RESEARCH ARTICLE

European Journal of Development Studies
www.ej-develop.org

Institutional Innovations to Reduce High Transaction Costs and Risks in Smallholder Markets in Ghana

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ABSTRACT

This article analyses institutional innovations to address high transaction costs and risks involved in the interaction between traders (agents) and smallholder farmers in rural markets of Ghana. A mixed methods design was used to collect data from participants. The findings from the study revealed possible institutional innovations to address high transaction costs and risks to facilitate smallholder farmers' market access in rural agricultural markers of Ghana. These include the introduction of a new contract farming arrangement, cooperative society, smallholder farmers' participation in decision-making, and the government's direct intervention.

Keywords: High Transaction Costs, Institutional Innovations, Transaction Risks, Smallholder Farmers.

Published Online: October 12, 2022

ISSN: 2736-660X

DOI: 10.24018/ejdevelop.2022.2.4.147

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I. Introduction

The term transaction costs can be defined as "the costs incurred in finding and negotiating with a trading partner and making a contract and enforcing it. These costs could be in terms of money spent or the opportunity cost of time spent" (Jagwe *et al*., 2010). It is known in the academic literature that High transaction costs discourage smallholder small farmers' participation in agricultural markets (Okoye *et al*., 2016; Jagwe*, et al*., 2010).

Similarly, transaction risks might be another obstacle to smallholder farmers' market access. This is the risk of not receiving the goods or the money for which one traded (Geyer,1984).

Indeed, institutions can improve market participation for smallholder farmers, however, state institutions for the agriculture sector in some African countries, especially the poorest countries, are weak (FAO, 2009). Consequently, institutional innovations are needed to address both high transaction costs and risks to enable smallholder farmers to access agricultural markets for their produce. Phakathi *et al*. (2021) define Institutional innovation as "the design and implementation of new or significantly improved rules, norms, processes and procedures that differ significantly from an organization's previous ones." There is no explicit definition for the term institutional innovation. In the current article, institutional innovation for smallholder farmers' market participation can be explained as modifications of the existing institutional processes, roles, and responsibilities to achieve the desired outcomes of smallholder farmers' market participation.

The current article is based on a Ph.D. study objective. It was intended to analyze the innovative public and private institutions' role to reduce transaction costs and risks and explore alternative sources of livelihood to benefit smallholder farmers.

II. Methodology

The study took place in the Bono East and Ashanti regions of Ghana. It was intended to examine the possible institutional innovations likely to reduce high transaction costs and risks between smallholder farmers and traders.

The study used a mixed methods approach to collect data from the participants (farmers, traders and key informants). The quantitative data was obtained from smallholder farmers and traders through questionnaire interviews. The qualitative data was collected through key informants and vulnerability (MARISCO) analysis. All the data were collected and analysed concurrently using SPSS, Excel and PAST. The final data was interpreted through cross tabulation, chi-square test, and Principal component (PCA) analysis. The data generated from MARISCO vulnerability analysis was analysed through results chain, gap analysis and cause-effect.

III. Results/Discussion

The participants were initially questioned about their awareness of the concept of transaction costs. Only one of the participants claimed that he was aware of the transaction costs concept. However, after a detailed explanation of the meaning of transaction costs, most of the participants confirmed they are affected by high transaction costs in one way or another.

In respect of the impact of high transaction costs on smallholder farmers' activities, Table I shows that 68 out of the 130 smallholder farmers who took part in the study believed high transaction costs reduce their profit margins of which 40 of them come from Bono East Region and the remaining 28 participants come from Ashanti Region. Forty-five of the participants from both regions mentioned that high transaction costs affect their livelihoods. Six of the participants claimed that high transaction costs affect their market participation. The remaining 11 participants had other areas high transaction costs affected them in their farming activities.

Also, the key informants were interviewed from both regions of Ghana about the implications of high transaction costs on smallholder farmers' activities. Their responses are shown in Table II.

TABLE I: Smallholder Farmers' Views On How High Transaction Costs Affect Them

Participants' village/town	Participants' views on effects of high transaction costs						Total
	Awareness of transaction costs	Reduced profit margins	Affect livelihoods	Lower trading/market participation	Other	unsure	
Asuyei	1	8	8	1	0	0	18
Dabaa	0	5	2	0	2	2	11
Aworowa	0	9	2	1	0	0	12
Tanoso	0	8	1	0	0	0	9
Tuobodom	0	13	6	0	1	0	20
Oforikurom	0	2	4	1	0	0	7
Akumadan	0	6	5	1	0	0	12
Gyinase	0	2	7	1	2	1	13
Gyinase-Karikari farms	0	7	5	1	2	0	15
Kumasi-Tanoso (IPT)	0	8	5	0	0	0	13
Total	1	68	45	6	7	3	130

TABLE II: The Key Informants' Response To The Implications Of High Transaction Costs For Smallholder Farmers

Regions	The impact of high transaction costs on smallholder farmers							Total
	Affects livelihoods	Affects profit margins/ farming activities	Close down farming business	High prices for produce/food	Prevents market access	No response	other	
Bono East Region	2	5	4	1	4	2	0	18
Ashanti Region	1	7	2	4	1	1	1	17
Total	3	12	6	5	5	3	1	35

IV. Transaction Risk

All the participants' responses (in the questionnaire interviews with smallholder farmers and traders, key informants' interview and MARISCO situational analysis) show that smallholder farmers in the Bono East and Ashanti regions of Ghana encounter high transaction risks in their existing transactions between them and the traders in rural markets in Ghana. A typical example of transaction risks discovered in the current study is the high price fluctuations (See Table III).

Also, other sources of high transaction risks include reliance on rainfall instead of both rainfall and irrigation. All the farmers interviewed especially the vegetable growers complained about the impact of the lack of irrigation for their farming activities. Furthermore, farmers in Gyinase, Gyinase-Karikari farms, Tuobodum and Akumdan mentioned during interviews that lack of irrigation prevents them from year-round cultivation, hence their inability to participate in the international markets.

TABLE III: Key Informants' Responses To Marketing Problems Affecting Smallholder Farmers

Region	Marketing problems for smallholders							Total
	Poor roads	Low prices/Price fluctuations for produce	Lack of market information	Other	High transport cost	Lack of ready market	Multiples marketing problems	
Bono East Region	2	5	0	3	1	1	6	18
Ashanti Region	1	7	1	1	0	0	7	17
Total	3	12	1	4	1	1	13	35

TABLE IV: INSTITUTIONAL INNOVATIONS TO ADDRESS HIGH TRANSACTION COSTS AND RISKS

		Institutional innovations							Total
		Smallholder farmers' involvement in decision-making	Co-operatives	Government intervention	Contract farming	Public and private partnership	Smallholder farmers' empowerment	Other	
Regions in Ghana	Bono East Region	3	3	2	5	3	1	1	18
	Ashanti Region	4	2	3	3	1	0	4	17
	Total	7	5	5	8	4	1	5	35

In addition, most of the marketing problems faced by smallholder farmers identified during key informants' interviews (see Table III) were potential sources of high transaction risks, such as lack of ready market, lack of market information, poor roads and high transport costs. As they can lead to breach (of contract) and misinformation known to be constituent of transaction risks (Meijerink & Eaton, 2009).

Also, all four categories of transaction risks (risks of natural shocks, price risks, economic coordination risks, and risks of opportunism) identified by Dorward *et al*., (2004) were confirmed in the study. For example, smallholder farmers have a thin market, and their investment is based on complementary actions from the market women and the government for policies. The farmers want to know if their produce will be purchased by traders and if government policies will lead to a reduction in farm inputs and agrochemicals, in order to invest more of their limited resources in farming activities. The above is a typical example of economic coordination risk (Dorward & Kydd, 2004). The participants were asked during the questionnaire interviews to select possible alternative arrangements (or institutional innovations) likely to address high transaction costs and risks to facilitate market access for smallholder farmers. The responses of the participants are depicted in Table IV and Table V.

Contract farming had the highest responses from the key informant as the best institutional innovation. Out of the 8 responses, 5 responses came from participants in the Bono East region and the remaining 3 responses came from key informants in the Ashanti region. The key informants mentioned during the interviews that contract farming arrangements can help smallholder farmers to overcome high price fluctuations and other marketing challenges. Smallholder farmers' participation in the decision-making had the second highest response as the institutional innovation likely to address high transaction costs and risks with 7 responses. Out of this number, 4 responses came from participants in the Ashanti region and the remaining 3 responses came from participants in the Bono East region. Again, 5 responses each were received from the key informants on co-operatives, government interventions, and other institutional innovations not listed on the questionnaire. Out of the 5 key informants who selected cooperative as an institutional innovation with the potential to address high transaction costs and risks, 3 of them came from the Bono East region and the remaining 2 key informants came from the Ashanti region. Also, 5 key informants selected government intervention as the best institutional innovation, 3 of them came from the Ashanti region and the remaining 2 came from the Bono East region. The participants believed that government direct intervention can help smallholder farmers to overcome high transaction costs and other challenges facing the smallholder farmers, such as favorable land tenure arrangements. For example, a key informant (a farmer) at Gyinase mentioned that smallholder farmers need government intervention to enable them to address land tenure problems at their farm sites. He mentioned that their farmlands belong to 'Kwame Nkrumah University of Science and Technology and the management always threatens to stop them from farming on the university property, but farmers do not have alternative farmlands for farming. Additionally, the 5 key informants who selected co-operative as their preferred institutional innovations over other institutions listed on the questionnaires believed that it could enable smallholder farmers to have bargaining powers in transactions with the market women from Accra (capital city of Ghans). They claimed that prices and payment arrangements are dictated by the market women (market queens). Lack of bargaining power and payment arrangements tend to affect their profitability and livelihoods. Out of the 5 responses, 3 responses came from key informants in the Bono East and 2 responses came from key informants in the Ashanti region. Five key informants, however, selected other institutional innovations, such as the creation of warehouses for smallholder farmers' produce to address the high spoilage rate. Out of this number, 4 responses came from key informants in the Ashanti region and 1 response came from a key informant in the Bono East region. Four responses came from the Ashanti region key informants and 1 response came from Bono East region key informants. many responses came from the key informants in the Ashanti region on another form of institutions to enable them to reduce the high spoilage rate.

Table V revealed contracting (or contract farming) as the best institutional innovation for smallholder farmers to address high transaction costs. 32 (about 25%) of the participants identified it as the best institutional innovation for them regarding market access for their produce. 23 out of the 32 responses came from Ashanti Region participants and the remaining 9 participants' responses came from the Bono East Region.

TABLE V: SMALLHOLDER FARMERS PREFER INSTITUTIONAL INNOVATIONS TO REDUCE HIGH TRANSACTION COSTS

		Institutional innovation to reduce transaction costs suggested							Total
		Smallholder farmer empowerment	Co-operative society	Smallholder farmer's participation in decision	Government intervention	Contracting	Public and private partnership	Other	
Regions in Ghana	Bono East Region	9	16	5	14	9	7	6	66
	Ashanti Region	9	14	6	8	23	2	2	64
Total		18	30	11	22	32	9	8	130

TABLE VI: CHI-SQUARE TEST FOR SUGGESTED INSTITUTIONAL INNOVATION TO REDUCE TRANSACTION COSTS

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	12.736[a]	6	0.047
Likelihood Ratio	13.223	6	0.040
N of Valid Cases	130	–	–

a. 4 cells (28.6%) have an expected count less than 5. The minimum expected count is 3.94.

The second institutional innovation participants think can reduce high transaction costs and risks is a co-operative society. 30 (23%) of the participants responded to co-operative as the institutional innovation they believe can address high transaction costs and risks affecting their farming activities. 16 out of 30 responses came from participants in the Bono East Region and the remaining 14 participants came from the Ashanti Region.

The third highest suggested institutional innovation by the participants likely to address their high transaction costs and risks is government intervention. 22 (about 17%) of the participants confirmed government intervention as the best institutional innovation for them with the potential to address high transaction costs and risks associated with their farming activities. 14 of the responses came from participants from the Bono East Region and the remaining 8 participants came from the Ashanti Region.

Furthermore, 18 (about 14%) of the participants discovered smallholder empowerment as an institutional innovation with the potential to address high transaction costs and risks. Both Bono East and Ashanti Regions have 9 responses each out of the total 18 responses.

Also, 11 (8%) of the participants identified smallholder participation in decision-making on issues affecting them as the fourth institutional innovation. 6 of the responses came from participants in the Ashanti Region and the remaining 5 responses came from participants in the Bono East Region.

Similarly, 9 (about 7%) of the participants discovered public and private partnerships as the institutional innovation likely to address high transaction costs and risks affecting smallholder farmers. 7 of the responses came from Bono Ahafo Region participants and the remaining 2 participants came from the Ashanti Region participants.

However, 8 participants selected other innovations not listed on the questionnaire as the best institutional innovations likely to address high transactions, such as price standardization. 7 of the participants who opted for other institutional innovation came from Bono East Region and the remaining 2 participants came from the Ashanti Region.

The outcome of the chi-square test (P=0.047) shows statistical significance in the responses from participants in the Bono East and Ashanti region on the suggested institutional innovations to address high transaction costs and risks affecting smallholder farmers.

TABLE VII: KEY INFORMANTS' RESPONSES TO BENEFITS OF SMALLHOLDER FARMERS' PARTICIPATION IN DECISION-MAKING

		Benefits of participatory decision-making								Total
		Address all marketing problems	Improvement in livelihoods	Reduction in high transaction costs	Unaware	Promotes market access	Prevents price fluctuations	Improvement in bargaining power	No response	
Towns/ villages	Techiman	0	0	1	2	1	0	2	0	6
	Asueyi	0	0	2	0	0	0	3	0	5
	Tuobodum	0	0	1	0	0	0	2	0	3
	Oforikurom	0	0	0	0	1	1	0	0	2
	Akumadan	0	2	0	0	0	0	0	0	2
	Gyinase	2	0	1	0	0	0	0	0	3
	Gyinase-Karikari farms	2	1	0	0	0	0	1	0	4
	Kumasi-Tanoso (IPT)	1	0	0	0	0	0	1	0	2
	Dabaa	1	0	1	0	3	0	2	1	8
Total		6	3	6	2	5	1	11	1	35

Eleven (31%) of the key informants realised that participatory decision has the potential to promote bargaining power for smallholder farmers. Some of the key informants mentioned that the improvement in the smallholder farmers' bargaining power will enable them to overcome bargaining costs discovered to be high transaction costs. Three responses out of the 11 responses from key informants came from Asueyi; 2 responses each came from the key informants in Techiman, Tuobodum and Dabaa; 1 response each came from participants Gyinase-Karikari farms and Kumasi-Tanoso (IPT). Six key informants mentioned that smallholder farmers' participation in decision-making could help to address all marketing problems. Out of this number, 2 responses each came from key informants in Gyinase and Gyinase-Karikari farms; 1 response each came from participants in Kumasi-Tanoso (IPT) and Dabaa. Similarly, 6 key informants, on the other hand, believed that participation in decision-making can help to address high transaction costs. Out of this number, 2 responses came from key informants in Asueyi; 1 response each came from key informants in Techiman, Tuobodum, Gyinase and Dabaa and 0 response was received from participants Oforikurom and Dabaa. Five of the key informants mentioned that participatory decision-making can promote market access for the smallholder. Out of this number, 3 responses came from key informants1 response each came from Techiman and Oforikurom. The remaining participants did not respond to this question. Three key informants identified improvement in the livelihoods of smallholder farmers as the benefit of participation in decision-making. Out of this number, 2 responses came from key informants in Akumadan and 1 response came from a key informant in Gyinase-Karikari farms. Again, 2 participants from Techiman claimed they are unsure about the benefit associated with smallholder participation in decision-making. A participant from Oforikurom mentioned that smallholder farmers' participation in decision-making can help to address price fluctuation. Lastly, a participant in Dabaa decided not to respond to any of the benefits listed on the questionnaire as a benefit for smallholder farmers' participation in decision-making.

The chi-square test for the key informants' responses to the benefits of smallholder farmers' participation in decision-making is shown in Table VIII.

The chi-square test (P=0.16) shows the statistical significance of the responses of the key informants. There were variations in the responses from the key informants in both the Ashanti and Bono East regions on the benefits of participatory decisions for smallholder farmers. For example, key informants in the Bono East region claimed participation in decision-making can help to address all market problems but none of the key informants in the Ashanti region thought smallholder participation in decision-making can address all their marketing problems. The responses reflect the geographical locations of the participants. Many of the key informants in the Bono East (Techiman) region lived close to rural areas compared to those in the Ashanti region. They see smallholder participation in decision-making as crucial to addressing all their needs. However, participants in the Ashanti region who lived close to urban centers and the second capital of Ghana (Kumasi) did not see smallholder participation in decisions as necessary to address all their needs.

TABLE VIII: CHI-SQUARE TEST FOR BENEFITS OF SMALLHOLDER FARMERS' PARTICIPATION IN DECISION-MAKING

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	80.915[a]	56	0.016
Likelihood Ratio	59.566	56	0.347
Linear-by-Linear Association	1.141	1	0.285
N of Valid Cases	35	–	–

a. 72 cells (100.0%) have an expected count less than 5. The minimum expected count is 0.06.

V. CONCLUSION

Contract farming agreement was discovered by the participants as the best alternative arrangement or an institutional innovation likely to address the high transaction costs and risks associated with smallholder farmers' market participation, although it is known literature that can present some challenges to both farmers and buyers (See FAO, 2017). It had the highest responses compared to other institutions in both key informants' interviews (table IV) and smallholder farmers' interviews (Table V).

Also, co-operative society was seen as the second-best institutional innovation among smallholder farmers, although, it was ranked as the third best institutional innovation with the same number of responses as government intervention in the key informants' interviews. Rather, the key informants identified smallholder farmers' participation or involvement in decision-making as the second-best institutional innovation.

The government's direct intervention was ranked in both key informants' and smallholder farmers' interviews as the third best institutional innovation likely to address high transaction costs, transaction risks and other challenges faced by the smallholder farmers in their market participation. Also, government intervention was discovered in the MARISCO vulnerability analysis as having the potential to address

smallholder farmers' marketing problems.

The government intervention to offer insurance to smallholder farmers to address market participation challenges is seen with a minimal level of controversy (Poole, 2017). It can still help to introduce policies that can offer insurance against price fluctuations and other marketing problems.

All other institutional innovations identified in the current study have the potential to minimise high transaction costs and risks if properly implemented in the form of farmer-led institutional innovation. Thus, allowing farmers to initiate, create, and improve institutions based on their context-specific challenges or opportunities (Phakathi *et al*., 2021).

CONFLICT OF INTEREST

I declare that this article is based on my PhD study. Therefore, I do not have any conflict of interest in any aspect of this article.

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