

**TOBIT ESTIMATION OF THE INTENSITY OF EXPORT SUCCESS OF
HORTICULTURAL ENTERPRISES IN GHANA**

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ABSTRACT

Purpose- The issue of export success and the ability to sustain oneself in international horticultural markets have become more critical in the recent global and economic downturn because of its significance to the economy and to actors in the horticultural export chain. The extent of success is even much critical for enterprises. Therefore this study establishes the factors which influence the intensity of export success which measures the extent of export success.

Design- Primary data were collected from 52 managers and representatives of horticultural exporting firms through a semi-structured questionnaire. The *tobit* model was used to estimate the intensity of export success by horticultural enterprises in Ghana.

Findings- The result indicates that, manager's educational level, managers past experience, manager trained in export management, manager's entrepreneurial orientation, presence of export department, product diversification and government support directly influences the intensity of export success. Export barriers and constraints in accessing working capital negatively influences intensity of export success.

Practical implications- Personal or personal development in terms of training in export management and build up of experience is important in the quest to improve the intensity of export success. Organisational reforms such as institution of export department and diversifying horticultural export products improves the intensity of export success. To improve the intensity of success, external factors such as working capital inaccessibility and trade barriers should be addressed by various stake holders. In all government and institutional interventions has been proved to be of the essence.

Originality/value- Although various determinants of export performance or success have been established by researchers the factors that influence the intensity of export success is not known. This study therefore bridges this gap.

Keywords – Tobit, export success, horticulture, enterprises, Ghana

Article Type – Research paper

INTRODUCTION

Export-led growth has been a primary development strategy in the global economy. Exposure to international trade can significantly contribute to economic growth and social development. Export-based growth has an immediate beneficial impact; jobs, income opportunities, and a new basis for capital, technology, and skills can be created (Fromm and Dornberger, 2005). Export growth occurs when firms in the sector are successful; it is much more effectual when the intensity of success enterprises are high.

Successive governments in Ghana had therefore made major efforts over the years to stimulate exports through diverse policy instruments. There has been practical evidence since the early 1980's under the economic recovery programme (ERP) and the structural adjustment programme (SAP) which followed (Buasi, 2000). The ERP aimed at making export promotion

the focal point, coupled with export diversification (ISSER, 2006). The monopoly of cocoa as the major traditional export crop was questioned and horticultural exports (NTAEs) such as pineapple, papaya, mango, and chillies were given attention.

Studies done by Baah-Nuakoh *et.al.* (1996) on ‘exporting manufacturers from Ghana’ showed that the structural adjustment policies (SAP) that accompanied the economic reform programme (ERP) of the 1980’s created incentive systems conducive for the expansion of non-traditional exports, yet, what it takes to survive in the export sector and improve the intensity of success was never outlined. Estimating the intensity of success therefore becomes the focus of this study.

METHODOLOGY

Data collection procedure

The study was undertaken in the Central, Eastern and, Greater Accra Regions of Ghana which constitutes the southern tropical belt. These regions have the right edaphic conditions for efficient production of the horticultural export crops. Besides these, most of this area of cultivation are linked relatively with good road networks and are relatively closer to the terminals of Ghana’s points of exit of internationally tradable commodities that is, the Kotoka International Airport, and Tema Harbour (see figure 1). The districts demarcated in the map forms major areas where most of the horticultural products are obtained.

Figure 1: Map of Ghana Showing Belt of NTAE and Study Area



Area
 Source: CERSGIS, 2009

A sample size of 52 horticultural exporters was obtained. Respondents were identified from current list provided by the Federation of Association of Ghanaian Exporters (FAGE) in Ghana's Fresh Produce Exporter's Directory, 2008. FAGE act as the mother of all export associations from which the sample was drawn from. There was face-to-face interviewing using a semi-structured questionnaire.

Theoretical model

Tobit estimation was employed to determine the factors that influence intensity of export success as has been used in most econometric studies of intensity, especially, of adoption (Baidu-Forson, 1999). Here, the binary dependent variable, successful or not successful is not appropriate. In his study of adoption of land enhancing technology in the Sahel, Baidu-Forson (1999) suggested that, valuable information may be lost due to the use of binary dependent variable. The dependent variable used here is therefore censored at success. To obtain intensity dependent variables for analysis, the mean index (the mean performance score) is subtracted from the average score of each firm's aggregate performance score (see appendix1 for performance indicators). Those with negative resultant values were tagged to zero (0) and those with positive values were recorded in their absolute terms. Hence the intensity of export success here refers to the extent to which a firm's average score deviate from the mean. It is given as: $(AS - \bar{XS})$

Where

AS is the firm's average performance score

\bar{XS} is the mean index (mean performance score)

Estimations in the tobit model assume a tobit index (T) where $T = \beta'x_i$ and the vector, β includes a constant. If (T) fall below a critical threshold level (T^*) , the success level is estimated to be zero. Therefore, the expected value of $y_i, E(y_i)$, is defined as:

$$\begin{aligned} E(y_i) &= T - T^* \geq 0 && \text{if } T \geq T^*, && \text{successful} \\ E(y_i) &= 0 && \text{if } T < T^* && \text{unsuccessful} \end{aligned} \tag{1}$$

The expected value of y_i is computed directly as:

$$E(y_i/x) = F\left(\frac{x'\beta}{\sigma}\right)(x'\beta) + \sigma f\left(\frac{x'\beta}{\sigma}\right), \tag{2}$$

Where:

x is the vector of the explanatory variables,

β is a vector of *Tobit* maximum likelihood estimates; and

σ is the standard error of the error term.

The effect of a change in any independent variable on $E(y_i/x)$ (marginal effect) is given as:

$$\frac{\partial E(y_i/x)}{\partial x_i} = \varphi\left(\frac{\beta x_i}{\sigma}\right) \beta_i \tag{3}$$

Empirical model

Collected survey data were analyzed using descriptive statistics and econometric models with the statistical software packages SPSS and Eviews. The estimated model is specified by equation 4:

$$y_i = \beta_0 + \beta_1 gen + \beta_2 educ + \beta_3 mpe + \beta_4 mtrain + \beta_5 ent + \beta_6 firmsize + \beta_7 proddiv + \beta_8 expdpt + \beta_9 rd + \beta_{10} gis + \beta_{11} eb + \beta_{12} wcl \quad (4)$$

The independent variables included enterprise owner (manager), enterprise (organisational) and institutional factors postulated to influence success of enterprises. These variables include *Gender (GEN)* is measured as a dummy variable; 1 if respondent is a male and 0 otherwise, *Education Level (EDUC)* is operationalized as number of years spent by a manager in formal education, *Manager's Past experience in exporting (MPE)* is operationalised as a dummy; 1 if respondents ever had experience in terms of foreign trade and travels before current position, or 0 otherwise, *Managers Training (MTRAIN)* is measured as a dummy on whether the manager has been trained in export management; 1 for yes and 0 otherwise, *Entrepreneurship (Personal Agency Belief)(ENT)* is measured as a product of locus of control and perceived self-efficacy. Personal Agency Belief = f (LOC*SE) (Harper, 2003), *Firm size (FSIZE)* is measured by the average number of workers per month, *Product Diversification (PODIV)* is measured as the number of different horticultural commodities exported a firm, *Export Department (EXPDT)* is operationalised as dummy; 1, if the firm has an export department and 0, otherwise, *Research & Development (RD)* is measured by the percentage of expenditures on R&D to output/annual income ratio, *Government or institutional support (GIS)* is used as an indicator of whether an exporting firm has ever received financial or technical or both support from either government or an institution. It was measured by a dummy variable that equals 1 when exporter has ever received support and 0 otherwise, *Export Barrier (EB)* on a four point scale (1= not very important; 4= very important), importance of political situation; socio-cultural complementarities; lack of adequate distribution channels; and importance of standards and technical regulation is measured following (Mavrogiannis *et al*, 2008). The average score for each firm is computed and dummied; 1, if export barrier has an important effect on export, 0, otherwise, *Working Capital Accessibility (WCA)* this variable measures the perceived working capital accessibility situation in the country. It is measured on a five point scale where managers were ask to rate their access to financial institutions, or funds. One extreme being very difficult, and the other extreme being very easy. The score for each firm is dummied; 1, if access to working capital is very difficult or difficult; 0, if access to working capital is neither difficult nor easy to very easy.

RESULTS AND DISCUSSIONS

The regression results of the model have shown the importance of certain managerial, organizational and institutional factors that influence intensity of export success. It has been clear that, managers education level (EDUC), positively affects the intensity of export success of enterprises in the horticultural sector of Ghana by 0.59 percent (Table 1). The benefits attained from education enlighten a manger enough to adapt new technology and bring in new ideas for

the improvement of the firm's performance. Also, the result indicate that, should a manager who has ever travelled or traded in trading partners country or being in similar environments (thus manager with past experience in exporting) be engaged, the intensity of success in a non-traditional agricultural crop exporting firm increases by 12.59 percent. The travels and foreign exposures equip manager to know the intricacies of foreign environment, how to thrive and do business in it successfully. Likewise, managers training in export management and manager's entrepreneurship level also have a direct relationship with export intensity. The result implies that, if a manager participates in an export management training course/exposition, the intensity of export success of a firm increases by about 20.90 percent. Training in export management acquaints management with the current requirements of the export market thereby ensuring that the right form of product is presented to the market to ensure good performance of the enterprise. A percentage increase in the entrepreneurship level of managers in the horticultural export sector increases the intensity of export success by about 0.01 percent.

Table 1: Tobit Analysis of Determinants of Export Success Intensity

Dependent Variable: EXPORT SUCCESS INTENSITY (Censored Normal)			
Variables	Coefficient	Std. Error	Marginal Effects
C	-1.522331	0.634577**	-0.5217
GEN	-0.113034	0.316661	-0.0387
EDUC	0.017283	0.008857**	0.0059
MPE	0.367213	0.152939**	0.1259
MTRAIN	0.609802	0.191852***	0.2090
ENT	0.000248	0.000120**	0.0001
FIRMSIZE	-0.000273	0.000516	-0.0001
PRODIV	0.069135	0.019904***	0.0237
EXPDPT	0.456189	0.182450***	0.1563
RD	-0.157349	0.109721	-0.0539
GIS	0.580474	0.172008***	0.1989
EB	-0.324375	0.162320**	-0.1112
WCI	-0.471940	0.192503***	-0.1617
R ²	0.536893	Log likelihood	-25.13155
Adjusted R ²	0.378462	Avg. log likelihood	-0.483299
S.E. of regression	0.315624	Mean dependent var	0.342720
Sum squared resid	3.785497	S.D. dependent var	0.400346

Source: Field Survey, 2008.

***, **and * are significant at 1%, 5% and 10% resp.

The organisational factors, Product diversification and presence of export department directly related to intensity of export success of horticultural enterprises in Ghana. The result further shows that, intensity of export success increases by about 2.37 percent with one additional traded commodity added by a firm to its exports. Different non-traditional agricultural commodities have different market prices and also the seasonality of these products makes a profit maximising firm to balance resource portfolio in exporting the commodities to rig in revenue all year round. Should market performance of one commodity fail, there is another commodity to rely on hence ensuring the sustenance of the firm. Also, it can be inferred from the result that, the presence of export department in a firm increases the intensity of export success by about 15.63 percent.

Result of institutional factors influencing the intensity of export success indicates that a percent increase in the current government or institutional interventions in the fresh produce industry will increase the intensity of export success by about 19.89 percent. This means that, an effort aimed at relieving non-traditional agricultural crop exporting firms will go a long way to increase the intensity of export success by about 19.89 percent. Export barriers were found to reduce the intensity of export success. Thus an increment in perceived export barriers by the exporters reduces the intensity of export success by about 11.12 percent. This means that, if export barriers such as importance of political situation; socio-cultural complementarities; lack of adequate distribution channels; and importance of standards and technical regulation effects perceived by an exporter increases by a percent, the intensity of export success decreases by about 11.12 percent. Likewise, working capital inaccessibility negatively influences the intensity of export success. The result shows that, difficulty in assessing working capital by firms reduces firm's intensity of export success by about 16.17 percent.

RECOMMENDATIONS

The evidence provided here so far pre supposes that, managers training in export management and managers past experience matters most in efforts to improve intensity of export. Therefore firm owners and stakeholders in the horticultural enterprise should take interest in personnel development in terms of training in export management and build up of experience in exporting.

The presence of export department and product diversification as well increases the intensity of export success, hence horticultural exporting firms should institute export department while also considering diversifying their horticultural products.

The role of government and institutions is critical in helping exporters increase their export intensity. They should therefore not relent on their interventions in the horticultural sector but rather government policies and programmes as well as those of non-governmental organisations should be encouraged and improved upon.

Finally, the issue of working capital inaccessibility and trade barriers in the horticultural export sector should be addressed by the government of Ghana and various stakeholders since they hinder the intensity of export success.

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Appendix 1: Component of measurement scale (developed into five point likert scale)

Measures	Authors
1. Goal achievements of the firm	Katsikeas, <i>et. al</i> , (1996)
2. Satisfaction with firm’s international performance	White <i>et al</i> , (1998); Evangelista (1994)
3. Export Sales Volume Growth	Köksal, (2008); Mavrogianis <i>et al.</i> , (2008); Leonidou <i>et al.</i> , (2002);
4. Export Sales Value Growth	Shamsuddoha and Ali (2006); Leonidou <i>et al.</i> , (2002)
5. Firms Profit in Exporting	Köksal (2008); Katsikeas <i>et al</i> , (1996, 2000); Francis and Collins-Dodd (2000); White <i>et al.</i> , (1998)
6. Market Diversification/share (number of countries exported to)	Köksal (2008); Chen <i>et al.</i> , (2006); Katsikeas <i>et al.</i> , (1996, 2000); Francis and Collins-Dodd (2000); Fraser and Hite (1990)
7. Export Intensity (export proportion of sales)	Chen <i>et al.</i> , (2006); Francis and Collins-Dodd (2000)

Source Author’s compilation