

# The Role of Trust and Transaction Cost Attributes to Reduce Side Selling in Sesame Contract Farming in Ethiopia

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**ABSTRACT**— Based on the concept that relational contracts complete a formal contract in the absence of a legal enforcement mechanism, this study assessed the coexistence of relational and formal contracts to reduce side selling in sesame contract farming. Thus, trust and communication are used as relational contract elements, and the need for a formal contract was assessed based on transaction cost attributes (asset specificity and behavioral uncertainty). A structural equation modeling was used to analyze the relationship between the attributes of relational contracts and transaction cost economics and their direct and indirect effect on reducing side selling. The result indicates trust has a positive significant direct effect on reducing side selling with an effect coefficient of 0.248. Based on the result, while asset specificity, satisfaction, communication, and commitment have a total significant positive effect on reducing side selling, uncertainty encouraged side selling. Even if it is appealing for farmers to side sell when the market price is higher, the cost of losing secured market outlet and long term buyer exceed the short term benefit. Therefore, both farms and the firm need to foster trust to have a sustainable relationship. Alongside trust, it is better to execute contract legislation and enforcement mechanisms to circumvent uncertainty.

**KEYWORDS:** Relational contract, SEM; Side selling; Transaction cost economics; Trust

## 1. INTRODUCTION

The unexpected events in agricultural production might reduce production, productivity, and affect market price. Yields and market price uncertainty and a decision made under such uncertainty affect farmers' welfare [1]. Though different studies confirmed the positive impact of contract farming as partial insurance [1, 2, 3, 4], the arrangement has its own risk for both farmers and firms. The sustainability of the relationship is highly dependent on both party commitments. If either of the parties fails to meet their obligation due to production fail or opportunistic behavior, the other party will be worse-off. Contract farming has risks such as terminating the contract, side selling, and utilizing input for other purposes due to information asymmetry, lack of legal enforcement, and natural hazards. Opportunistic behavior can occur before and after the contract. Especially for farm contracts, commitment problems arise after the contract is made. Farmers' commitment towards the contract agreement reduces in case of a higher market price than the contract price. Smallholder Farmers have an information advantage over the contractor when it comes to their production environment [5]. On the other hand, if the farmers fail to meet the quality requirement, they will receive a lower price than the contract price. In a situation where there is a lack of rules and regulations to abide by both parties, it is costly to sue the defaulter [6]. The opportunistic behavior of both farmers and the firm increases ex-post transaction cost to enforce the contract. Economic actors always choose the governance structure that lowers transaction costs among the available alternative institutional arrangements [7]. When outputs transacted without making a product-specific investment, transaction costs will be lower, and a spot market is preferable. However, if the product needs special handling, processing, and specific quality requirements, network or hierarchy are better governance

structures [8, 9]. Therefore, integrating farmers in the modern food value chain in both the domestic and international markets in the form of contract farming can serve as a new dynamic for overcoming market problems and lower transaction costs [10]. The vertical integration aims at reducing transaction costs that both parties incur due to human opportunistic behavior, information asymmetry, and bounded rationality on the spot market [11, 12]. However, the implementation of the contract comes with its own cost [13] and enforcement is expensive [14]. Regardless of rules existed to guide the contract, both parties have an incentive to breach if the benefit they get outside of the contract is higher than the cost they will incur in case of breaching [14]. In such cases, dispute settlement in contract farming relations is either governed by formal contract through third party involvement or relational contract. The success of contract farming depends on to what extent the parties honor their agreement. In addition to the punishment and fines they receive in case of ex-post contract breaching, the value they attach to the exchange relationship determines how they act against conflicts.

A formal contract can serve as a safeguard mechanism to legally claim in case of commitment problems and promote long term relationships [12]. However, it has been criticized for lacking relational aspects, which are also important factors to determine performance and sustainable relationships between partners. Agricultural contracts are criticized for being incomplete. Most of the time, the written contract does not incorporate details such as quantity, time commitment, and lack to display contract duration. When commitment and uncertainty problems arise in the relationship, the cost of monitoring and enforcing the contract becomes high. Therefore, relational contracts are required to solve these problems and maintain the transaction [15]. A relational contract is an informal enforcement mechanism that can serve as a safeguard when contracts are incomplete [16]. The sustainability and success of a contract, especially in developing countries where enforcement has a high transaction cost, highly depend on a trust-based relationship [17]. "A lack of trust among trading partners often creates a condition where every transaction has to be scrutinized and verified, thereby increasing the transaction costs to an unacceptably high level" [18]. In the absence of institutional arrangements or a third party to enforce the contract, firms depend on relational contracts to make the exchange smooth and sustain future ties [19]. Therefore, both formal contract and relational contracts are complementary and serve as a safeguard against opportunism and necessary for a long-term relationship [16, 21, 22, 23, 24, 25]. In Ethiopia, institutions and market infrastructures are underdeveloped to execute the contract [25] and the legal framework and enforcement mechanisms are still incipient. In a situation where the legal system is not solid and transaction cost due to persecuting the defaulting party is high, contract breaching can happen [6]. Therefore, the sustainable relationship between the firm and the farmers is expected predominantly based on trust [26]. Based on the concept that relational and formal contracts are complementary, especially in the absence of a legal framework to enforce contracts, this paper assed the need for the coexistence of relational and formal contracts to reduce side selling. Most of the studies on relational and formal contract governance structures in contractual relationare theoretical and qualitative. The empirical studies focus on inter-organizational [27], large industrial firms [12] and public-private partnership [24, 28]. Contractual relationships in agricultural products get little attention. Therefore, the research gap makes it worthwhile to study the relational and formal contract to sustain transaction relationships on areas where the literature on contract farming is relatively thin

## **2. Theoretical Framework and Hypothesis**

As cited by Schepker et al., (2014), Poppo,2013 mentioned that a relational contract is needed when only transactions are not smooth due to asset specificity and uncertainty. The substitution argument is that relational contract elements can avoid high transaction costs due to formal contracts and can better serve as a safeguard against opportunistic behavior [29]. On contrary, the complementary argument states that when formal contracts are incomplete to execute a transaction exchange by a third party, the relational element serves as a safeguard

to avoid contract breach. Poppo and Zenger (2002), argued using both formal and relational contract concurrently as a safeguard is better. Contract terms nurture relational governance, particularly trust in long term transaction relations [15, 30].

### ***2.1 Formal contract***

A formal contract specifies requirements and necessary legal measurements to be taken by a third party in case of a contract breach [15] and authorized by a legal entity [30]. A formal contract is based on transaction cost economics. It helps to specify the nature of the agreement, including the responsibilities, the operations, and possible adjustments in case of unpredictable events [29]. The need for formal contracts arises to protect exchange parties from ex-post contract conflicts due to asset specificity and uncertainty [12]. Transaction cost economics, according to Williamson (1979), aimed at regulating contract distortion as a result of ex-ante and ex-post contract actions of individuals. Formal contracts are necessary, especially at the early stage of the relationship, to circumvent opportunistic behavior [15]. The success of a contract is affected by transaction economics attributes such as asset specificity and uncertainty [29].

### ***2.2 Relational Contract Theory***

Relational contract theory is based on the premise that any formal contractual relationship cannot be fully complete and possess a relational element to some extent. The theory emphasizes that relationship-related specific social and economic factors govern exchange by determining the relationship components, how the exchange parties fulfill their obligations, and how the contract functions [31]. According to Mouzas and Blois (2008), while vertical integration involves a formal contract to some degree, this contract is often lacking in consideration of the relational aspects of the contract, which cannot be imposed by the third-party (court). They argued that transaction cost fails to incorporate human and socio-cultural dimensions of transaction relationship. When contracting parties fail to specify all the ex-ante and ex-post clauses in the contract and, taking legal action become hard, the partnerships depends on relational contract elements [15, 30].

### ***2.3 Hypothesis***

The long-term relationship between actors in the supply chain depends on the transaction cost from asset specificity, frequency, and uncertainty. Asset specificity refers to the need for product-related specific investment in improved inputs, technologies, time, and labor. Buyer, seller, or both at the same time can make transaction-specific investments depending on what is required and to what extent the transaction needs to happen. While one side investment might encourage opportunistic behavior [16], investment in the transaction by both parties increases the level of commitment both parties have towards the relationship. The existence of behavioral uncertainty leads to the opportunistic behavior of actors, which affect the relationship negatively [7, 17, 18]. Uncertainty about how the partner acts against unexpected changes affects the trust of the other partner, which then influences the relationship to sustain [33].

Hypothesis 1: Behavioral uncertainty encourages side selling by negatively affecting trust

Hypothesis 2: Asset specificity reduce side selling

In relational contract, norms and values shared govern how partners act on the contract. These norms include communication and trust. In areas where formal institutions to enforce a contract are not available, and enforcement cost is high future relation of the partners highly depends on trust. By developing trust in each other, partners can safeguard opportunistic behavior and reduce the risk [34]. Lack of trust between partners affect the market relation and increase transaction cost. Therefore, communication and trust are the crucial

components of a successful supply chain. To have long term contractual relationships and avoid side selling, both the farmers and firms should develop trust in each other. Communication is a pillar for two partners involving in contract farming to sustain relationships as Morgan and Hunt (1994), indicated communication is the foundation to develop trust between the exchanging parties.

Hypothesis 3: Trust reduce side selling

Hypothesis 4: Communication has a direct effect on side selling

Hypothesis 5: Trust has a mediating effect between Communication and side selling

An exchange between two parties and the continuity of the relationships depends on the expected economic and non-economic benefit from the transaction. If partners enjoy positive social and economic benefits, they will develop trust and become committed and loyal to their relations [34, 36].

Hypothesis 6: Satisfaction has a positive relation with trust

Hypothesis 7: A satisfied partner is committed to the relationship

### 3. Research Methodology

#### 3.1 Data Collection and Sampling Technique

The study was conducted in Humera, Ethiopia. The area was selected purposively based on the availability of sesame contract farming. Using a rule of thumb to determine the minimum sample size may lead to a bias in the estimation of parameters because they are not specific to the model to be tested [37]. Therefore, in this study, Daniel Soper's online sample size calculation tool based on Westland (2010), was used to determine the minimum sample size. Using the anticipated effect size of 0.3, the desired statistical power of 0.8, 6 construct variables, and 25 indicator variables, the minimum sample size requirement for this model was 161. But, since some studies suggest the minimum sample size for structural equation modeling is 200, out of the total 1500 households participating in contract farming, 200 Sample respondents who have been in contractual relation with the firm for more than 5 years were randomly selected. Data was collected using a structured questionnaire with a 6 point Likert scale 0 for strongly disagree, and 5 strongly agree. To avoid common method bias (CMB) due to misinterpretation of the questionnaire the ambiguous words were avoided, and the questionnaire items were constructed based on the suggestions by [39].

#### 3.2 Analysis Method

Structural equation modeling (SEM) was used to assess factors that determine farmers' side selling in contract participation. Using SEM has an advantage over-identifying both the direct and mediating effect of trust on side selling. Latent variables can be measured using indicators together with random and systematic measurement errors using SEM. Since the application of SEM is based on covariance between continuous observed variables, two steps were followed in this study. Initially, six constructs (Trust, commitment, satisfaction, uncertainty, communication, and asset specificity) were measured by observed indicators, as indicated in table 1. Based on Bollen (1989), the relationship between the constructs and the indicators is specified as

$$X = \Lambda * \xi + \delta \dots \dots \dots \text{Equation1}$$

Where x is a vector of indicator variables,  $\Lambda$  a matrix of factor loadings,  $\xi$  a vector of latent factors and  $\delta$  is a vector of measurement errors

A confirmatory factor analysis (CFA) was implemented using AMOS. The results reported in the result section confirmed that the data fit a hypothesized measurement model, and there is a valid relationship between the constructs and respective indicators used in this study. Maximum likelihood estimation was used as it allows simultaneous estimation of all parameters in the model and provides an "unbiased", "efficient" and "consistent" estimation when the model is correctly specified [41, 42].

### ***3.3 Variable Definition and Measurements***

Production contract might be vulnerable to ex-post distortion [43]. In the absence of well-specified contract relation, trust can solve uncertainty problems [21] and plays an important role in long term business relations [44]. Therefore, trust is used as a predominant factor for long-term relationship existence and reducing side selling based on [12, 15, 22].

No Side Selling: is defined in this study as no matter the market price is higher than the contract price, and farmers face immediate cash needs, farmers only sell to the firm. Sesame producing farm households who have been in a contractual relationship with the same firm at least for five years and regularly supply to the firm were selected. It is measured in terms of the willingness level of farmers to sell only to the firm for a particular higher market price ranging from 10% to 100% price gap.

Trust: Trust is defined as how considerate, trustworthy, and sincere the firm is and how confident the farmers are on the firm [18, 35]. Honesty and benevolence are adopted from [12, 45] as indicators of trust for this study. Honesty is when partners being "reliable, stands by its word, fulfills promised role obligations, and is sincere." Benevolence is "genuinely interested in one's interests or welfare and is motivated to seek joint gains." Both honesty and benevolence are important to measure trust and provide a higher scale than a single component measure. Trust can be affected by a farmer's satisfaction, uncertainty, communication, commitment, and asset specificity [46].

Commitment: defined as the extent to which exchanging partners value their relationship and put effort to sustain the relationship [35]. Satisfaction results in a committed relationship.

Communication: is defined as a formal and informal information exchange between the farmers and the firm [35]. In the food supply chain, traceability is possible if the necessary information is shared between the trading partner [47]. The level and transparency of information flow between firms and farmers have a direct and indirect effect on trust. Communication has a direct and indirect effect on trust.

Satisfaction: if farmers are satisfied with the services rendered by the firm, they will develop trust and continue to trade their sesame under the contract agreement. They will be willing to promote the advantage of contract farming within their social and family network and encourage other farmers to participate.

Uncertainty: Refers to doubt on how the partner acts against unexpected changes. Uncertainty increases transaction costs. The opportunistic behavior of a trading partner may cause uncertainty problem [48]. Based on Hobbs and Young (2000), producers face quality and price uncertainty.

Asset specificity: Production contract specifies certain aspects like type of input use and quality of the output demanded. Therefore, production-specific investment to a certain extent to meet the requirement is necessary. Asset specificity in this study is defined based on Boger (2001), as specific investments made to meet the quality

requirement. Three asset specificity dimensions were considered based on [22, 50]. Which include, Human asset specificity: investment by the firm in training and development and investment by a farmer in the necessary labor; Dedicated asset specificity: investment by the firm to check whether sesame is organic or not and Physical asset specificity: investment by a farmer in different inputs needed and investment by the firm in the sesame hulling machine and other farm machinery.

**Table 1** Constructs and their indicators

Factors	Items (indicators)	Code	CFA loading	Cronbach's alpha level
Trust (Honesty and benevolence )	The firm is sincere about farmers	Trust1	.824***	.913
	Farmers get firm support	Trust2	.811***	
	Farmers have confidence on firm advisory	Trust3	.744***	
	Firm consider farmers welfare while making price decision	Trust4	.807***	
	Firm's reputation for being honest	Trust5	.855***	
	The firm keeps its promise	Trust6	.774***	
Commitment	Supply agreed quality	Commitment1	.867***	.920
	Sell only to the firm even if the spot market price is higher	Commitment2	.883***	
	Firm's commitment of time & money to provide training & technical assistance	Commitment3	.903***	
Communication	Firm and Farm households share common information	Communication1	.845***	.897
	Farmers are informed about the quality requirement and price changes	Communication2	.909***	
	Information sharing on crucial issues is a critical element to maintain the relation	Communication3	.831***	
Satisfaction	Improved seed	Satisfaction1	.895***	.935
	Training	Satisfaction2	.835***	
	Credit	Satisfaction3	.891***	
	Better price	Satisfaction4	.846***	
	Encourage other farmers to participate	Satisfaction5	.849***	
Asset specificity	Farmers investment in sesame production	Asset specificity1	.850***	.911
	Farmers willing to put more effort and investment to produce quality sesame	Assetspecificity2	.859***	
	The firm has made a significant investment in inputs & machinery	Asset specificity3	.865***	
Uncertainty	The firm alters the agreement if there is unexpected price change*	Uncertainty1	.861***	.859
	The firm promise to do things without doing them later *	Uncertainty2	.830***	
	The firm degrade our sesame after harvest *	Uncertainty3	.765***	

\*Reverse code is used for these indicators

Source: Author's computation from sample survey data (2019)

Multiple indicators were used to measure a single construct. The reliability of the indicators was tested using Cronbach's alpha coefficient before the confirmatory factor analysis was carried out. The constructs with a Cronbach's alpha value above 0.8 considered as good fit and 0.9 as an excellent fit [41]. Therefore, the value of the Cronbach's alpha in table 1 indicates internal consistency is assured.

#### 4. Result and Discussion

##### 4.1 Model Fit

A single factor Herman's test and common latent factor (CLF) test was implemented to detect if there is a common method bias (CMB) problem. Both tests confirmed that there is no CMB problem. Also, the standard regression weight comparison between the model with and without CLF showed that there is a negligible difference between them.

**Table 2** Measurement model fit indexes

Fit index	One factor dependent variable model	5 factors independent variable model	Criteria
X <sup>2</sup> /df	1.606	1.03	<5
GFI	.98	.929	>.90
CFI	.99	.992	>.95
RMSEA	.055	.012	<.06
PCLOSE	.382	.99	>.05

Source: Author's computation from sample survey data (2019)

Initially, the model didn't fulfill the fit indexes criteria to fit the empirical data. However, after some adjustments were made based on modification indices and theoretical bases, as showed in table 2, the model succeeded to fit the empirical data.

**Table 3** Internal model fit structure

Variables	CR	AVE	MSV	MaxR(H)	asset specificity	Satisfaction	Compliance	communication	uncertainty
Asset specificity	0.91	0.72	0.37	0.91	0.85				
Satisfaction	0.94	0.75	0.40	0.94	0.60	0.86			
Compliance	0.92	0.75	0.40	0.93	0.58	0.63	0.86		
communication	0.90	0.74	0.16	0.91	0.37	0.40	0.35	0.86	
uncertainty	0.86	0.67	0.14	0.87	0.28	0.39	0.27	0.16	0.82

Source: Author's computation from sample survey data (2019)

The average variance extracted (AVE), maximum shared variance (MSV), and composite reliability (CR) were computed to measure the internal model fit. As seen in the result, Table 3 above indicates the variables achieved

convergent validity evidenced by AVE all above .5 and reliability by CR above .7 and discriminant validity based on the square root of the AVE greater than any inter-factor correlation. MSV is less than AVE, confirming discriminant validity is achieved.

4.2 Structural equation model result

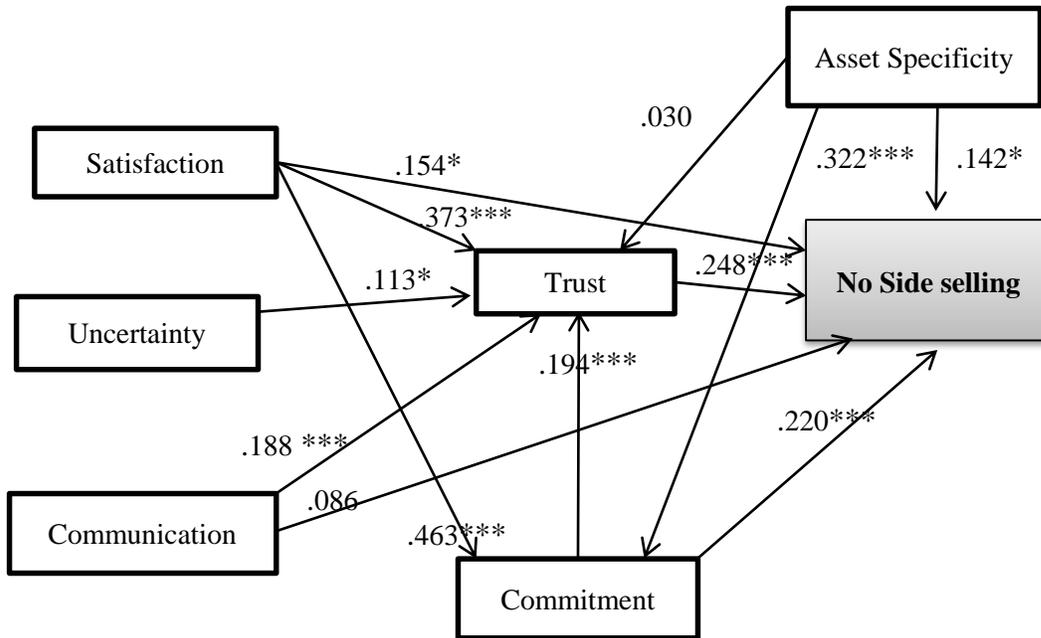


Figure 1 Full structural equation model

\*\*\*, \*\* and \* refers to 1%, 5% and 10% significance level, respectively

Source: Author’s computation from sample survey data (2019)

The structural equation model result showed that trust reduces side selling. Therefore, the firm and the farmers will have a positive long term relationship. The result is consistent with [43]. All the exogenous variables have a significant effect on trust except asset specificity. Though it has a positive relation with trust as hypothesized, asset specificity is not significant. Since the degree of specificity in agricultural investment is lower than other industrialized products [14], farmers can use the investment for other crop production. Therefore, it is not surprising for insignificant relation of asset specificity and trust. Communication, satisfaction, and commitment have a significant positive relationship with trust, while uncertainty has a negative relation. These findings are similar to [35] that uncertainty due to opportunistic behavior affects trust negatively. Wu, Weng and Huang (2012), found that communication and uncertainty affect trust in Taiwan’s high-tech industries partnership.

Table 4 Structural equation model fit

Fit index	Value	Criteria
X <sup>2</sup> /df	1.322	<5
GFI	.99	>.90
CFI	.99	>.95
RMSEA	.04	<.06
PCLOSE	.462	>.05

Source: Author’s computation from sample survey data (2019)

The structural equation model meets all the fit indices. Therefore, we can conclude that the model fits the empirical data.

**Table 5** Direct, indirect and total effect of transaction cost and relational elements

Dependent variable	R <sup>2</sup>	Independent variable	Direct effect	Indirect effect	Total effect
<b>Commitment</b>	.51	Asset specificity	.322**	-	.322**
		Satisfaction	.463***	-	.463***
<b>Trust</b>	.49	Asset specificity	.030	.063**	.092
		uncertainty	.113*	-	.113*
		Satisfaction	.373**	.090***	.463**
		Communication	.188***	-	.188***
		Commitment	.194**	-	.194**
<b>No side selling</b>	.47	Asset specificity	.142**	.094**	.236***
		Uncertainty	-	.028**	.028**
		Satisfaction	.154**	.217***	.370**
		Communication	.086	.047***	.132*
		Commitment	.220**	.048***	.268**
		Trust	.248**	-	.248**

\*\*\*, \*\* and \* refers to 1%, 5% and 10% significance level, respectively

Source: Author's computation from sample survey data (2019)

Commitment has a direct and indirect effect on reducing side selling. The more the farmers are committed to supply the agreed quality and enjoy the relationship, the more they chose to sell their sesame to the firm, even if the market price exceeds the contract price. However, to commit, the farmers should be satisfied with the services and prices provided by the firm. The result is consistent with [52, 53] that relation benefits affect commitment. Transaction specific investment affects commitment positively. The result implies that when both parties invested, there is a greater likelihood to remain in the relationship. In addition to their direct effect on a reducing side selling, trust and commitment were hypothesized to have a mediating effect between side selling and other exogenous variables. As can be seen from table 5, this hypothesis is confirmed to be true. Robert et al, (1994) found a similar result that commitment and trust not only have a direct effect but also are key mediating variables in successful marketing relations in automobile tire relationships. Side selling is also affected by asset specificity. Gërdoçi et al., (2017), using a binary logistic regression model, reported that in the Albania dairy market trust and asset specificity positively affect long term relationships, uncertainty affects it negatively. A trust-based transaction-specific investment affects trading relations positively [24, 50].

## 5. Conclusion and Policy Recommendation

One of the motives behind having contract farming is to reduce ex-ante and ex-post transaction costs. However, the opportunistic behavior of trading partners may result in higher transaction costs of contract enforcement. Having a written contract is necessary but not sufficient to govern the relationship between trading partners. Therefore, relational contracts can play as much role in reducing side selling and ensuring consistent relations between partners. Trust was the core relational governance element in this study. The absence of contract legislation in the study area makes trust the predominant factor in sustaining the relationship. To develop mutual trust, partners should not act opportunistically. Also, the benefit they get from the firm, and transparent information flow between them affect their trust. Commitment is another factor that determines side selling. Farm households that are satisfied with the overall service provided by the firm and receive a better price supply the required quality, and enjoy the relationship they have with the firm. Even if it is appealing for farmers to

side sell when the market price is higher, the cost of losing secured market outlet and long term buyer exceed the short term benefit. Though Asset specificity has a positive relation with trust as hypothesized, it is not significant. However, the transaction-specific investment made by both firms and farmers contributed to their long-term relationship. The study result showed that both transaction cost (asset specificity and uncertainty) and relational contract (Trust and commitment) coexist to govern the exchange between the farmers and the firm. Therefore, the firm needs to foster trust to avoid uncertainty and have sustainable sesame supply. Farmers are also required to produce and supply according to the agreement to earn firm trust. Alongside trust, contract laws and enforcement mechanisms need to be established. Therefore, the government should facilitate the establishment of a legal framework.

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