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Determinants of Rose Flower Market Supply and Opportunities; The Case of EthioAgri-CEFT Private Limited Company, Holeta Town, Oromia Region, Ethiopia

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ABSTRACT

With over 50,000 people employed in both permanent and temporary positions, the flower industry plays a crucial role in creating job opportunities and contributing to the country's economy. This underscores the importance of continued support and investment in this sector. We were also impressed by the fact that Ethiopia has become a major player in the global flower market. The country's export-oriented approach has enabled it to compete with other top flower-producing countries, such as Kenya and Ecuador. This not only showcases Ethiopia's potential and capabilities in the flower industry, but also serves as a source of pride for the country. The study also highlighted some of the challenges faced by the Holeta flower farm, such as access to market information. This is a crucial aspect that can greatly affect sales volume and profitability. Therefore, it is essential for stakeholders to collaborate and develop strategies to improve access to market information, which will ultimately benefit the entire industry. Furthermore, the study identified several determinants that significantly influence sales volume, including the sex and education level of employees, product type, competition, and farm size. This information can be used by the Holeta flower farm and other industry players to better understand their market and make informed decisions to improve sales and profitability. We appreciated the use of both primary and secondary data in this study, as well as the thorough analysis using descriptive and inferential statistics. The inclusion of tables, figures, and STATA software also made the findings more comprehensible and reliable. We hope that the findings and recommendations from this study will be utilized to design effective interventions and strategies for the sustainable growth and success of the industry. Keywords: Determinants, Rose Flower, Market, Opportunities, EthioAgri-CEFT, Ethiopia.

Keywords

Environmental risks, climate change, drought and water scarcity

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Introduction

Agriculture remains an important sector of the African economy and the daily lives of the majority of Africans,

accounting for just over 60% of jobs and ranging from 3% to almost 50% of GDP across the continent. Ethiopia is the second most populous country in Africa with a population of over 100 million. The country has achieved

a remarkable and sustained economic growth over the past decade. Between 2005-06 and 2014-15, Ethiopian GDP grew by an annual average of 10.5 per cent. The major sectors, including agriculture, industry, and services. Agriculture plays an important role in Ethiopia's economy and provides livelihood for a growing population. As a whole, the agricultural sector has a share of approximately 44% of the country's GDP, 80% of the workforce and 70% of the export earnings. Despite its central role, the agriculture sector faces many new challenges such as environmental risks: climate change, drought, and water scarcity, and land degradation, low level of market integration, poor infrastructure and policy implementation (Babbie, 1998).

Horticulture and floriculture sub sectors are relatively new to export and contain a huge potential to earn foreign currency through balanced export and diversification. The amount of flower products exported from Ethiopia is currently at a minimal with respect to the international market demand. However, the competitive edge gained by Ethiopian cut flowers, especially roses, in European markets have attracted several stakeholders (Bacchetta, 2007).

Floriculture is getting utmost consideration for exports presently in Ethiopia. The floriculture sector is booming in Ethiopia making the country the second largest exporter in Africa (next to Kenya) and the fifth largest supplier of flowers to the global market. The majority of the production is rose flowers (estimated 80%) followed by summer flower and cuttings. The sector has turned in to among the five top foreign exchange earning commodities and also provides employment opportunity for hundreds of thousands of individuals (Babbie, 1998). Commercial cut flower business in Ethiopia was introduced by the Derg regime during 1980/1981 in collaboration with the German Society for Technical Cooperation. Imports of plants from the Canary Islands and Holland became instrumental in establishing Zeway, Debrezeit and Tibila estate farms with about 20 species of different cut flowers. The Horticultural Development Corporation, a state-owned enterprise, was the first business entity to enter into the floriculture industry (Bacchetta, 2007). In 2000, only nine (9) ha of land were under flowers and this has increased to over 1,200 ha in 2008, with more than 80 flower growers. More than 90,000 jobs have been created in and around these flower farms. Some 70 percent of the country's flower products are exported to the Netherlands while 10-15 percent is exported to Germany. Russia, Japan and the Near East

are other relevant markets. The rapidly growing flower sector in Ethiopia has now become the fourth foreign-currency generator of the country next to the top three: coffee, oilseeds and cereals. In addition to the positive impacts in terms of foreign exchange, economic development and creating employment, the floriculture sector provides an inspiring example of a successful introduction of advanced labor-intensive production technology. Ethiopian exports of fruits, vegetables and herbs have been limited but, with new investors coming in, these are now growing strongly. Both in Europe and the Middle East a growing interest exists for products from Ethiopia. Ethiopia's flower industry is a current example for how much potential the country has in agricultural production. Floriculture was identified as one of the target industries to be developed to generate agriculture-led employment in downstream processing industries. Government officials from various departments and a host of private initiatives have cooperated closely to establish a base for flower production (Sorsa, 2011).

Ethiopia grows different flowers like Roses, Carnations, Cardamoms and Satice. The flower sector create employment for over 50,000 persons (permanent and temporary), and one of top five products that enable the country to earn foreign exchange. The Ethiopian flower industry is an export-oriented industry. About 40 percent of the farms are fully foreign owned, 23 percent are joint ventures, and 36 percent are fully domestic owned. Among the most export products, Ethiopia export flower to the international market. The cut-flower industry is, without doubt, Ethiopia's most important success story. It is probably the country's best example of identifying globally competitive natural resources for product diversification, generating employment and attracting foreign direct investment (Shakya, 2009). The fluctuation of international market demand and variation in price for rose flower from time to time is the main challenge for prospective rose flower exporters in Ethiopia. This study will therefore try to identify the determinants of rose flower supply and tries to point out at the opportunities that would enhance the export of rose flower in EthioAgri-CEFT private limited company a member of MIDROC Ethiopia Investment Group.

Statement of the problem

According to Shakya (2009), the floricultural sector in particular has strong backing from the government. Incentives such as a five-year tax holiday, duty-free

imports of machinery and easy access to bank loans and land have attracted investors. In the last five years, the floriculture industry has become the second largest flower exporter from the continent following Kenya, and fourth largest non-EU nation to provide flowers in the world market. As per the estimates of the Ministry of Agriculture (MOA), the export value generated from this sector is expected to rise up to US\$535.8 million by 2022. As a result of these and other incentives, Ethiopia's flower business is booming and could potentially overtake coffee as the country's main export commodity.

Generally, the value of stems of flowers sold in the international market is declining from time to time. For instance, as per the annual reports of Ethiopian Horticulture Development agency (EHDA) and flora Holland auction center presented the decline in value of demand for flowers in the international market and the amount in stems of flowers sold is declining from time to time.

Despite Ethiopia's endowment of enormous natural resources and other competitive advantages, floriculture, so far, has been unable to make any significant development in export earnings. The challenge lies in realizing the enormous and opportunity for potential exports (Bacchetta, 2007).

For the flower producers and exporters, air transport is one of the main challenges they face in the sector. The other challenging factor that holds back the sector is its market destinations. Though there had been ambitious plans to diversify the market destinations, the effort to realize it was not satisfactory, according to some observers. Since 70% of the export is destined for the Netherlands, it was not able to diversify it in the wider market across the global market. Some observers are of the view that the flower sector is 'fenced by the Dutch' preventing local producers from exploring alternative and competitive markets. Moreover, issues of management and banking services are also other factors that cause local investors to go out of the business. Reports indicate that producers, mostly local ones, have been leaving the sector in recent years (market insider, 2014).

Globalization and liberalization have improved international trade dramatically in the past several decades. Continuous market deregulations, regional trade agreements caused significant growth of the world export. Fiscal Year 2016/17 has been a challenging year for Ethiopian's external sector particularly exports.

Merchandise exports exhibited modest growth of 1.4 percent. Conversely, export proceeds from flower went down by 3.0 percent as both export volume and international price fell by 2.5 and 0.5 percent, respectively. Hence, the share of flower in total export earnings decreased to 7.5 percent from 7.9 percent last year same period (NBE Annual Report 2016/17). The reasons for such down may accounted for many factors and export marketing related problems will be the one and probably the major. The marketing related impediments involved in the sector have not yet been empirically explored (Alebachew, 2018).

Hypercompetitive business environment has pushed organizations to limits dictating the need to adopt strategic management practices that support plans, choices and decisions that lead to competitive advantage and to archive sustainability, profitability, success and wealth creation (Kourdi, 2015). There is need to operate with set goals and objectives and therefore having strategies in place is paramount to the industry to ensure sustainability and efficiency in order to remain relevant in the market.

According to Porter (2011) strategic management addresses the question of why some organizations succeed, others fail and it covers the causes for company's success or failure. The organization must aim at providing satisfaction to customers if it hopes to stay afloat the tide of globalization in technology innovations, competitiveness and customer demands. Effective marketing practices have been noted to improve organizational performance (Kipsanai & Nkirina, 2018). Market growth is at the heart of firm performance and hence firms need to put measures in place to innovate and come up with strategies that will not only ensure market growth, but also promote sustainability of business.

Factors such as Sagging Economy, Poor Sales Forecasting, and Poor Individual Performance can adversely affect the sales performance of an organization. An organization which is operating in such environment should adjust itself with the external business affecting forces and overcome its internal weakness and limitations to be successful and competent. Sagging Economy, Poor Sales Poor sales forecasting, Poor Individual Performance can adversely affect the sales performance of an organization. Not only these, factors such as, product shortage, absence of training and development, setting inappropriate sales plan or quota

and the absence of attractive sales incentives and commission also can adversely affect sales volume of the business organization (Kefyalew, 2018). Despite the significance of rose flowers in the livelihood of many employees and foreign currency generating crop in the study area, it has not been given due attention. It is only recently that few studies have been done on rose flower. However, most of these studies have focused on production and were limited to a specific area and marketing aspects. Hence, this study attempts to fill in these gaps. Therefore, the researcher tried to investigate the major Determinants of Rose Flower Market Supply and Opportunities; the Case of EthioAgri-CEFT Private Limited Company, Holeta Town, Oromia Region.

Research Questions

What are the major internal export marketing constraints that the rose flower industry in EthioAgri-CEFT private limited company?

What are the major external export marketing constraints that the rose flower industry in EthioAgri-CEFT private limited company?

What are the factors affecting the sales volumes of rose flower in EthioAgri-CEFT private limited company?

Objectives

General Objectives

The general objective of this study is to identify the determinants of rose flower market supply and opportunities; The Case of EthioAgri-CEFT Private Limited Company, Holeta Town, Oromia Region, Ethiopia.

Specific Objectives

To identify internal export marketing barriers of rose flower industry in study area.

To assess external export marketing barriers of rose flower industry in study area

To identify factors affecting Sales volumes of rose flower in study area.

Significance of the study

This research study is to identify the determinants of rose flower market supply and opportunities in EthioAgri-CEFT private limited company. It has its own contribution for the future development of the sector.

First, it shows the key factors that affect the export marketing nature of cut rose flowers of Ethiopia in the international market. This helps the flower producers in the country to know more about the issue and to respond accordingly. To this end they may compete in the international market more aggressively than ever. Second, the study has its own contribution on increasing the foreign earning of the country in general and the flower producers in particular by showing the factors and possible solutions for the determinates of the demand of the rose flower in the international market. Third, it provides policy recommendations to strengthen the sector in general and to enhance the export performance of rose flowers in particular. The study can equip rose flower exporters devise their marketing strategy based on the recognized challenges enables policy makers to understand export marketing challenges and whereby assess policies and regulations of the country in order to enhance the performance of the sector.

This particular study is therefore important as baseline information to help stakeholders know the magnitude of the problem, and examine strategies for intervention towards control and designing a better program. It will be significant for all participants of Ethiopian rose flower export business; it has significant role for policy makers and regulatory bodies to revise the existing policy of the sector in order to enhance economic and social benefit expected from the sector.

The study has important contribution for academicians and researchers who want to make further study on the sector, and also. The study is important to enrich the research endeavors for Ambo University by adding one important research in the back bone of the economic sub sector of the country.

Limitation and Scope of the Study

The study is designed from the angle of the determinants of rose flower market supply and opportunities in rose flower export marketing in the case of EthioAgri-CEFT private limited company and its contribution to the Ethiopian export diversification. The floriculture industry in Ethiopia is one of the major sectors that fetch high amount of foreign currency on consistent basis and among the industry's producers and exporters, the study focuses only on rose flower marketing in relation to the earlier mentioned producer and Exporter Company. So, in order to understand the overview and indication of the determinants related to rose flower marketing of the

country, a case study is under taken on rose flower farms based in Ethiopia.

There are many flower industries in our country which produces different types of flowers to the international market. Furthermore, as far as the universe of the study is concerned, this paper limit its scope to one flower farm namely Holeta Flower Farm out of the two flower farms under the Umbrella of EthioAgri-CEFT private limited company both located at Amhara national state and Oromia national state respectively.

Materials and Methods

Description of the Study Area

The study area is located in Oromia national state, Finfine special zone, Holeta city. The site is located on the west direction 35 kilometers away from Addis Ababa the capital city of Ethiopia. The areas altitude is 2399 meters above sea level, Location (Latitude/longitude): 9° 00' N and 38°30' E, Agro-ecological zones (AEZs): M2-5, Soil type and coverage: Nitosols and Vertisols. The average annual rainfall amount of the area is 1700 mm. Besides, the sites annual average minimum and maximum temperature is 15 °c and 28 ° c respectively. Likewise, the study area is characterized by producing different varieties of roses (Cut flower).

Given the diversity of climatic conditions and altitudes in Holeta, three basic types of rose flower varieties can be grown. These are sweetheart (30-40 cm stems and small buds), intermediates (40-60 cm in stem length) and tea hybrids (60-80 cm stems). The majority of Holeta production falls into the intermediates, with considerable variation between farms. The yields per square meter also vary, with stems per square meter for tea hybrids ranging from 100 to 110 stems per square meter and for intermediates from 120 to 140 stems per square meter. Rose grown in Holeta are inside the green houses, are perennial shrubs that continuously grow from new shoots and may be harvested for a period of 4 to 7 years.

Under green houses, for most commercial rose flower varieties grown in Holeta, the best quality of flower shoots, in terms of stem length, diameter of leaf area and flower bud size, is obtained. As temperature increases, the periods from cut back to flowering became shorter; stem became shorter, diameter and leaf area smaller, flower weight decreases and adjoins with fewer and smaller petals. In Holeta Greenhouse flowers can

possibly be grown in both soil and soilless media whose physical and chemical properties are adjusted to obtain maximum productivity. Furthermore, properties such as, heat conservation, water holding capacity, fertilizer levels and pH can also be manipulated to reduce the amount of pests, pathogens and the probability of infection.

Each type of rose flower grown in Holeta has different optimal conditions varying by light intensity, light exposure, soil acidity, water needs and temperature amongst other factors. This is mainly because, high light intensity increases photosynthesis and directs partitioning of assimilates to young shoots. The majority of the farms in Holeta grow only roses.

Most of the farms grow multiple rose varieties, six to ten on average. The most important rose varieties currently in use are Upper class, Ever Red, Aloha, Bellrose Shanty, Duett, Athena, Paschamina, Mariyo, Indian Sunset and Sweet Candia. All rose flower exporters in Holeta have their own cooled processing and packing warehouse where the roses are prepared for transport after harvest. Virtually all export growers in Holeta also have their own refrigerated truck which is use to deliver the flowers to the airport.

EthioAgri-CEFT established the Agri-Flowers farm at Holeta in 2004, currently 17.3 ha are fully developed with different colorful varieties under state-of-the-art in green houses. Twenty million stems are produced per annum. Products are delivered mostly to the European Auction at the Netherlands on a sustainable basis and partly to direct markets throughout the Middle East and Japan. EthioAgri-CEFT has continued delivering quality flowers with reasonable volume by complying with the standard code of practice.

Types and sources of data

There are two types of data sources, which can be considered for research purpose. These data sources include the following:

Primary Data

Primary data can be referred as first hand data because it is collected mainly for the set research purpose. This type of data often helps to give appropriate answers to the research questions (Gelo, Braakmann, & Benetka, 2008).

Secondary Data

Due to the fact that this study is based on the existing theories, the literature was reviewed in depth in order to achieve a good understanding of the researched field. The secondary data, already collected and studied from other researchers, includes different sources of literature like books, journals, and statistics, different surveys, etc. By default the secondary data should be examined before any primary research is done, because its need to be examine what has already been generated about the topic and if it will be suitable to meet objectives. These types of data can also be called second hand data because they were not collected for a particular purpose but can be of important to several researchers at different time (Gelo *et al.*, 2008). Both Primary and secondary data was used for the study. Primary data were collected by using a questionnaire from employees and sales agents. On the other hand, secondary data was collect through document review. Moreover, Literature review, company manuals, brochures and practical observations are used to strengthen the research (Kefyalew, 2018).

Sampling techniques and sample size determination

The sample size is determined using Cochran's (1977) formula because of heterogeneity of sample respondents (Dattalo, 2008).

$$n = \frac{pq(z)^2}{e^2}, n = \frac{(1.96)^2 \cdot 0.46 \cdot 0.54}{(0.07)^2} = 195$$

Where, n is the sample size, z is the selected critical value of desired confidence level, p is the estimated proportion of an attribute that is present in the population, q=1-p and e is the desired level of precision. Sample respondents from195 (one hundred ninety five) permanent staffs of Holeta flower farm, was selected to analyze the market determinants and opportunities of the rose flower.

Methods of Data Collection

A questionnaire prepared by the researcher was used to collect data concerning Determinants of Rose Flower Market Supply And Opportunities; The Case of EthioAgri-CEFT Private Limited Company, Holeta Town, Oromia Region, Ethiopia.. A questionnaire is used

when factual information is desired. The use of questionnaire allows wider coverage, since researchers can approach respondents more easily than other methods (Patten, 2016). Therefore questionnaire was prepared for respondents including employees and sales agents to collect relevant data. The questionnaire was prepared in English language since the study is conducted in English language. However it was translated into Amharic and Afan Oromo to enable the respondents answer the question easily and comfortably.

Methods of Data Analysis

To analyze data collected from respondents, the researcher used quantitative data analysis techniques. For the quantitative data, the researcher used the software called STATA. Descriptive statistical analysis such as frequency, and percentage, was used in order to analyze the data.

Econometric analysis

The problem of endogeneity occurs when an explanatory variable will be correlated with the error term in the population data generating process, which causes, the ordinary least squares estimators of the relevant model parameters will be biased and inconsistent. The source of endogeneity will be omitted variables, measurement error and simultaneity (Chavas & Kim, 2001) Test and Durbin-Watson (DW) test will be applied to check the presence of endogeneity. There are two measures that are often suggested to test the existence of multicollinearity. Variance Inflation Factor (VIF) for a continuous variables association and Contingency Coefficients (CC) for dummy variables association. Thus, Variance Inflation Factor (VIF) is used to check multicollinearity among continuous variables. As R^2 increase towards 1, it is a collinearity of explanatory variables. The larger the value of VIF, the more troublesome or collinear is the variable X_i . As a rule of thumb, if the VIF is greater than 10 (this will happen if R^2 is greater than 0.80), the variable is said to be highly collinear (Urgessa, 2011).

$$VIF(X_i) = \frac{1}{1 - R_i^2} \dots(6)$$

Contingency coefficient is used to check multicollinearity between dummy variables. The value ranges between 0 and 1, with 0 indicating no association between the variables and value close to 1 indicating a high degree of association between variables.

$$CC = \sqrt{\frac{x^2}{N + x^2}} \dots(7)$$

Where, CC is contingency coefficient, x^2 is chi-square test and N is total sample size. If the value of CC is greater than 0.75, the variables are said to be collinear. Following (Tadele Melaku Challa & Paul Mansingh, 2016). Econometric model specification of supply function in matrix notation is as follows:-

Structural equations:

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} \dots + \beta_k X_{ki} + \mu_i \dots(8)$$

Y_i = is a dependent variable which represents total number of rose flowers supplied to the market

β_0 = is a constant coefficient or intercept of the regression

$\beta_1, \beta_2, \beta_3 \dots \beta_k$ = are the coefficients of X_i 's or represent the slopes of the model.

μ_i = is an error term which represents other factors that explains/ affects Y_i other than X_i 's as being unobserved.

$X_{1i}, X_{2i}, X_{3i} \dots X_{ki}$ = are explanatory variables that determine the rose flower market supply.

Hypothesis and Variable Definitions

In order to identify factors that will determine quantity of rose flower supplied to the market exploring which factors will significantly influence and how these factors will be related with the dependent variables are required. Hence, the following dependent and independent variables will be defined and hypothesized in the study.

Dependent Variables

Rose Flower Sales volume

It is a continuous variable in multiple linear regression model. It is measured as the volume /level/amount of rose flower supply by grower in 2020/21 production years.

Independent (Explanatory) Variables

The independent variables hypothesized to affect Sales volume of roses are the following:

Sex of the employee

A dummy variable that takes a value of one if the employee is male and zero otherwise (Almaz *et al.*, 2015) found that sex of the employee positively and significantly influences rose flower marketed supply.

Female employee might have family burdens than males that decrease production thereby the supply of rose flowers to the market. Therefore, sex of the employee was hypothesized to have a positive influence on rose flower sales volume.

Access to market information

This is a dummy variable taking a value of 1 if the Company had access to market information and 0 otherwise. It is hypothesized to affect rose flower marketable supply positively. Because, producers that have access to market information are likely to supply more rose flower to the market. Obtaining market information increased the chance of the company selling rose flower. Study by Omiti *et al.*, (2009) implies that getting information has a considerable marginal effect on increasing the probability of selling rose flower.

Education level of the employee

It is continuous variable measured in terms of years of schooling that the company worker was attended and hypothesized to affect market supply positively. This is due to the fact that a company with good knowledge can adopt better practices and would increase marketable supply. A study conducted by Akalu (2007); Mohanty & Sethi (2019) indicated that, education positively and significantly affected the market supply of rose flower. Therefore, this variable was expected to affect market supply of rose flowers positively.

Product price

This variable is measured in Birr per stem. Abebe (2009) argued that the product price has direct relations with marketable supply and hence it is expected to affect the company sales volume of rose flower price positively.

Farming experience

Rose flower farming experience is a continuous independent variable measured in the number of years a company has been engaged in rose flower production and marketing. Verhees & Meulenberg (2004) revealed that rose flower farming experience of the company has a significant and positive effect on the quantity of rose flower supplied to the market. Therefore, this variable was hypothesized to positively affect rose flower market supply.

Competition

Another critical continuous economic variable is the amount of competition in the firm's industry-both the number of competing firms and their relative strengths in the market place. Ideally, a company's marketing and sales programs should be designed to gain a differential advantage over competitors (Guesh, 2010).

Place (distribution) information

It is a continuous variable. The higher information regarding distribution aspect of the farm is directly related to their sales volume. This means that the higher the flower farms are provided with different marketing channels information, the higher is their sales volume (Ruta, 2011).

Product (Type of Roses grown)

It is a continuous variable. There are many types of roses grown commercially but for convenience the fresh cut roses are classified in to four such as Large or Hybrid Tea, Medium or Intermediate, Small or Sweetheart and Spray or Cluster (Ruta, 2011).

Farm size

This variable is a continuous variable and it refers to the total area of farmland that a company owns in hectare. In agriculture, land is one of the major factors of production. It is assumed that the larger the total area of the farmland the company owns, the higher would be the output. The availability of land enables the owner to earn more agricultural output which in turn increases the marketable supply (Hambisa & Geda, 2020). Therefore, farm size and marketable supply are expected to have direct relationship.

Quantity of Rose Flowers Produced

It is continuous variable measured in stems. A marginal increase in rose flower production has obvious and significant effect in motivating market supply. Therefore, this variable is hypothesized to have a positive effect on market supply Takele's (Takele, 2010) analytical result showed that, the quantity of rose flower produced jointly affected both the probability of market participation and volume of supply. Therefore it is assumed to affect participation decision and market supply positively (Sigei *et al.*, 2014).

Results and Discussion

Classic Assumption Test of econometrics problem

Test Multicollinearity

This test aims to test whether the regression model found a correlation between independent variables (independent). A good regression model should not happen correlation between the independent variables. If the independent variables are correlated then these variables are not orthogonal (Esa & Ghazali, 2012) for analysis with STATA output we see the results in the Appendix 1.

Result of VIF and CC test there is no multicollinearity existence. Since the value of VIF for continuous variables is less than 10 and CC for dummy and categorical variables is less than 0.75 (appendix 2).

Autocorrelation Test

From appendix 4 values obtained Durbin - Watson (DW count) of 1,252. Based on predetermined criteria DW count is between -2 and 2, i.e., $-2 \leq 2 \leq 2$ then this means no autocorrelation. So the conclusion is the autocorrelation test is met. Based on the results of various kinds of tests can be concluded that the requirements have been met all the classical assumption that the data analysis using multiple regression equation to do.

Test Heteroskidastity

This test is used to see if the confounding variables have the same variant or not (Husainah & Ramadhan, 2017).

From the analysis it can be seen that does not happen heteroskedasticity because no clear pattern as well as the points spread above and below the number 0 on the Y axis so that it can be said heteroscedasticity test is met test Autocorrelation.

Autocorrelation test is a test of the assumptions in the regression where the dependent variable is not correlated with itself. To analyze them using STATA output before we look at the table "Model Summary". Such as the following:

Multiple Linear Regression Analysis

Multiple linear regression analysis was used to analysis the survey data

"R" represents the value of the multiple correlation coefficients between the predictors and the outcome (Field, 2005). In order to analyze the determinants of sales volume for rose flower marketing, the multiple linear regressions has been employed and the results are presented in Table -12. The factors affecting sales volume of rose derived from exploratory factor analysis are considered as independent variables and sales volume for rose flower marketing is considered as dependent variable. The results show that the coefficient of multiple determinations (R^2) is 0.938 and adjusted R^2 is 0.934 indicating the regression model is good fit. It reveals that about 93.4 per cent of the variation in dependent variable (sales volume for rose flower marketing) is explained by the independent variables (determinants of sales volume for rose flower Marketing) where as 6.6% influenced by other variables not studied.

Education level of employee

The education level of employee has a positive and significant effect on sales volume at less than 1% significance level. Education is generally recognized that education equips individuals with the necessary knowledge of how to make a decision. This increased educational entitlement has supported the production and marketing of rose flowers in the study area and has also improved the ability to acquire new idea in relation to market information and improved production of the employees, due to that the educational background of the employees is believed to be an important feature that determines the readiness of employees to accept new ideas and innovations. According to Akalu (2007); Mohanty & Sethi, (2019) employee who have higher

education level have better attitudes towards the new production technologies, input utilization, to actively being beneficiaries of services provided to them.

The education level of employees exhibited a significant and positive effect on the sales volume of rose flower at less than 1% significant level. As the education level of employee was increased by one level, the amount of rose flower sold increased by 17000 stems. Hence, the education level of employee is one of the factors which determine the sales volume of rose flower.

Education allow the use of new production techniques, technology and market information, which in turn increased rose flower supply. This result is congruent with Yimer (2015) who found that education level of employee positively affected rose flower market supply. Furthermore, Habtamu (2015) and Yeshitila & Alemu (2012) found that education increases the quantity of rose flower supplied to the market and hence increases the sales volume (Table 9).

Product price

The product price has a positive and significant effect on sales volume at a less than 1% significance level. The result showed that there is direct relationship between the product price and the farm sales volume. The result suggests that on average, one USD increase in the price of the rose flower in the market by 41,000 stems of flowers. This result is supported by the finding of Birachi *et al.*, (2011) that revealed a relationship between the price of the rose flower and volume of sales. The study revealed that majority of the respondents agreed that pricing strategy increase sales volume. This is in line with a research done by Odhiambo (2013) which revealed that pricing strategy and decision has a significant effect on sales volume.

Product (Type of rose varieties)

The type of product (type of rose varieties) grown has a positive and significant effect on sales volume at a less than 1% significance level. The result for type of roses grown by the farm shows that on average, one type increase in cultivation of improved varieties of roses by the farm results to 100,000 stems of flowers increase in sales volume. This result is consistent with the findings of Loveman (1994) that usage of technology by rose growers gave higher productivity which in turn had positive effect on their sales volume.

Competition

Competition has significant and positive influence on sales volume of the farm and it was statistically significant at less than 1% probability level. According to the survey result, as competition exist at international market the sales volume increases by 58,000 stems, the company is competing not only domestically but also with many international farms.

The competition in the domestic market is not that much a threat for the company because most of the domestic competitors have no capacity to compete with the Company. In the international market, however, the competition is getting fierce. For example, in the rose market, there are competitors from Kenya, Holland, Ecuador and Colombia.

Thus, this study confirms competition forces the company make adaptations to survive in a dynamic environment (Anning-Dorson, 2016) by continuing to try to fulfill the things that consumers want which will increase the sales volume performance of the farm. High competition in the industry will make companies that cannot adapt to stay outside of the business.

Competition will encourage companies to innovate such as developing new products/ services in the market, improving production processes, using new technologies or applications in the company's business processes, etc. (Distanont & Khongmalai, 2020). The existence of this innovation will increase competitive advantage (Chiu & Yang, 2019), so the company can win the competition in its industry and increases the sales volume.

Farm Size

The land size of a farm positively and significantly affects the sales volume of the farm at 5 less than 1% level of significance. It indicates that as the land size of the farm increases by a hectare, the sales volume increases by 29000 stems.

The positive sign on cultivated land size for rose flower shows that a farm with large cultivated land, compared to farm with small rose flower land size would more likely to sell to assemblers and consumer. This implied that the farm with large cultivating land sizes produce large volumes of rose flower and supply to any market that existed throughout the world and increases the sales

volume. This finding is in line with Tegegne (2008) who found that size of land had positive and significance influence on farm on marketable supply of farm produce.

Also, the studies conducted by Martey *et al.*, (2015) revealed that the probability of being commercial farm is positively significant by the farm size under cultivation while, cultivated land size positively determines the marketable supply from total production and hence increases the sales volume.

Access to market information

As the multiple linear regression result indicates, access to market information had negative and significant influence on sales volume at less than 1 % significant level. As the farm not access to market information, the sales volume of roses decreases by 107,000 stems (Table 9).

The probable reason might be dynamic information such as consumer needs and market trends. This requires due attention to new market opportunities, changing needs of the consumer and how market trends influence buying. The finding agrees with the finding of Pokhrel (2011) investigated the effects of access to marketing information on the sales volume of enterprises and results also indicated that the utilization of information regarding marketing mix decisions (especially promotion and place) significantly and negatively affects sales volume.

Quantity of Rose Flowers Produced

The total quantity of rose flowers produced had positively and significantly influence on the sales volume of the rose flowers at less than 1% level of significance. It indicates that when the farm produced more quantity of rose flower had also supplied more to the market or when the production of rose flowers in a given year is better, the higher the market supply and the amount of rose flowers that can be sold to the market so that the sales volume will be higher.

The result reveals that the amount of rose flowers produced by the company increases by one stems, the sales volume increases by 49,000 stems. The result is in line with Giziew (2013) who found that quantity produced significantly and positively affects the sales volume.

Table.1 Multiplelinear regression model output

Source	SS	df	MS	Number of obs	=	195
				F(10, 184)	=	276.88
Model	3.58840779	10	.358840779	Prob > F	=	0.0000
Residual	.238464008	184	.001296	R-squared	=	0.9377
				Adj R-squared	=	0.9343
Total	3.82687179	194	.019726143	Root MSE	=	.036

VSaleinmillion	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
Sex	.0344583	.011961	2.88	0.004	-.0108599 .0580566
Edu	.0170672	.0024724	6.90	0.000	-.0121892 .0219452
Pprice	.0406833	.0038507	10.57	0.000	-.0482805 .033086
FExperience	.0008663	.0020727	0.42	0.676	-.003223 .0049555
Place	-.0011906	.0029012	-0.41	0.682	-.0069145 .0045332
Product	.1008168	.0065232	15.46	0.000	-.0879469 .1136866
Competition	.057536	.0030589	18.81	0.000	-.063571 .051501
Farmsize	.029297	.0043068	6.80	0.000	-.0208 .0377941
accesstomarket	-.1068886	.0101787	-10.50	0.000	-.1269705 -.0868067
Quantity	.0487268	.0046324	10.52	0.000	-.0395873 .0578663
_cons	11.06908	.0403366	274.42	0.000	10.9895 11.14866

Source: survey result (2021/22)

Recommendations

Based on the findings the following recommendations are made:

- It is recommended that due to high competition in the market, the company should improve on planting of productive and market oriented products (varieties) hence increase production quantity and quality recognition. Improve on their branding strategy. Through this, the company will be able to increase the sales volume.
- The company should use strategies such as use of price discounts, free samples, and bonus to increase customer’s intention to purchase their products hence increase in sales volume. Price penetration strategy should also be used to increase product adoption.
- The study recommends that the company should use attractive stimulus in their work environment and also during promotion hence influence customers’ perception and increase sales volume.
- The company should increase its distribution channels across the world thus influence product (variety)

availability and increases the sales volume. It is also necessary to increase the sales volume by increasing the quantity of rose production through efficient use of resources.

- Education level of employee, price of product, Product type, Competition, farm size and quantity produced had a significant effect on sales volume. Therefore, there is a need for similar study to be conducted in other organizations to determine other factors that affects sales volume.

Author Contribution

Dirriba Idahe: Investigation, formal analysis, writing—original draft. Mihretu Tafere: Validation, methodology, writing—reviewing.

Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethical Approval Not applicable.

Consent to Participate Not applicable.

Consent to Publish Not applicable.

Conflict of Interest The authors declare no competing interests.

References

- Abay Akalu, 2007. Vegetable market chain analysis in Amhara National Regional State: the case of Fogera woreda, South Gondar zone. M.Sc thesis presented to the school of graduate studies, Haramaya University. pp70.
- Abebe, A. (2009). *Market chain analysis of honey production in atsbi wemberta district, eastern zone of tigray national regional state*. Haramaya University.
- Access Capital. (2011). *Research december 30, ethiopia: Macroeconomic hand book 2011/12*.
- Akalu, A. (2007). *Vegetable market chain analysis in amhara national regional state: The case of fogera woreda, south gondar zone*. Haramaya University.
- Alebachew, M. (2018). Assessment of challenges in export marketing: The case of ethiopian vegetable and fruit commercial growers. *Sisay, MA (2018). Assessment of Challenges in Export Marketing: The Case of Ethiopian Vegetable and Fruit Commercial Growers. iBusiness, 10(01), 1*.
- Almaz, G., Workneh, N., Edilegnaw, W., & Gezahegn, A. (2015). Determinants of participation-decision in vegetable value chains: A gender perspective. *International Journal of Physical and Social Sciences, 5(3), 231-246*.
- American Marketing Association. (2008). Definition of marketing and expected product quality. *Journal of Consumer Research, 16, 344-353*.
- Anning-Dorson, T. (2016). Interactivity innovations, competitive intensity, customer demand and performance. *International Journal of Quality and Service Sciences*.
- Armstrong, G., & Kotler, P. (2003). *Marketing: An introduction*: Pearson Educación.
- Awuor, E.O., & Vosloo, M. (2011). *A conceptual model for managing supply networks for simultaneous optimisation in a complex adaptive environment: A case of the floriculture industry in kenya*.
- Ayelech Tadesse, 2011. Market chain analysis of fruits for Gomma woreda, Jimma zone, Oromia National Regional State. M.Sc thesis presented to School of Graduate Studies, Haramaya University.p110.
- Babbie, E. (1998). *The practice of social research 8th edition* (wadsworth, belmont, ca).
- Bacchetta, M. (2007). Releasing export constraints: The role of governments.
- Belwal, R., & Chala, M. (2008). Catalysts and barriers to cut flower export: A case study of ethiopian floriculture industry. *International Journal of Emerging Markets*.
- Birachi, E.A., Ochieng, J., Wozemba, D., Ruraduma, C., Niyuhire, M., & Ochieng, D. (2011). Factors influencing smallholder farmers' bean production and supply to market in burundi. *African crop science journal, 19(4), 335-342*.
- Cao, H., & Folan, P. (2012). Product life cycle: The evolution of a paradigm and literature review from 1950–2009. *Production Planning & Control, 23(8), 641-662*.
- Chala, Z.T. (2010). *Economic significance of selective export promotion on poverty reduction and inter-industry growth of ethiopia*. Virginia Tech.
- Chavas, J.-P., & Kim, K. (2001). An econometric analysis of the effects of market liberalization on price dynamics and price volatility.
- Chiu, C.-N., & Yang, C.-L. (2019). Competitive advantage and simultaneous mutual influences between information technology adoption and service innovation: Moderating effects of environmental factors. *Structural Change and Economic Dynamics, 49, 192-205*.
- Christine Khatoro Chalwa, D.W.S., Evans Biraori Oteki. (2016). Factors affecting performance of cut flower firms in kenya: A case of maji mazuri flowers ltd, uasin gishu county;3(2),37-41
- Collinson, C. (2001). The business costs of ethical supply chain management: South african wine industry case study. *Unpublished paper, Chatham: NRI*.
- Dattalo, P. (2008). *Determining sample size: Balancing power, precision, and practicality*: oxford university press.
- De, L., & Singh, D. (2016). Floriculture industries, opportunities and challenges in indian hills. *International Journal of Horticulture, 6*.
- Distanont, A., & Khongmalai, O. (2020). The role of innovation in creating a competitive advantage. *Kasetsart Journal of Social Sciences, 41(1), 15-21*.
- Doyle, P. (2009). *Value-based marketing: Marketing strategies for corporate growth and shareholder value*: John Wiley & Sons.
- Emana, B. (2008). Participatory value chain analysis of horticultural crops in kombolcha district of eastern oromia: Ethiopia, Research Report, ActionAid Ethiopia, Addis Ababa.
- Emana, B., & Gebremedhin, H. (2007). Constraints and

- opportunities of horticulture production and marketing in eastern ethiopia. *Dry land coordination group (DCG) report*, 46.
- Esa, E., & Ghazali, N.A.M. (2012). Corporate social responsibility and corporate governance in Malaysian government-linked companies. *Corporate Governance: The international journal of business in society*.
- Field, A. (2005). *Discovering statistics using SPSS* (2nd ed.).
- Gebreyesus, M., & Sonobe, T. (2011). Global value chains and market formation process in emerging export activity: Evidence from Ethiopian flower industry, discussion paper 11-13. Tokyo: National graduate institute for policy studies
- Gebreyesus, M., & Iizuka, M. (2012). Discovery of flower industry in Ethiopia: Experimentation and coordination. *Journal of Globalization and Development*, 2(2).
- Gelo, O., Braakmann, D., & Benetka, G. (2008). Quantitative and qualitative research: Beyond the debate. *Integrative psychological and behavioral science*, 42(3), 266-290.
- Giralt-Miracle, D. (2015). *Essential gaudi: Libros de Vanguardia*.
- Giziew, A. (2013). Determinants of market supply of vegetables: A case of Akaki-Kality sub-city, Ethiopia. *Journal of Rural Development*, 32(3), 281-290.
- Goi, C.L. (2009). A review of marketing mix: 4Ps or more. *International journal of marketing studies*, 1(1), 2-15.
- Guesh. (2010). *Assessment of factors affecting sales volume: With reference to mesfin industrial engineering plc*.
- Gullino, M.L., Albajes, R., & van Lenteren, J.C. (1999). Setting the stage: Characteristics of protected cultivation and tools for sustainable crop protection *Integrated pest and disease management in greenhouse crops* (pp. 1-15): Springer.
- Habtam, G., Habtam, Bekele, Adam. (2015). *Analysis of potato value chain in Hadiya zone of Ethiopia*.
- Hamed, M., & Farideddin, A., H. (2016). Effects of Promotion on Perceived Quality and Repurchase Intention. *International Journal of Scientific Management and Development*, 4 (12), pp 457-461.
- Hambisa, E.N., & Geda, M.B. (2020). Factors affecting soybean producers supply to the market in Buno Bedele zone, south western Ethiopia. *International Journal*, 7(1), 245-249.
- Helm, R., & Gritsch, S. (2014). Examining the influence of uncertainty on marketing mix strategy elements in emerging business to business export-markets. *International Business Review*, 23(2), 418-428.
- Husainah, N., & Ramadhan, Z. (2017). Factors affecting the decision of students choose to study program management at faculty of economics and business university of Muhammadiyah Jakarta. *IMC 2016 Proceedings*, 1(1).
- Imbo, F.O. (2019). *Marketing strategy, implementation and performance of organizational implementors of vision 2030*. University of Nairobi.
- Imiru, G.A. (2017). Determinants of the flower producers & exporters performance in Ethiopia. *CLEAR International Journal of Research in Commerce & Management*, 8(3).
- Janko, A.M., & Alemu, G. (2014). Supply and marketing of floriculture in Ethiopia. *International of Horticulture and Floriculture*, 5(3), 254-270.
- Joosten, F. (2007). Development strategy for the export-oriented horticulture in Ethiopia: Wageningen Ur.
- Kanoga, S. (2016). Influence of marketing mix dimensions on performance of shopping malls in Nairobi city county Kenya. *Unpublished Thesis Submitted to Kenyatta University*.
- Kefyalew, A. (2018). *Assessment on the factors affecting sales performance (case of Moha soft drink industry summit and thaimanot plants)*. St. Mary's University.
- Khan, M.T. (2014). The concept of 'marketing mix' and its elements (a conceptual review paper). *International journal of information, business and management*, 6(2), 95.
- Mohanty, S., & Sethi, N. (2019). Outward FDI, human capital and economic growth in BRICS countries: An empirical insight. *Transnational Corporations Review*, 11(3), 235-249.
- Moorman, C. (1995). Organizational market information processes: Cultural antecedents and new product outcomes. *Journal of marketing research*, 32(3), 318-335.
- Negasi, M.Y. (2015). Marketing system analysis of vegetables and fruits in Amhara regional state: Survey evidence from Raya Kobo and Harbu Woredas. *Ethiopian Journal of Economics*, 24(2), 1-41.
- Odhiambo, M. (2013). *The effect of pricing as a competitive strategy on sales performance of selected pharmaceutical companies in Nairobi county*. University of Nairobi.
- Omiti, J.M., Otieno, D.J., Nyanamba, T.O., & McCullough, E.B. (2009). Factors influencing the intensity of market participation by smallholder farmers: A case study of rural and peri-urban areas of Kenya. *African Journal of Agricultural and Resource Economics*, 3(311-2016-5509), 57-82.
- Osmani, A.G., & Hossain, E. (2015). Market participation decision of smallholder farmers and its determinants in Bangladesh. *Економика пољопривреде*, 62(1).
- Patten, M. (2016). *Questionnaire research: A practical*

- guide: Routledge.
- Pokhrel, C.N. (2011). Analysis of market chain of mandarin in nepal: A case of lamjung district. *Van Hall Larenstein University of Applied Science*.
- Rikken, M. (2011). *The global competitiveness of the kenyan flower industry*. Paper presented at the Fifth Video Conference on the Global Competitiveness of the Flower Industry in Eastern Africa.
- Ruta, F. (2011). Effect of market information on the performance of flower sector of ethiopia. Van hall larenstein university of applied science.
- Shakya, M. (2009). Clusters for competitiveness: A practical guide and policy implications for developing cluster initiatives. Available at SSRN 1392479.
- Sigei, G., Bett, H., & Kibet, L. (2014). Determinants of market participation among small-scale pineapple farmers in kericho county, kenya.
- Sorsa, G. (2011). Underlying causes of business failure of floriculture investment in ethiopia. *A Research thesis for Partial Fulfillment Requirement of Masters of Business Administration in Finance, Addis Ababa*.
- Strang, J., Satanek, A., Snyder, J., Smigell, C., Archbold, D., Bush, P.,... Slone, D. (2002). Evaluation of thornless semi-erect and erect blackberry training systems and varieties for kentucky.
- TadeleMelakuChalla, M., & PaulMansingh, J. (2016). Factors affecting teff and wheat market supply in dendi district, west shoa zone, ethiopia.
- Takele, A. (2010). *Analysis of rice profitability and marketing chain: The case of fogera woreda, south gondar zone, amhara national regional state, ethiopia*. Haramaya University.
- Taylor, B. (2011). *Ethiopia's growth set to bloom? A global production networks analysis of an experiment in economic liberalisation*. University of East Anglia.
- Tegegne, B. (2008). *Analysis of cotton marketing chains: The case of metema woreda, north gondar zone, amhara national regional state*. Haramaya University.
- Ton, G., Vellema, S.R., & Danse, M. (2009). *Transparency in context. Chain-based interventions in ethiopian floriculture and ugandan sunflower sector*: Stichting DLO.
- UN. (2012). Corporate social responsibility in global value chains; evaluation and monitoring challenges for small and medium sized suppliers in developing countries, new york and geneva.
- Urgessa, B. (2016). *Challenges and opportunities of tea marketing in the case of east african agri-business private limited company*. St. Mary's University.
- Urgessa, M. (2011). *Market chain analysis of teff and wheat production in halaba special woreda, southern ethiopia*. Haramaya University.
- Verhees, F.J., & Meulenberg, M.T. (2004). Market orientation, innovativeness, product innovation, and performance in small firms. *Journal of small business management*, 42(2), 134-154.
- Whitaker, M., & Kolavalli, S. (2006). Floriculture in kenya. *TECHNOLOGY, ADAPTATION, AND EXPORTS*, 335.
- Woldesenbet, A.T. (2013). Value chain analysis of vegetables: The case of habro and kombolcha woredas in oromia region, ethiopia. *School of Agricultural Economics and Agribusiness, School of Graduate Studies, Haramaya University*.
- Xaba, B.G., & Masuku, M.B. (2013). Factors affecting the productivity and profitability of vegetables production in swaziland. *Journal of Agricultural Studies*, 1(2), 37-52.
- Yeshitila, H., Jema, & Alemu, G. (2012). *Analysis of vegetable marketing in eastern ethiopia: The case of potato and cabbage in kombolcha woreda, east hararghe zone, oromia national regional state*. Haramaya University.
- Yimer, A. (2015). Factors affecting fruit supply in the market: The case of habru woerda, north wollo, ethiopia. *European Journal of Business and Management*, 7(4), 309-318.
- Zewdenh, E. (2016). *An assessment of market dynamics in relation to rose flower export market in ethiopia*. St. Mary's University.
- Zewdie, B. (2007). Export marketing, customs and bank clearing operations of floriculture in ethiopia. *Addis Ababa University School of Graduate Studies. Addis Ababa, Ethiopia*.

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