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The Moderating Role of Farming Systems in Market Participation and Value Creation for Medium and Smallholder Farmers in Rural Uganda

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Abstract:
The study investigated the moderating role of farming systems in the association between market participation and value creation, targeting medium and smallholder farmers in Uganda, particularly in two districts in northern Uganda, Nwoya and Amuru. A sample size of 385 respondents consisting of medium and smallholder farmers involved in farm operations was calculated. The surveyed participants were selected using simple random sampling, while key informants were selected with a purposive sampling technique. Quantitative data obtained were coded and entered into SPSS version 25.0 statistical package computer software. Exploratory factor analysis was conducted to determine factor loading for the items examined. SPSS PROCESS MACRO v4.2 by Andrew F. Hayes was used to assess the moderation effect. There is a significant strong positive association of market participation and farming system with value creation ($r = .861^{**}$, $p < .01$) and ($r = .753^{**}$, $p < .01$), respectively. Secondly, market participation and the farming system significantly affect value creation ($p<.05$), and thirdly, the farming system moderated the effect of market participation on value creation. Policies and programs focusing on improving market access and market information dissemination should be implemented to benefit farmers significantly. Initiatives that promote sustainable and innovative agricultural practices should be encouraged to enhance value creation. A comprehensive approach that combines market participation and a farming system should be implemented to improve value creation. Enhancing farming systems by improving infrastructure, providing necessary support, and aligning farming practices with market demands can significantly impact the value of smallholder farmers' capabilities.

Keywords: *Farming systems, market participation, value creation, Uganda*

1. Introduction

Market participation among medium-scale and smallholder farmers has been projected to lead to more specialized production systems that ensure the efficient use of resources (Mulenga et al., 2021). However, the link between market participation and value creation has not been properly explored at the household level because participation in a given market is normally viewed as a choice, and it is deemed necessary only when it is expected to be profitable (Wieland et al., 2016). Market participation for rural farmers indicates how farm households undertake the production of goods and services for consumption or specialize in producing those that they have a comparative advantage in producing (Olwande & Mathenge, 2011). Market participation is an important ingredient for agricultural commercialization (Otekunrin et al., 2019) for both medium and smallholder farmers (Hlatshwayo et al., 2022; Worku et al., 2022; Xu et al., 2022). Sustainable commercialization requires integration into both output market participation and input markets (Amfo et al., 2022; Ismail,

2022; Wieland et al., 2016). Agricultural commercialization as such entails market orientation, which involves produce offered for sale and the use of purchased inputs (Gidelew et al., 2022; Kuchimanchi et al., 2022; Mkuna & Wale, 2022; Ume, 2023). It is important to note that about 70 percent of Uganda's population is still practising subsistence farming. It is therefore important to forge away forward to ensure that these farmers are brought into the money economy through modernizing and commercializing agriculture if Uganda is to achieve a middle-income status.

In part, the smallholder agriculture sector in Uganda remains unprofitable and is largely characterized by low-value creation due to low uptake of improved farm inputs, weak links to markets, high transport costs, few farmer organizations, poor quality control and lack of information on markets (Akite et al., 2022; Aseete et al., 2023; Bamwesigye et al., 2020). Although investment rates in Uganda are similar to those in Africa, smallholder investments in value creation are considerably lower. Ugandan farmers display less confidence in the economy than their counterparts in other African countries. As such, for given profit levels, Ugandan smallholder farmers invest more. At the same time, increased competition has exerted more pressure on smallholder farmers to cut costs. Many of these costs are not under the farmers' control, so farmer profitability has suffered greatly. It is recognized that the scope and profitability of commercialized agriculture is an important component of medium-scale farmers' demand for mechanization equipment (Otekunrin, 2022). In less developed markets, government policy interventions aimed at the promotion of commercialized crop production should endeavour to integrate labour-saving interventions in technology packages as they are key drivers for value creation (Abdullah et al., 2023; Bamwesigye et al., 2020; Truelove et al., 2023). This means that promoting farmer market participation can be a key determinant for profitability and value creation for farmers, thus influencing commercialization (Changalima & Ismail, 2022; Ndlovu et al., 2021; Niguse & Mebratu, 2023). Besides, to measure production efficiency in farming, both yield and profit function have been recommended (Abate et al., 2022; Akite et al., 2022; Mothiba et al., 2023; Wubet et al., 2022). The profit function, unlike the production approach, combines both technical and allocative concepts in a profit relationship, and any errors in production decisions are translated into lower revenue for the producer and, hence, lower profit efficiency (Nanhthavong et al., 2022).

The quest for value creation for Ugandan farmers remains a multifaceted topic, especially where value chains are not coordinated, and traders set prices which guarantee them profits without consideration of their own investments (Barzola et al., 2019; Barzola Iza et al., 2019; Misanya et al., 2023; Sebatta et al., 2015). Medium and smallholder rural farmers are most affected by this predicament, and the situation is made more complex by the fact that they are far from the central trade hub of the country, thus increasing transaction costs and the ability for value creation and profitability (Namuyiga et al., 2022). From a national perspective, the Uganda government's framework of prosperity for all emphasizes that households, which are mostly smallholder farmers, engage in commercialization and value creation. The framework recognizes profitability as an integral part of commercialization. Commercialization shifts require value creation, increased production and input decisions that are based on profit maximization, reinforcing vertical linkages between input and output markets. Literature and experience on agricultural commercialization indicate that large-scale farmers have, on balance, outperformed medium and smallholder farmers (Abraham et al., 2022; Ankrah et al., 2021; Ebanyat et al., 2010; Jaffee et al., 2011; Oya, 2012). The literature further supports the linkage between value creation and profitability of the agricultural sector (Calandra et al., 2023; Liu et al., 2022; Montalbano & Nenci, 2022; Sargani et al., 2020; Zhao et al., 2021).

Value creation is highly market-oriented and is driven by market participation (Girma & Kuma, 2022; Liu et al., 2022; Montalbano & Nenci, 2022; Truelove et al., 2023; Ume, 2023). This is mostly guided by the strong need to intervene in improving household market orientation at the production level in order to promote the commercial transformation of subsistence agriculture. Farmer market access is a vital component of market participation. A farmer can access the market either by selling to a buyer at the farm gate or physically transporting the produce to the marketplace using available means (Jjagwe et al., 2022). Meeting the challenge of improving rural incomes will require value creation and a transformation of low-input farming systems to one that is highly commercialized (Ume, 2023). Efficient market participation will require a sustainable farming system. A farming system is a set of agro-economic activities that are interrelated and interact with themselves in a particular agrarian setting (Karges et al., 2022). It is a mix of farm enterprises to which farm families allocate their resources to efficiently utilize the existing enterprises to increase the productivity and profitability of the farmer (Oya, 2012). The literature emphasizes that the farming system has a significant influence on the output attained by farmers. However, little effort has been made to assess its interaction role with market participation in value creation (Behera & France, 2016). Studies on large-scale farmers show that availability and prudent use of agricultural mechanization along the value chain have the potential to enhance labour use and efficiency (Dixon, Gibbon & Gulliver, 2001), provide greater precision and timeliness in farm operations, reduce postharvest losses, contributing to adding value to products and profitability (Collinson, 2000). For medium and smallholder farms, it is only suggested that strategies for development and increased adoption of agricultural mechanization should address the aspects of the appropriateness of mechanization in the smallholder agriculture context (Zhou & Ma, 2022). The exact context under which the farming system alone influences value creation for medium and smallholder agricultural practices has not been explored empirically in Uganda. Literature is likewise silent on whether farming systems influence market participation in the agricultural sector. Anecdote literature suggests that the farming system significantly influences the quality and quantity of output but a little less on commercialization (Connor & Mínguez, 2012). This suggests that if one attains good output but does not participate in the output markets, then the level of commercialization will still remain low. This study, therefore, assessed the importance of market participation with value creation for medium and smallholder farmers in rural Uganda and also looked at the moderating role of the farming system adopted by the farmers in enhancing market participation and value creation.

2. Study Methodology

2.1. Study Area and Sampling Procedure

The study focused on medium and smallholder farmers in Uganda, particularly in two districts in northern Uganda, Nwoya and Amuru. The two districts are the backbone of agricultural activities in northern Uganda. Medium and smallholder farmers in the two districts have high involvement in commercialized agriculture, with Nwoya district having considerably higher levels than Amuru. Amuru district has higher market access potential as it is at the gateway to South Sudan, a major destination, especially for agricultural commodities from Uganda. Nwoya district is located at about 2^0 37' 59.99" N, 32^0 00' 0.00". While Amuru lies at about 2^0 48' 59.99" N, 31^0 56' 59.99" E. Nwoya district is about 330 kilometers (210 miles) by road north of the capital city Kampala in Uganda. There is verst unoccupied land with a total land area of about 4,736 square kilometers (1,828.7 square miles), receiving an average annual rainfall of about 1500mm and a population of about 133,507 people (UBOS, 2014). In contrast, Amuru district has total land coverage of about 3,625.9 square kilometers (1,400 square miles) and an approximate population of about 186,696 people (UBOS, 2014).

Because the exact number of medium and smallholder farmers in Uganda, in general, is not known since they keep growing, the sample size for the survey was determined using the (Kothari, 2004) process of taking a portion of a population as a representative of that population. Consequently, a sample size of 385 respondents was drawn consisting of medium and smallholder farmers who are actively involved in the farm operations. Medium and smallholder farmers in the two districts are engaged in a diverse number of enterprises combining both crop and animal production. However, crop production dominates the economic activities. Medium-scale farmers tend to be more involved in maize, cassava, rice, beans, and soybeans. In contrast, smallholder farmers are more involved in sorghum, millet, sesame, pigeon peas, cowpeas, eggplants, tomatoes and groundnuts, among others. The animals kept in this region are mainly pigs, goats, and cattle. The medium and smallholder farmers were selected using simple random sampling, while key informants were selected with a purposive sampling technique. This is justified by Kothari (2004), who stated, "The selection of each item in a random sample from an infinite population is controlled by the sample probabilities and that successive selections are independent of one another."

2.2. Data Management and Analysis

Quantitative data were collected in a survey using a structured questionnaire instrument, while qualitative data were collected on a case-by-case basis. Questionnaires were designed in such a way that there were no leading questions since biasing interviewees' opinions would distort the results of the study (Bryman & Bell, 2003). The interview guide simply outlined the main topics that were covered and served as a guide for the interviewers. Quantitative data obtained were coded and entered into SPSS version 25.0 statistical package computer software. Preliminary procedures for data cleaning were performed to scrutinize items for possible outliers, inconsistencies and non-normality in data entry. Exploratory factor analysis (EFA) was conducted to determine factor loading for the items examined. SPSS PROCESS MACRO v4.2 by Andrew F. Hayes was used to assess the moderation effect of farming systems in the association between market participation and value creation for medium and smallholder farmers in rural Uganda.

3. Results

3.1. Measurements

An Exploratory Factor Analysis (EFA) was conducted using a principal component analysis and varimax Rotation. The minimum factor loading criteria was set to 0.60. The communality of the scale, which indicates the amount of variance in each dimension, was also assessed to ensure acceptable levels of explanation. Only items with commonalities above 0.60 were retained.

An important step involved weighing the overall significance of the correlation matrix through Bartlett's Test of Sphericity, which provides a measure of the statistical probability that the correlation matrix has significant correlations among some of its components, was used with Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and data above 0.700 were considered appropriate for factor analysis. The EFA results are presented in the sections below for the study variables.

3.2. Value Creation

For the items of value creation, the Bartlett's test of Sphericity was significant ($\chi^2(n = 378) = 3865.631$, $p < .01$, KMO = .825). The factor solution derived from this analysis yielded six factors for the scale, which accounted for 87.240 per cent of the variation in the data, as seen in table 1.

3.3. Market Participation

For the items of market participation, the Bartlett's test of Sphericity was significant ($\chi^2(n = 378) = 6030.110$, $p < .01$, KMO = .794). The factor solution derived from this analysis yielded six factors for the scale, which accounted for 84.405 per cent of the variation in the data as seen in table 2.

3.4. Farming Systems

For the items of market participation, the Bartlett's test of Sphericity was significant ($\chi^2(n = 378) = 1628.919$, $p < .01$, KMO = .788). The factor solution derived from this analysis yielded five factors for the scale, which accounted for 88.706 per cent of the variation in the data as seen in table 3.

3.5. Correlations

To investigate the binary relationship among the study variables, we used the Pearson Product Moment Correlation analysis procedure. First, Pearson correlation of market participation and value creation show a very strong statistically significant positive relationship (r = .861**, p < .01). This shows that an increase in items of market performance is associated with increase in the items of value creation for medium and smallholder farmers in rural Uganda. Second, we also observed a strong statistically significant positive relationship between farming systems and value creation (r = .753**, p < .01). This also means that an increase in the items of farming systems is positively associated with an increase in the items of value creation. The results are presented in table 4.

3.6. Hierarchical Regression Model

A hierarchical regression analysis was conducted to analyze the effect of experience in farming, the number of acres of land a household has access to, the number of acres a household has under crop production, market participation, and farming systems on value creation. The first step of the regression involved entering control variables (experience in farming, number of acres of land a household has access to, number of acres a household has under crop production), market participation was added in the second step, and the farming system was added as the third step. The overall regression model predicted approximated 79% of the variance in value creation (R^2 = .793, F(90.946), p < .001). In model 1, experience in farming, the number of acres of land a household has access to, and the number of acres a household has under crop production predicted approximately 10% of the variance in value creation, and all the factors were significant predictors of the value of creation (p = .018, p = .000, p = .005 respectively). After controlling for the factors above, in model 2, market participation predicted approximately 64% of the variance in value creation (R^2 change = .642, F(929.052), p < .001). Finally, in model 3, farming systems predicted approximately 5% of the variance in value creation. The results are presented in table 5.

3.7. Moderation Analysis

A moderation analysis was performed using centered variables. The PROCESS SPSS macro was used to analyze the data (Hayes, 2022), altogether, about 79% of the variability in value creation was predicted by all the variables, R^2 = .794, F (479.878), p < .001. Table 4 displays the unstandardized regression coefficients. The interaction effect was statistically significant (p = .045), indicating that farming systems moderated the effect of market participation on value creation, particularly among medium and smallholder farmers in rural Uganda. This moderating effect is shown in figure 1. The graph demonstrates that the relationship between market participation and value creation is stronger for better farming systems and weaker for poor farming systems. Table 5 presents the conditional effects of the focal predictor (market participation) at three values of the moderator (farming system). The conditional effect of market participation on value creation shows that at a lower (poor) level of farming system (of 2.963) the effect of market participation on value creation is slightly lower (.607), at moderate level of farming system (of 3.733), the effect of market participation is higher (.662), and at higher levels of farming systems (of 4.593), the effect of market participation on value creation is highest (.718). This moderation effect is illustrated (Tables 6 and 7 and figure 1).

4. Discussion

The intersection between Farming Systems, Market Participation, and Value Creation is critical for understanding the magnitude of value creation among Medium and Smallholder Farmers in Rural Uganda. The concept of farming systems acting as a moderator in the association between market participation and value creation implies that the efficiency and suitability of the agricultural environment can significantly impact the way farmers engage with markets and subsequently create value (Ragasa & Chapoto, 2017).

This research reports that farming systems positively moderate the relationship between market participation and value creation. This implies that the positive association between market participation and value creation is strengthened by the variation in farming systems. This is supported by Barrett, Reardon, and Webb (2001), whose study emphasized that the farming environment, including terrain, infrastructure, and policy support, can moderate farmers' ability to interact effectively with markets. The efficiency of farming systems affects the availability of agricultural produce, timely access to market inputs, and the quality of products offered to the market. The study finding is in line with Tschirley, Ayieko, and Hichaambwa (2019), which underlines the importance of infrastructure, especially roads and storage facilities, in connecting farmers to markets. The condition of these infrastructures within farming systems moderate the ease of farmers' access to markets and their ability to deliver produce in a timely and efficient manner, thereby impacting their value creation.

The significance of information in market participation has been mentioned before (Sunding & Zilberman, 2001), and it aligns with this study. Farmers' access to information about market demands and trends shapes their production decisions, affecting the alignment of products with market needs, thus influencing value creation. Findings (Reardon, Barrett & Swinnen, 2009) indicate that smallholder farmers' ability to sell products at viable prices and maintain quality standards enhances value creation. This is influenced by their level of participation in markets and their understanding of customer needs.

Farming system efficiencies and their connectivity to market participation are pivotal in determining smallholder farmers' ability to create value, as previously indicated (Ragasa & Chapoto, 2017). When farming systems provide an enabling environment, they positively moderate the relationship between market participation and value creation. This study finding also aligns with the findings of Guluzhaer, Luhao and Yang (2019), who opined that digital finance as a

moderating factor could significantly strengthen the positive correlation between the perceived benefits of ordering finance and the financing intentions of rural farmers.

Additionally, farming systems' efficiencies and their connectivity to market participation are pivotal in determining smallholder farmers' ability to create value (Ragasa & Chapoto, 2017). When farming systems provide an enabling environment, they positively moderate the relationship between market participation and value creation. Likewise, Guluzhaer, Luhao and Yang (2019) opined that digital finance as a moderating factor can significantly strengthen the positive correlation between the perceived benefits of ordering finance and the financing intentions of rural farmers.

More so, increased agricultural productivity can improve the welfare of households by increasing their income and improving their food security by producing their own food (Mujeyi et al., 2021). Furthermore, Shah-Al Emran et al. (2021) also found that Farming Challenges, Economic Status, Crop Management Practices, Asset Endowment, and Farm Characteristics were five independent latent factors that influenced crop productivity and identified promising leverage points for sustainable development in coastal Bangladesh.

5. Conclusion

The results collectively highlight the pivotal role of both market participation and effective farming systems in driving value creation among rural Ugandan farmers. Market participation emerged as a dominant factor, significantly contributing to the overall variance in value creation. This emphasizes the critical need to focus on strategies that enhance farmers' access to markets and market knowledge to enable them to capture more value from their agricultural produce. Simultaneously, the importance of adopting and implementing efficient farming systems cannot be understated. Initiatives focusing on improving farming techniques, diversification, and sustainable practices are crucial to further elevate the value created by smallholder farmers. This research underlines the interconnectedness of market engagement and farming practices in influencing the economic output and value created by farmers in rural Uganda. The synergy between Farming Systems, Market Participation, and Value Creation is a complex yet essential nexus. Farming systems act as moderators, influencing the degree to which smallholder farmers can effectively engage with markets and consequently create value. Enhancing farming systems by improving infrastructure, providing necessary support, and aligning farming practices with market demands can significantly impact the value smallholder farmers can create

6. Recommendations

The strong positive correlation between market participation and value creation indicates the significance of engaging farmers in market activities. Policies and programs focusing on improving market access and disseminating market information could significantly benefit farmers. Collaborative efforts between agricultural extension services, cooperatives and local authorities might enhance these initiatives, enabling farmers to access broader markets and obtain fairer prices for their produce, which would, consequently, create more value. Additionally, the substantial positive relationship between farming systems and value creation highlights the importance of implementing improved farming techniques and systems. Initiatives that promote sustainable and innovative agricultural practices should be encouraged to enhance value creation. Support for training programs that introduce modern farming methodologies and techniques can aid farmers in optimizing their productivity and enhancing the quality of their output, thus creating more value. Key to the study, the hierarchical regression model suggests that experience in farming, the extent of accessible land, and the acreage under crop production collectively contribute significantly to value creation. Thus, investment in farmer capacity-building programs is essential. Tailored training and mentorship programs can enhance farmers' skills, knowledge, and understanding of sustainable agricultural practices. Access to resources and information that aid in the effective management of farm operations, including financial literacy and technological advancements, can further empower farmers to increase their productivity and value-creation potential. A comprehensive approach that combines market participation and farming system improvements could yield substantial benefits. Implementing integrated interventions that consider these factors holistically may yield synergistic effects, enhancing the overall impact on value creation.

Rotated Component Matrix[a]						
	Component					
	1	**2**	**3**	**4**	**5**	**6**
We deploy processes and practices that achieve growth objectives for our business and also for the customers.	.780					
We advise farm employees on what commodities are likely going to yield the best returns on their mechanization investments	.771					
Our staff are highly skilled and have sufficient knowledge of agricultural mechanization.	.748					
The equipment and implements we use offer a wide range of services, from land preparation, planting, spraying, weeding and harvesting.	.732					
We understand what is considered valuable to the customer, so much so that all our operations generate value for the customer.		.872				
Information from our clients influences what technology/equipment to use on the farm.		.816				
We work to enable stakeholders to access a well-constructed market where everything about mechanization is known in a transparent manner.		.712				

Rotated Component Matrix[a]						
	Component					
	1	2	3	4	5	6
Whatever we do, we ensure that it addresses the needs of our customers, such as purity, quality, and form.		.628				
Our farm uses equipment, machines and implements that ensure efficiency in operations.			.893			
We ensure timely operations for all our equipment on the farm.			.888			
We use the latest technologies that offer more benefits in a cost-effective way.			.691			
We have good relationships with employees, clients, suppliers and financiers of our business.				.914		
Our pricing strategy is very transparent and understandable to all existing and potential customers.					.837	
We own all the tractors and additional implements used on the farm.						.849
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.						
a. Rotation converged in 9 iterations.						

Table 1: Results of Exploratory Factor Analysis for Items of Value Creation

Rotated Component Matrix[a]						
	Component					
	1	2	3	4	5	6
We have consistency (in terms of quantity, quality and timeliness) in production of what is required by the market.	.921					
We deliver products/ produce to the market timely/ when it is demanded.	.830					
We are comfortable with the distance between our location and the nearest input (seeds, fertilizer, and pesticides) market.	.802					
We can access inputs (seeds, fertilizer, and pesticides) on a credit and cash basis.	.728					
The providers (seeds, fertilizer, and pesticides) provide the right information necessary for our business to invest in inputs.	.662					
We have many options on where to sell our products/ produce.		.848				
We sell products to the market at viable/good prices.		.805				
The cost of transporting produce to the market is affordable.		.801				
We can afford (seeds, fertilizer, and pesticides) when needed.		.771				
Our decision to sell is based on price and not immediate problems to be solved.		.529				
We source the best quality input (seeds, fertilizer, pesticides) we know of from the market.			.888			
We access inputs (seeds, fertilizer, and pesticides) in a timely manner and always when needed.			.792			

Rotated Component Matrix[a]						
	Component					
	1	2	3	4	5	6
We access inputs(seeds, fertilizer, and pesticides) that increase our farm productivity level.			.647			
We can influence the market to provide the inputs we need.				.871		
We produce to the standards/quality required by the market.					.687	
We make production (what, when, where, how and for whom to produce) decisions based on what the market wants.					.616	
We know where to get inputs (seeds, fertilizer, and pesticides) needed for our farm.						.875
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.						
a. Rotation converged in 13 iterations.						

Table 2: Results of Exploratory Factor Analysis for Items of Market Participation

Rotated Component Matrix[a]					
	Component				
	1	2	3	4	5
The land terrain in the area supports mechanized agriculture.	.908				
The production areas are accessible.	.716				
The physical features in the environment (trees, grass, and drainage) favour mechanized farming.	.689	.565			
The available infrastructure (road/transport, storage facilities) facilitates market access.		.920			
Government policies support mechanized and commercial farming.		.743			
The presence of weeds, pests, pathogens and diseases has minimal impact on our production.			.977		
The rainfall patterns support only one cropping cycle per year.				.935	
The rainfall patterns support 1 to 2 cropping cycles per year.					.923
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.					
a. Rotation converged in 6 iterations.					

Table 3: Results of Exploratory Factor Analysis for Items of Farming Systems

	Mean	Std. Dev.	1	2	3
Value Creation (1)	2.79	0.92	1		
Market Participation (2)	3.12	0.89	.861**	1	
Farming Systems (3)	3.73	0.73	.753**	.683**	1
	N		378	378	378
** Correlation is significant at the 0.01 level (2-tailed).					

Table 4: Results of Correlation Analysis

	Unstandardized Coefficients			Correlations			Collinearity Statistics	
	Model 1	Model 2	Model 3	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	3.096**	-0.094	-0.678					
how long have you been farming	-0.023	0.008	.000	-0.127	-0.122	-0.116	0.98	1.021
how many acres of land can you access	-0.001	2.71E-05	.000	-0.269	-0.291	-0.289	0.605	1.652
how many acres are under crop production	0.002	9.45E-05		-0.07	0.145	0.139	0.598	1.671
Market Participation		.904**	0.662**	0.861	0.845	0.8	0.842	1.187
Farming Systems			0.377**	0.753	0.443	0.225	0.509	1.964
R	0.32	0.862	0.891					
R Square	0.102	0.743	0.793					
Adjusted R Square	0.095	0.74	0.791					
R Square Change	0.102	0.641	0.051					
F Change	14.194	929.052	90.946					
df1	3	1	1					
df2	374	373	372					
Sig. F Change	.000	.000	.000					
Sig.	.000	.000	.000					
a Dependent Variable: Value								

Table 5: Results of Regression Analysis for Value Creation

n = 378, Control Variables (Number of years in farming, access to farming land in acres, number of acres a household has under crop production)

	B	*t*	*p*	95% CI	
				LLCI	ULCI
Constant	.022	.054	.957	.775	.819
Market Participation (A)	.394	.2.497	.013	.084	.704
Farming System (B)	.181	1.620	.106	.039	.400
A*B	.072	1.814	.045	.006	.150

Table 6: Summary of Moderated Regression Analysis Predicting Value Creation

Farming System	Effect	SE	T	p	95% CI	
					LLCI	ULCI
2.963	.607	.049	12.273	.000	.510	.704
3.733	.662	.034	19.562	.000	.596	.729
4.503	.718	.041	17.341	.000	.636	.799

Table 7: Conditional Effects of Market Participation

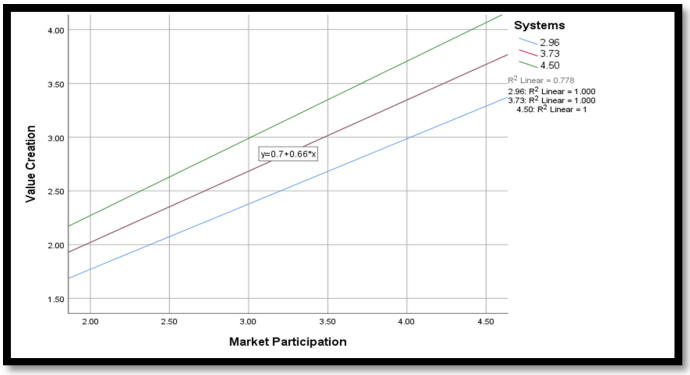

Figure 1: Moderation Plots

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8. Authors' Submission of Declaration

The authors formally declare that the content of this paper is their original work by themselves. It has not been published previously in any media including journals, conferences, or websites. It is not being reviewed by any editorial office of publishers. All cited materials have been properly credited with citations in the contexts and the References section.

9. Conflict of Interest Declaration

The authors declare no conflict of interest.

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