Smallholder Farmers' Market Orientation and the Factors Affecting It in Bangladesh

Ataul Gani Osmani[*], Elias Hossain[**]

[*] Department of Economics, Varendra University, Rajshahi 6204, Bangladesh
  e-mail: ataul.economics@yahoo.com

[**] Department of Economics, University of Rajshahi, Rajshahi 6205, Bangladesh
  e-mail: eliaseco@ru.ac.bd

Abstract

Smallholder farmers of Bangladesh struggle for a long time with access to markets due to lack storage and processing facilities. This paper investigates the market orientation status of smallholder farmers in Bangladesh. Using field survey data from 100 smallholder farmers of Durgapur upazila under Rajshahi district, we have calculated a household market orientation index to measure the households' market orientation status. In order to assess this, a One-way ANOVA analysis is adopted to check whether the smallholders are using more traded inputs in production as they move from low to high level of market orientation. Moreover, a multiple regression analysis is applied to identify the factors determining smallholders' market orientation. Results show that smallholder farmers in the study area are not subsistence oriented as, on the average,65% of their produced commodities are sold in the market and the sample farmers are moderately market oriented with average market orientation index 0.59,indicating that they allocate 59% of their cultivable land to marketable crops. This also indicates that market orientated farmers are progressively using traded inputs to increase total production and are significantly influenced by exogenous determinants like farm size, use of improved seeds, access to extension services and total value of produced cash crops. These findings suggest that enhancing direct motivation, enforcing farmer-market contacts and promoting market orientated crop technologies may facilitate the market orientation status of smallholder farmers.

Keywords: *Market Orientation, Smallholder Farmers, Traded Inputs, Bangladesh*

JEL Classification: *M21, Q13, B23*

Introduction

Market orientation of farmers is an ultimate result of agricultural commercialization. It requires access to emerging high-income agricultural markets for buying input and selling output (Balint, 2003). Due to difficulties like poor quality and high cost of inputs, high transportation costs, high market charges and unreliable market information, smallholder farmers in Bangladesh cannot cope with this high-income agricultural market (Sharma et al., 2012). Thus, the market orientation status of the smallholder farmers in Bangladesh is relatively low. To meet expanding demand and set opportunities for income generation in rural economy, it is necessary to link smallholder farmers strongly with market (Pingali, 1997). The necessary linkage between the farmers and market will increase the purchasing power for food and reallocate incomes to high valued non-food agribusiness sectors and off-farm enterprises (Davis, 2006). Market orientation of the high valued crops like fish, livestock products, fruits, spices and vegetables etc. is one of

the potential avenues of agricultural commercialization in Bangladesh. As high valued agricultural products are generally more perishable than the traditional staples, due to the lack of advanced post-harvest technologies Bangladeshi smallholder farmers cannot be the active participants in the market. In this context, the government and non-government organizations (NGOs) in Bangladesh are recently trying to transform smallholder agriculture from subsistence to market oriented (Azad, 2015).

Nevertheless, market orientation differs from market participation (Gebremedhin and Jaleta, 2012). Although market orientation translates into market participation, most of the researchers overlook market orientation and try to analyse agricultural commercialization only for output market participation (von Braun et al., 1994; Jaleta, et al., 2009; Otieno et al., 2009; Osmani and Hossain, 2015). Although the smallholder farmers in Bangladesh are now participating in output market with income mediated benefits (Osmani and Hossain, 2015; Razzaque and Hossain, 2007), they have not yet fully utilized agriculture for its multiple functions. However, sadly, literature on smallholder farmers' market orientation in Bangladesh is very limited or not at-all. Few popular articles, discussions or meeting papers on smallholder poultry and fish cultivation from government and non-government organizations have been available. Therefore, considering the issue of market orientation and smallholder farmers, several questions have arisen, which remained unanswered in the context of Bangladesh: (a) to what extent are smallholder farmers market oriented? (b) are market oriented farmers progressively using purchased inputs in their production? (c) and what are the factors that mostly determine the level of market orientation of smallholder farmers in Bangladesh? This paper is designed to respond to these questions by assessing the state of market orientation of the smallholder farmers, the pattern of using inputs by them, and identifying the factors that influence smallholders to be market oriented.

The paper has the following structure: section 2 provides a brief review of literature, section 3 deals with the methodology and data required for the study, section 4 presents the results and discussions based on the results, while section 5 concludes with some suggestions.

Literature Review

Market orientation has taken its own place in marketing thinking and business operations of manufacturing firms. But it is also important to incorporate market orientation in agriculture for rural development in developing countries (Helfert et al., 2001). In the process of economic development smallholder farmers' market orientation is one of the key ingredients to agricultural transformation (Johnston and Mellor, 1961; Johnston, 1970). Although there is an on-going debate on the role of smallholder farmers in economic development, they can efficiently use their land and cheaper family or local labour in production and directly be benefited from income and food supply growth (Hazell et al., 2007; Pingali, 2010). Smallholder farmers are important players but cannot cope with current trends in market demands (IFPRI, 2005). Narayanan and Gulati (2002) characterized smallholder farmers as practicing a mix of market-oriented and subsistence farming. Another study defined smallholder farmers as farmers with limited resource endowments, relative to large farmers in the sector (Dixon et al., 2003). The size of landholding or livestock ownership is a benchmark of defining small farms (Nagayets, 2005; Chamberlin, 2008). A farmer with the ownership of 0.05 to 2.49 acres of cultivable land is known as smallholder farmers in Bangladesh (GoB, 2008; Sharma et al., 2012). Thus, the smallholder farmers in Bangladesh are resource poor in terms of land holding. However, they may improve their livelihood status through market orientation as it leads to gradual decline in real food prices due to increased competition and lower costs in food marketing and processing (Jayne et al., 1995). For example, smallholder farmers in Bangladesh are enjoying better welfare outcomes in terms of more food and goods as they move through lower to upper level of commercialization (Osmani, et al., 2014).

Several studies have verified that the degree of market orientation is a major determinant of competitive advantage (Fritz, 1996; Selnes et al., 1996). As the smallholder farmers move to greater market orientation, they collect the required inputs (improved seed, inorganic fertilizer, crop protection chemicals etc.) from markets instead of their own produced inputs (Leavy and Poulton, 2007). It is shown in some empirical research findings that market orientation is positively related to aspects such as profitability (Narver and Slater, 1990), new diversified product (Atuahene-Gima, 1995) and sales growth with increased sales revenue (Greenley, 1995, Jaworski and Kohli, 1993). There is an evidence of research examining the importance of market orientation within food industry and related sectors (Harris and Piercy, 1999). More recently market orientation of smallholder farmers has been examined for different context in different countries (Gebremedhin and Jaleta, 2012; Goshu et al., 2012; Adenegan et al., 2013). These studies found that market orientation in smallholder agriculture is basically a production decision issue of what to produce for profit maximization. It is very much difficult to choose the commodities which can maximize profits of the smallholder farmers as different areas characterized by different geographic structures. Thus, the studies on market orientation need to be crop specific separately for different regions. As the present study on market orientation is crop specific in the context of Bangladesh, it will support to be enriched the scarce fuel of comprehensive and rigorous studies.

Methodology

Study area selection and data collection

The present study is based on primary data collected from *Durgapur* upazila under *Rajshahi* district of Bangladesh. This is mainly an agricultural area and characterized by the dominant crop rice with other minor crops such as wheat, potato, vegetables, jute, maize, oilseeds, pulse, onion, garlic etc. About 79.85% people of the upazila are farmers with small land holdings and rest 20.15% people are involved with non-agricultural activities. The present study has been carried out in three unions, chosen randomly, from *Durgapur* upazila of *Rajshahi* district namely, *Noapara*, *Deluabari*, and *Jhaluka*. The total population in *Noapara*, *Deluabari*, and *Jhaluka* are 25041, 25860 and 23028, respectively. Most of the people of these unions earn their income from agriculture and most of the farmers are smallholders. The randomly selected villages, two from each union, are *Nondigram*, *Kashipur*, *Vobanipur*, *Bera*, *Coupukoria*, and *Shaheber*. The study focuses on the 2013 production year and therefore relied on recalled information. Multistage random sampling technique is adopted to choose sample farmers from the study area. During the sampling, firstly, the researcher selected three unions randomly out of seven unions and in the next stage, two villages from each union are selected randomly. Next, a list of farmers is collected from the agriculture extension office of *Durgapur* upazila. Finally, we select 100 respondents from the six villages of three sample unions using the simple random sampling method. Thus, this study covers a total of 100 randomly selected farm households who were surveyed for data collection.

Empirical methodology

Hinderink and Sterkenburg (1987); Immink and Aarcon (1993); Jaworski and Kohli (1993); Fritz (1996); Selnes et al. (1996); Jaworski and Kohli (1996); Goshu et al. (2012), and Narver, Slater (1990) and Gebremedhin and Jaleta (2010) studied farm market orientation using different methodologies. Following Gebremedhin and Jaleta (2010) and Goshu et al. (2012), the present study firstly tries to assess the level or extent of smallholders' market orientation. Secondly, following the theoretical concept of Pingali (2001), the study checks whether the market oriented farmers are using traded inputs for non-traded inputs or not. Finally, following Gebremedhin and Jaleta (2010), the study also tries to sort out the important determinants of smallholders' market orientation.

Bangladeshi smallholder farmers are moderately commercialized. They produce diversified crops and participate in output market in different extent according to their commercialization level (Osmani and Hossain, 2015). But market participation (sales of output) status is not enough to look into the commercialization of smallholder farmers. Because, commercialization is induced by production decision and the production decision varies with different market orientation levels of the farmers. Market oriented smallholder farmers produce commodities that are more consumable and marketable in a planned way using market signals (Gebremedhin and Jaleta, 2010 and Goshu et al., 2012). Thus, using market orientation index, the study looks into the smallholder farmers' allocation of resources (land, labour and capital) to the more marketable commodities. When the farmers differ in the resource allocation pattern, they will differ in their market orientation. Firstly, a crop specific marketability index (CMI) is used to determine the proportion of total amount sold to market. The CMI is given below.

$$CMI_j = \frac{\sum_{i=1}^{N} X_{ji}}{\sum_{i=1}^{N} Y_{ji}} \quad ; \; Y_{ji} \geq X_{ji} \text{ and } 0 \leq CMI_j \leq 1 \tag{1}$$

The crop specific marketability index of jth crop is denoted by CMI_j. This is the proportion of crop j sold (X_{ji}) to the total amount produced (Y_{ji}) aggregated over the total households in a farming system. This crop specific marketability index (CMI_j) ranges from 0 to 1, where a value of closer to 0 indicates subsistence crops mainly produced for home consumption and a value of closer to 1 indicates commercial crops mainly produced for marketing. After computing CMI_j, the study computes a household's market orientation index (MOI_i) considering land allocation pattern of the household. This is weighted by the crop specific marketability index (CMI_j) of each crop. The household's market orientation index (MOI_i) is given below.

$$MOI_i = \frac{\sum_{j=1}^{j} CMI_j \times L_{ji}}{L_i^T}; \quad L_i^T > 0 \quad \text{and} \quad 0 < MOI_i \leq 1 \tag{2}$$

Where, L_{ji} is the amount of land allocated to produce crop j by ith household and L_i^T is the total crop land operated by the ith household in the considering production year. The value of MOI_i also ranges from 0 to 1, where the market oriented household takes a value of closer to 1 indicates the household allocates higher proportion of total operated crop land to produce more marketable crops.

Although earlier studies on smallholder market orientation have considered output market only, a sustainable market orientation requires integration into input markets as well (Pingali and Rosegrant, 1995). In the crop mix of the households, market orientation may be justified by the relative importance of more marketable crops and profit motive of the households (Pingali and Rosegrant, 1995; Pingali, 2001). According to Gebremedhin and Jaleta (2010) the realization of profit through market revenues also requires increased production efficiency using modern inputs and technologies. Having the background of market orientation, we adopt a statistical model of One-way ANOVA to inspect whether there is a rising trend in using purchased inputs in agricultural production by smallholder farmers working at different levels of market orientation. The reason is that in the recent years, per capita land holding has rapidly been reduced and the production system has been converted from organic to chemical.

Finally, following Gebremedhin and Jaleta (2010), market orientation index (MOI_i) is modelled as a function of different socio-economic factors to see how the factors affect the level of market orientation. The functional form is as follows:

$$MOI_i = f(X_i) \tag{3}$$

Where, MOI_i = Market Orientation Index or the level of market orientation, and X_i = assumed socio-economic factors that affect the level of market orientation. Therefore, a specified regression model is also formulated as follows:

$$MOI_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + u_i \tag{4}$$

Where, MOI_i is the market orientation index or the level of market orientation; β_0, $\beta_1,..,\beta_{10}$ are parameters to be estimated; X_1, $X_2,............,X_8$ are the explanatory variables that affect the level of market orientation, and u_i is the stochastic error term. The regression Equation (4) shows a linear relationship between dependent variable and explanatory variables and the equation is estimated using Ordinary Least Squares (OLS) method. The explanatory variables that are used in the regression are shown in Table 1.

Table 1. Specification of the Explanatory Variables for Multiple Regression Models

Variable Name	Type	Measurement	Expected Sign
X_1 = Farm size	Continuous	total cultivated land used for production in a production year (*Bigha = 33 decimals*)	+
X_2 = Farming experience	Continuous	Number of years engaged in crop production (years)	+
X_3 = Education level	Continuous	Formal education of the household head (years of schooling)	+
X_4 = Cost of Chemical fertilizer	Continuous	Total value of fertilizer used in the last production year (Tk.)	+
X_5 = Use of improved seeds	Continuous	% land used improved seeds (the percentage of total cultivated land by planting improved seeds)	+
X_6 = Access to extension Services	Dummy	If access (access to information services from experts related to the use of irrigation, fertilizer, pesticide, prices etc.) then 1, otherwise o	+
X_7 = Value of cash crops	Continuous	Total market value of produced cash crop (measured in the Bangladeshi currency Taka)	+
X_8 = Value of food crops	Continuous	Total market value of produced food crops in the production year (measured in the Bangladeshi currency Taka)	+

Results and Discussion

This section provides the results of the estimations towards attaining the objectives set for the study. To this end, the results from estimation of crop specific marketability index are presented in the next section. After that results from the One-way ANOVA analysis are presented. Finally, the estimation result of the multiple regression models showing the influence of the key socio-economic factors on the level of market orientation are discussed.

Level of market orientation of smallholder farmers

In explaining the level of market orientation of smallholder farmers in Durgapur upazila, we adopt a household market orientation index. The market orientation index is computed for specific crops produced in 2013production season. The findings of market orientation index reflect that the land allocation decision of households is designed for profit maximization. Specifically, on average, smallholder farmers in the study area allocate 59% of their cultivable land to the production of marketable crops and as the average market orientation index is about 0.59, indicating a moderate market orientation of smallholder farmers in the study area (Table 2).The computed results from crop marketability index and household market orientation index are presented in Table 2.

Table 2. Smallholder Farmers' Level of Market Orientation

Indicators	Rice	Jute	Potato	Wheat	Maize	Mustard	Pulse	Onion	Total
Total Production ('000'Tk.)	4541.25	200.5	3239.8	274.99	760.51	186.98	194.48	790.9	10189.4
Total sales ('000' Tk.)	1983.58	198.4	2528.04	123.69	750.51	146.48	156.5	743.9	6631.1
CMI	0.44	0.99	0.78	0.45	0.99	0.78	0.80	0.94	0.65

Household Market Orientation Index (MOI)					
Indicators	Obs.	Mean	Std. Dev.	Min	Max
MOI	100	0.59	0.24	0.06	0.96

Source: Authors' calculations according to data from Osmani and Hossain (2013)

Analysis of crop specific marketability index indicates that 65% of total production is sold by the households in the study area. Thus, the households are considered moderately commercialized as their sales' percentage is well above the midpoint but less than the threshold level 75%. According to Goletti (2005) and Ohen et al. (2013), farmers (small or large) are said to be commercial if they sell more than 75% of their total production. However, the crop specific marketability index reveals that jute and maize are jointly the most marketable crops in the study area. Although rice and wheat are produced by almost every farmer in the study area, the crop specific marketability index calculates that only 44% of produced rice and 56% of produced wheat are sold in the output market as shown in the above table. This indicates that rice and wheat farmers are less commercialized as these crops are mainly produced to meet the farmers' consumption needs. Potato is another food crop produced by the smallholder farmers where marketability index is computed as 0.78 which indicates that potato producers are commercialized. Table 2 also shows that crop marketability indices are 0.78, 0.80 and 0.94 for mustard, pulse and onion, respectively, but farmers are less interested in production of these types of crops.

Intensity of market orientation by the using pattern of purchased inputs

Results in Table 3 indicate that purchased input use pattern is an important determinant of market orientation in the study area as it is geared through the progressive need to purchased external inputs into production process. This is evident from the analysis of One-way ANOVA examining the relationship between the levels of market orientation and purchased (traded) input use pattern. In doing this statistical test, the farm households are categorized into three groups depending on the value of MOI, such as <0.50 (less than 0.50), ≥0.50 to <0.75 (0.50 to less than 0.75) and ≥0.75 (0.75 or more), and improved seeds, chemical fertilizer and pesticides are taken as the intensity representatives of market orientation. Moreover, as most of the respondents (about 85%) are *Boro* rice producers, we only considered input cost of *Boro* rice

production showing the rising trend of average cost. Table 3 shows the intensity of market orientation of smallholder farmers by the use of purchased inputs in the production of agricultural commodities. The results presented in the table show that the use of purchased inputs has consistent increasing pattern along the level of market orientation, from low to high.

Table 3. Intensity of Market Orientation by use of Purchased Inputs

Representatives of Purchased Inputs	Level of Market Orientation			Prob.> F
	<0.50	≥0.50 to <0.75	≥0.75.	
Average costofimproved seeds (Tk.)	270.35	476.60	710.77	0.0001***
Average costof chemicalfertilizer (Tk.)	1978.20	3487.34	5235	0.0001***
Average costofpesticides (Tk.)	625.43	1104.32	1657.75	0.0001***
Total Number of Observation	25	47	28	100

Note: *** 1% significance level

Source: Authors' calculations according to data from Osmani and Hossain (2013)

The One-way ANOVA test results confirm that the variation in average costs of improved seeds, chemical fertilizer and pesticides by farm households at different levels of market orientation is statistically significant at 1% significance level (Table 3).

Determinants of market orientation

Table 4 presents the results of the OLS estimation of factors affecting smallholder farmers' market orientation in *Durgapur* upazila of *Rajshahi* district. The R-squared value indicates that 49% of the variation in the market orientation index is explained by the independent variables. As the study is based on the primary data, there is a probability of occurring heteroscedasticity and multicolinearity problems in the estimation process of OLS. However, the robust action is taken to remedy the problem of heteroscedasticity. Moreover, the VIF test is performed to see whether the model suffers from the problem of multicollinearity and incorrect specification. This test reveals that the model is free from such problems as the average VIF value for the explanatory variables included in OLS estimation is 1.45.

Table 4. OLS Estimation Results for Determinants of Market Orientation

Variable	Coefficient	Robust Std. Err.	T	P>|t|
Farm size	0.028**	0.013	2.09	0.040
Experience	0.002	0.002	1.23	0.221
Education level	0.002	0.004	0.52	0.605
Cost of Chemical fertilizer	3.45e-06	6.46e-06	0.53	0.595
Use of improved seeds	0.002***	0.001	2.86	0.005
Access to Extension services	0.099**	0.047	2.11	0.038
Value of produced cash crops	1.30e-06***	3.37e-07	3.86	0.000
Value of produced food crops	1.93e-07	4.76e-07	0.41	0.686
Constant	0.146	0.079	1.84	0.069
$F_{(10, 89)} = 11.92$; Prob. > F = 0.0000; R-squared =0.4867; Root MSE =0.17835				

Note: *** and ** indicate 1% and 5% significance levels, respectively

Source: Authors' calculations according to data from Osmani and Hossain (2013)

Table 4 shows the results from the OLS estimation of the determinants of market orientation of smallholder farmers. The results indicate that the extent of market orientation is significantly determined by farm size, use of improved seeds, access to extension services and value of produced cash crops. That is, these variables have stronger numerical effects on market orientation. Other explanatory variables have no significant impact on market orientation of the small holder farmers. It is found that there is a strong significant and positive relationship

between farm size and market orientation in the study area i.e. (β = 0.028; P = 0.040). This indicates that if farmers' farm size is increased by one *bigha*, market orientation index will be increased by 0.028 at 5% significance level. The fact might be that farm households with large farm size could allocate their land for cash crop production giving them better position to participate in the output market. The regression results also reveal that use of improved seeds has a significant and positive impact (β = 0.002; P = 0.005) on the level of market orientation. It explains that at 1% significance level, farm households' market orientation increases by 0.20% if they use 1% more land for cultivation by using improved seeds. This is so because use of improved seeds render higher production and improved seeds are supposed to be effective to produce high quality crops resulting from high demand and possible higher selling price for the crop.

Agricultural extension services appear effective in inducing market orientation for Bangladeshi smallholder farmers. The results of table 4 show that farmers' access to extension services (β = 0.0993; P = 0.038) correlate significantly and positively with the market orientation in the study area. This explains that smallholder farmers' market orientation is increased by 9.93%, if they have access to locally available agricultural extension services. The result may be attributed to the effective monitoring and teaching approach of the extension agents in the study area. Finally, the amount of total cash crop production (β = 1.30e-06; P = 0.000) is also strongly and positively related with market orientation of smallholder farmers in the study area. This explains that as cash crop production increases by one Taka (Bangladeshi currency), market orientation increases by 0.00013%.

Conclusion

The present study examines the status, intensity and determinants of market orientation of smallholder farmers in Bangladesh with the reference of Durgapur Upazila. The calculation of household market orientation index reveals that on the average, farm households allocate 59% of their cultivable land to the production of marketed crops. This is because of the gradual substitution of complex farming system by specialized farming for specific high value crops in which every farm decision depends on the market signals. It is also important to note that as farmers in the study area are moderately market orientated, they progressively use traded inputs like improved seeds, chemical fertilizer and pesticides in production. One-way ANOVA test finds that farm households are overwhelmingly using purchased inputs in production as they move from lower to higher level of market orientation. However, one of the key limiting factors in production is that although farmers are somewhat market oriented, the production system is not yet fully mechanized. Moreover, the result of OLS estimation shows that market orientation of smallholder farmers increases as the farmers with relatively larger farm size are using more improved seeds and have well accessed to extension services for production of cash crops. Specifically, these findings suggest that a holistic approach should be taken that would enforce farmer-market contracts and fair input prices, adequate extension services for all marginal and smallholder farmers and encourage farmers to produce and trade market oriented crops, such as onion, pulse, maize, jute and potato. Along these lines, there is a need to promote market oriented crop technologies and further research on endogenous determinants of market orientation also deserves better attention.

Acknowledgement

References

1. Adenegan, K.O., Olorunsomo, S.O., and Nwauwa, L.O.E., 2013. Determinants of Market Orientation among Smallholders Cassava Farmers in Nigeria. *Global Journal of Management and Business Research Finance*, Volume 13, Issue 6, Version 1.0.
2. Atuahene-Gima, K., 1995. An exploratory analysis of the impact of market orientation on new product performance: A contingency approach. *J. Prod. Innovat. Manag.*, 12: 275-293.
3. Azad, S.A.K., 2015. High-Value Agriculture Products in Bangladesh: An Empirical Study on Agro-Business Opportunities and Constraints. *Dhaka University Institutional Repository*, A Ph. D. Thesis submitted to the Department of Marketing, University of Dhaka.
4. Balint, B.E., 2003. Determinants of Commercial Orientation and Sustainability of Agricultural Production of the Individual Farms in Romania. An unpublished PhD Dissertation, University of Bonn, Germany.
5. Chamberlin, J.,2008. It's a Small World After All, Defining Smallholder Agriculture in Ghana. paper presented at *International Food Policy Research Institute (IFPRI),* IFPRI Discussion Paper 00823.
6. Davis, J.R., 2006. How can the poor benefit from the growing markets for high value agricultural products? Research Report, Natural Resources Institute, Kent, UK.
7. Dixon, J., Taniguchi, K., and Wattenbach, H., Eds.2003. Approaches to assessing the impact of globalization on African smallholders: Household and village economy modeling. Proceedings of a working session on Globalization and the African Smallholder Study, Food and Agriculture Organization of the United Nations.
8. Fritz, W., 1996. Market Orientation and Corporate Success: Findings from Germany. *European Journal of Marketing*, Vol 30(8): 59-74.
9. Gebremedhin, B., and Jaleta, M., 2010. *Commercialization of Smallholders: Is Market Participation Enough*? Joint 3rd African Association of Agricultural Economists (AAAE) and 48th Agricultural Economists Association of South Africa (AEASA) Conference, Cape Town, South Africa.
10. Gebremedhin, B., and Jaleta, M., 2012. Market orientation and market participation of smallholders in Ethiopia: Implications for commercial transformation. Proceeding of International Association of Agricultural Economists (IAAE) Triennial Conference. Foz do lguacu, Brazil.
11. Goletti, F., 2005. Agricultural Commercialization, Value Chains and Poverty Reduction, Making Markets World Better for the Poor. Discussion Paper no.7, Hanoi: Asian Development Bank.
12. Goshu, D., Kassa, B., and Ketema, M., 2012. Measuring Smallholder Commercialization Decision and Interaction in Ethiopia. *Journal of Economics and Sustainable Development*, Vol.3, No.13.
13. GoB (Government of Bangladesh)., 2008. Handbook of Agricultural Statistics, December 2007. Ministry of Agriculture, Government of the People's Republic of Bangladesh, Dhaka.
14. Greenley, G.E., 1995. Market orientation and company performance: Empirical evidence from UK companies. *Brit. J. Manage.,* 6: 1-13.
15. Hazell, P., Poulton, C., Wiggins, S., and Dorward, A., 2007. The Future of Small Farms for Poverty Reduction and Growth 2020. Discussion Paper No. 42. IFPRI, Washington, D.C.
16. Harris, L.C., and Piercy, N.F., 1999. Management behavior and barriers to market orientation in retailing companies. *Journal of Services Marketing,* 13(2): 113-131.
17. Helfert, G., Ritter, T., and Walter, A., 2001. How does market orientation affect business relationships? A Proceeding of the 17th IMP Conference, Oslo, September 9-11, pp: 1-26.
18. Hinderink, J., and Sterkenbur, J.J., 1987. Agricultural Commercialization and Government Policy in Africa. KPI Limited, New York.
19. Immink, M.D.C., and Alarcon, J.A., 1993. Household Income, Food Availability, and Commercial Crop Production by Smallholders Farmers in the Western High lands of Guatemala. *Economic Development and Cultural Change*, 41: 319-342
20. IFPRI (International Food Policy Research Institute)., 2005. The future of small farms: Proceedings of a research workshop. Wye, UK, June 26-29, Washington, DC.
21. Jaleta, M., Gebremedhin, B., and Hoekstra, D., 2009. Smallholder commercialization: Processes, determinants and impact: Improving Productivity and Market Success (IPMS) of Ethiopian Farmers Project. *International Livestock Research Institute* (ILRI), Discussion Papers, No. 18. Nairobi, Kenya.
22. Jayne, T.S., Mukumbu, M., Duncan, J., Lundberg, M., Aldridge, Staatz, J., Howard, J.K., Nakaponda, B., Ferris, J., Keita, F., and Sananankoua, A.K., 1995. Trends in real food prices in six Sub-Sahara African countries. Policy synthesis Number 2 East Lansing: Michigan State University.

23. Johnston, B.F., and Mellor, J.W., 1961. The Role of Agriculture in Economic Development. *American Economic Review* 51 (4): 566–593.

24. Johnston, B.F., 1970. Agriculture and Structural Transformation in Developing Countries: A Survey of Research. *Journal of Economic Literature,* 8 (2): 369–404.

25. Jaworski, B.J., and Kohli, A.K., 1993. Market Orientation: antecedents and consequences. *Journal of Marketing*, Vol. 57(3): 53-70.

26. Leavy, J., and Poulton, C., 2007. Commercializations in Agriculture. Future Agricultures Consortium, working paper 003.

27. Narver, J.C., and Slater, S.F., 1990. The effect of marketing orientation on business profitability. *Journal of Marketing*, Vol. 4(1): 20-36.

28. Nagayets, O., 2005. Small Farms: Current Status and Key Trends. Information Brief Prepared for the Future of Small Farms Research Workshop, Wye College.

29. Narayanan, S., and Gulati. A., 2002. Globalization and the smallholders: A review of issues, approaches, and implications. Markets and Structural Studies Division. *International Food Policy Research Institute*, Discussion Paper No. 50. Washington, D.C.

30. Ohen, S.B., Etuk, E.A., Onoja, J.A., 2013. Analysis of Market Participation by Rice Farmers in Southern Nigeria. *Journal of Economics and Sustainable Development*, vol. 4, no. 7, pp. 6-11.

31. Osmani, M.A.G., and Hossain, M.E., 2013. Household survey-2013: Commercialization of smallholder farmers and its welfare outcome, Department of Economics, University of Rajshahi, Rajshahi-6205, Bangladesh.

32. Osmani, M.A.G., Islam, M.K., Ghosh, B.C., and Hossain, M.E., 2014. Commercialization of Smallholder Farmers and Its Welfare Outcomes: Evidence from Durgapur *Upazila* of Rajshahi *District*, Bangladesh. *Journal of World Economic Research,* Vol. 3, No. 6, 2014, pp. 119-126.

33. Osmani, M.A.G., and Hossain, M.E., 2015. Market Participation Decision of Smallholder Farmers and its Determinants in Bangladesh. *Economics of Agriculture,* Vol. 62, No. 1, pp. 163-179.

34. Otieno, D.J., Nyanamba, J.O.T., and McCullough, E., 2009. Market Participation by Vegetable Farmers in Kenya: A comparison of Rural and Peri-urban Areas. *African Journal of agricultural Research*, Vol 4(5): 451-460.

35. Pingali, P.L., and Rosegrant, M.W., 1995. Agricultural commercialization and diversification: Process and polices.*Food Policy*, 20(3):171-185.

36. Pingali, P.L., 1997. From Subsistence to Commercial Production Systems: The Transformation of Asian Agriculture. *American Journal of Agricultural Economics*, 79(2): 628-634.

37. Pingali, P.L., 2001. Environmental consequences of agricultural commercialization in Asia. *Environment and Development Economics*, null, pp 483-502.

38. Pingali, P.L., 2010. Agriculture Renaissance: Making "Agriculture for Development" Work in the 21st Century. *Handbook Agric. Econ.* 4:3867-3894. Elsevier.

39. Razzaque, M.A., and Hossain, M.G., 2007. Country Report on the State of Plant Genetic Resources for Food and Agriculture. Ministry of Agriculture, Bangladesh.

40. Sharma, V.P., Jain, D., and Sourovi, D., 2012. *Managing agricultural commercialization for inclusive growth in South Asia.* Agriculture Policy Series, Briefing Paper No. 6/2012,GDN, New Delhi, India.

41. Selnes, F., Jaworski, B.J., and Kohli, A.K., 1996. Market Orientation in United States and Scandinavian Companies: A cross-cultural study. *Scandinavian Journal of Management*, Vol 12(2): 139-157.

42. von Braun, J., and Kennedy, E. (Eds.)., 1994. Agricultural Commercialization, Economic Development, and Nutrition. Johns Hopkins University Press, Baltimore.