structural equation modeling analysis and hypothesis test

SEM analysis with indices such as df = 387, Chi-square = 766.685, P = 0.000, CMIN/df = 1.981 < 3 and other goodness-of-fit indices were also achieved. Thus, five factors affecting the relationship quality between farmers and local traders include collaboration, perceived price, profit/risk sharing, power asymmetry, effectiveness communication. The most important contributor to the relationship quality is profit/risk sharing with a regression weight of 0.28. Collaboration (0.20) is the second most important relationship quality determinant, followed by effectiveness communication (0.17) and perceived price (0.16). Finally, power asymmetry factor has a significantly negative impact (-0.19). The results also show that the relationship quality factor positively affects farmers' profit (0.48) and relationship continuity intention (0.50) among coffee farmers and local traders (Figure 3). Those five determinants explain approximately 35% of the variance in the relationship quality score.

In addition, the path coefficients are statistically significant (P-value < 0.05; C.R > 2) and are consistent with the model (Table 5). Therefore, hypotheses H_1, H_2, H_3, H_4, H_5, H_6, and H_7 are accepted at a significant level of 5%. The results of the hypotheses test confirm statistically significant relations between the factors in the model.

The study uses the Bootstrap method with the number of resamples N = 500 to test the reliability of estimates (Schumacker & Lomax, 2004). The bootstrap method involves iteratively resampling a dataset with replacement to test the reliability of the estimates. The results show that the standard errors of Bias are very small (SE-Bias < 0.05), so it can be concluded that the estimates in the model are reliable (Table 6).

3.4. Discussion

These results can be better explained in practice. Clearly, the business relationship also occurs at least in part through positive collaboration. The collaboration covers all aspects that can be shared by stakeholders to achieve an in-depth understanding (Touboulic & Walker, 2015). A positive collaboration contributes to the stability of relationships by reducing the probability of partners switching. Collaboration involves resolving conflicts among supply chain stakeholders so that relationships can remain for a long time. Furthermore, the collaboration in business relationships mostly helps to enhance the relationship quality. Besides, effectiveness communication is also the main determinant of relationship quality, holding an important mediation role. Communication refers to accessing information (prices, market orientation, quality requirements, and promotion plans) to help farmers adapt more quickly to market changes. Thus, communication positively influences relationship quality. From a TCE perspective, information sharing counteracts opportunistic behavior and reduces adverse selection as well as moral hazards.

Profit/risk sharing helps to reduce instability, leading to relationship maintenance. Buyers share risks with farmers in terms of regularly exchanging market information and manufacturing tech-

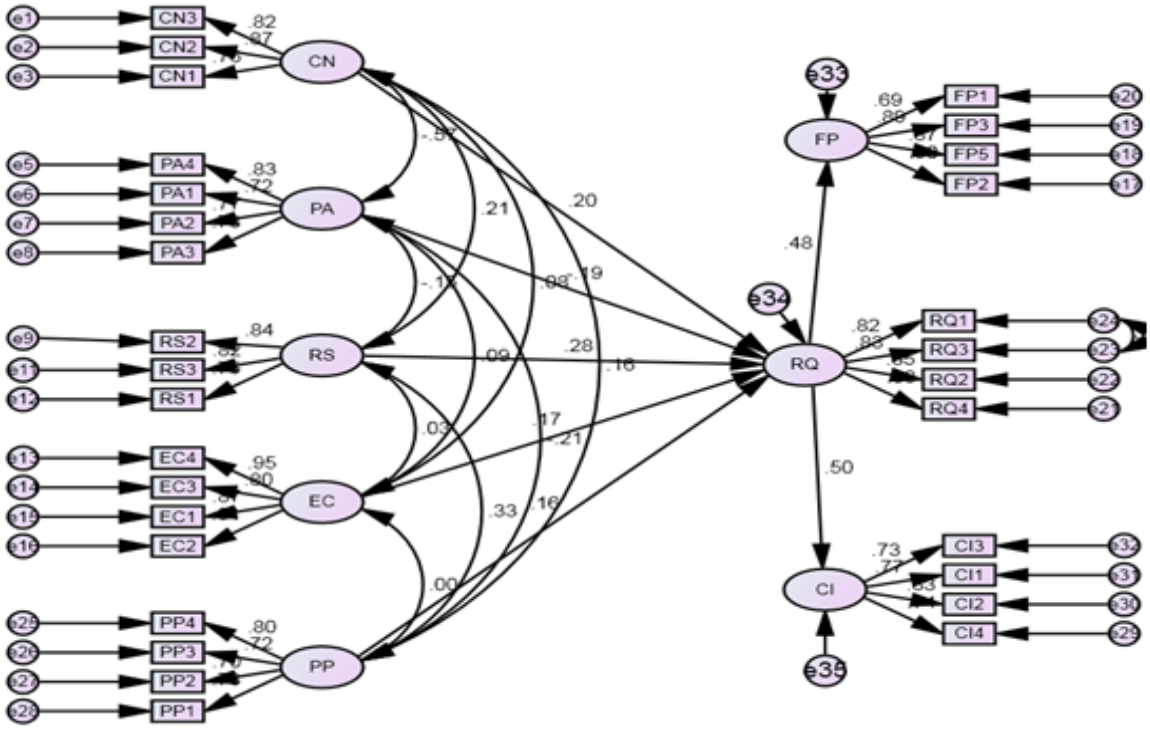

Figure 3. Factors affecting relationship quality.

Table 5. Results of hypotheses test

Hypotheses	Relations[1]	Estimate	S.E.	C.R.	*P*-value	Conclusion
H_1	CN → RQ	0.201	0.100	2.224	0.026	Accepted
H_2	PP → RQ	0.159	0.071	2.105	0.031	Accepted
H_3	RS → RQ	0.280	0.080	3.690	0.000	Accepted
H_4	PA → RQ	-0.195	0.102	-2.159	0.010	Accepted
H_5	EC → RQ	0.169	0.075	2.566	0.035	Accepted
H_6	RQ → FP	0.484	0.077	6.662	0.000	Accepted
H_7	RQ → CI	0.495	0.051	6.142	0.000	Accepted

[1]EC: effectiveness communication; FP: farmers' profit; RQ: relationship quality; PA: Power asymmetry; PP: perceived price; CI: relationship continuity intention; CN: collaboration; RS: profit/risk sharing.

Table 6. Results of Bootstrap test

Parameter[1]	Estimate	SE	SE-SE	Mean	Bias	SE-Bias
RQ ← CN	0.223	0.112	0.004	0.223	0.001	0.005
RQ ← PA	0.150	0.126	0.004	-0.217	0.003	0.006
RQ ← RS	0.295	0.086	0.003	0.290	-0.005	0.004
RQ ← EC	-0.220	0.084	0.003	0.199	0.005	0.004
RQ ← PP	0.193	0.066	0.002	0.154	0.004	0.003
FP ← RQ	0.512	0.085	0.003	0.512	0.000	0.004
CI ← RQ	0.314	0.058	0.002	0.309	-0.005	0.003

[1]EC: effectiveness communication; FP: farmers' profit; RQ: relationship quality; PA: Power asymmetry; PP: perceived price; CI: relationship continuity intention; CN: collaboration; RS: profit/risk sharing.

niques to help farmers orientate the production direction in the most optimal way. When the price of coffee in the market increases, local traders will be having more profit. Farmers will engage with

local traders who are willing to share a part of the profit with them (Lages et al., 2005; Sun et al., 2018). Therefore, profit/risk sharing is essential factor in the relationship between sellers and buyers. Next, if farmers are satisfied with the product price, they will continue to cooperate with buyers. Perceived price satisfaction includes short- and long-term satisfaction when comparing the price received to the price paid. Producers are more likely to be attracted to buyers with a reasonable price. Producers' satisfaction with the received price has the capacity to influence their perception of the relationship quality as well as their willingness to remain loyal to the buyers.

Power asymmetry refers to the ability of one partner to influence or control the behavior of another partner in a manner contrary to the desire of the second partner. Power asymmetry negatively affects the relationship quality between farmers and local traders. The market power asymmetries between business partners can create a feeling of insecurity and vulnerability among small partners in the supply chain. Due to their power, intermediaries follow some practices (e.g. delayed payment, renegotiation of the agreed price, withdrawing from the agreement, etc.) that increase costs and risks for smallholder farmers. Thus, equal power distribution might be a precondition for economic agents to get involved in business relationships and an important determinant of relationship quality (Bandara et al., 2017).

Relationship quality positively affects farmers' profit and relationship continuity intention between farmers and local traders. Relationship continuity intention is considered as a result of a quality relationship. A quality relationship enables farmers to continue selling their coffee to the previous purchasing partners. Farmers will also introduce these partners to other neighboring farmers. Besides, farmers' profit from prior relationships is an indicator of relationship quality. The relationship between buyers and sellers has become increasingly important in the agribusiness sector (Lees & Nuthall, 2015), contributing to the enhancement of farmers' interests in general and enhancing business performance in particular. In this study, building relationships with buyers helps stabilize production and increase coffee farmers' income. Good relationships make coffee easier to sell in the market. The relationship also helps create linkages in coffee production and consumption.

4. Conclusion and policy implication

Relationship quality maintains business relationships with local traders and ensures the sustainable development of coffee production. Farmers are the key contributors to the development of Vietnam's coffee sector. Local traders are the vital players in the local coffee supply chain in Dak Lak Province, enabling farmers to optimally orientate coffee production. The study identifies five elements positively impacting on the relationship quality, including collaboration, perceived price, profit/risk sharing, effectiveness communication, and power asymmetry. Profit/risk sharing is the most important factor affecting relationship quality. Power asymmetry can lead to insecurity and vulnerability for small-scale farmers. The research also indicates that relationship quality positively influences the profit and relationship continuity intention of coffee farmers towards local traders.

At present, the relationship among stakeholders has not been closely built in the agricultural supply chain. It is still relatively loose and not legally binding. It is suggested that policymakers should focus on increasing transparency and information sharing to improve the relationship quality between coffee farmers and local traders. Results of the study could be considered in other agricultural products related to the relationship between farmers and local traders, enhancing the development of the agricultural supply chain. The findings can be reinforced to agricultural products in countries with poor infrastructure, especially in regions where traders are the main purchasing channel.

5. Limitations of the study

The paper has a small sample size (201 farmers) and has not focused on in-depth research on the whole issue. The study only selects some factors affecting the quality relationship between farmers and local traders. In addition, many other factors such as uncertainty, payment conditions, support services, procurement audits, etc. have not been included in this study. Another possible limitation is that it examines the relationship between farmers and their buyers (local traders), but the data were collected from one-side of the dyads. Future studies can consider

testing the model using the perspectives of both the partners.

Conflict of interest

The authors declare no conflict of interest.

Acknowledgments

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