

Ordinary Least Square (OLS) Estimators of Mushroom Market Supply in the City of Addis Ababa

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Abstract

The overall study focuses to assess ordinary least square (OLS) estimators of mushroom market supply in the city of Addis Ababa. This study has analyzed and generalized interviewed and personally observed data from 60 observations done.

Price of mushroom and number of labors employed in the business are the relevant variables. Being exit from mushroom market via mushroom producers is as an expense of labor factor, rather not as an expense of price. Even if mushroom market supply model has less predictive power on mushroom market supply of the population function, market price and number of labors employed in the production has direct relationship with mushroom market supply, *ceteris paribus*.

So Ethiopia, as labor intensive strategic country, every mushroom supplier should extensively utilize this resource to enhance mushroom market supply. Anyone who is going to repeat this research cannot include price of mushroom and labor as a factor in favor of other relevant exogenous variables.

Keywords: Ordinary least square; Mushroom; Market; Production

Introduction

Background

Chang and Miles as cited by Birhanu gizaw [1] mushrooms are macro-fungi with distinctive fruiting bodies either epigeous or hypogaeous. Chang as cited by Birhanu gizaw [1] mushrooms are eukaryotic heterotrophy organisms; nutritionally classified as saprophytes, that obtain nutrients from dead organic materials; pathogen which depends on living plants and animal bodies; mycorrhiza, through a close physiological association with host plants and animals, thereby forming a special partnership where each partner enjoys some vital benefits from the other.

Having this in mind, increasing mushroom market supply is every mushroom cultivator's goal. Total global production of mushrooms has increased more than tenfold in the past 25 years and the market for mushrooms is growing. World production of cultivated edible mushrooms is estimated to be almost 5 million tonnes, valued at about \$9.8 billion per year, to which Africa contributes a very small proportion [2]. Right now, understanding of those factors which can reliably and significantly predict mushroom market supply is a growing interest of every agricultural economist. This paper has focused on estimation of mushroom market supply in the city of Addis Ababa. So far determinant factors of mushroom market supply in the city of Addis Ababa such as market price of mushroom and number of labors employed in the business has examined. Stating background and justification of estimators of mushroom market supply in the city of Addis Ababa is a crucial task.

Problem statement

With the support of research and training, mushroom production could have a significant impact on poverty alleviation and food security in Africa [3]. The low level of research and training in mushroom cultivation is the main problem hampering the development of mushroom production, which associated with. Research, training and development of mushroom growing in Ethiopia have provided the basis for small-scale commercial production of mushrooms [4]. Prior, many researchers have done a research on consumption habit of the community, biological nature, food and nutrition security of mushroom. But none what so ever has done market supply factors

of mushroom [5]. This paper has relied on stating problems of the study such as supply reduction, being unable to study supply factors of mushroom, low information/intention on mushroom importance and production. Right now, most of the mushroom suppliers have exited from the market. As Addis Ababa urban agricultural office (crop cultivation coordinator), mushroom marketing and training centers [6], mushroom producers firms and households have stated orally, most of mushroom producers have exited from the market. The researcher has emphasized that stating problems of the study in this scenario is the basic concern [7].

Conceptual and econometric frame work

Quantity supply is the amount of a good that sellers are willing and able to sell.

Mushroom market supply: It is the sum of all individual supplies for all sellers of mushroom.

- Its own price and number of labors employed in the production are factors of mushroom supply.
- $Y = f(p, l)$, (1)
- Y is mushroom market supply p is price of mushroom and l is number of labors employed in the business.
- $Y = \beta_0 + \beta_1 p + \beta_2 l$ mathematical model of mushroom market supply. (2)
- $Y = \beta_0 + \beta_1 p + \beta_2 l + U_i$ econometric model of population function of mushroom market supply. (3)

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- A hypothetical sample regression mushroom market supply:

$$Y_i = \hat{\beta}_0 + \hat{\beta}_1 p + \hat{\beta}_2 l \quad (4)$$

Specific objectives of the study

In line with the research problem, the Specific objectives of this paper are as follows:-

- To identify factors of mushroom market supply;
- To regress mushroom market supply on various factors and
- To estimate the direction and magnitude of impact of various factors on mushroom market supply.

Methods of Data Collection

Primary data have been collected by interview and personal observation and secondary data have been collected in such a way that reviewing cross-sectional data from 60 observations and different literatures.

Results and Discussions

As per the analysis certain results has demonstrated. The researcher has believed that presenting the findings and conducting discussion on the results is the appealing part of this study.

Reporting regression results

$$\hat{Y}_i = -14514.19 + 71.20000P + 3816.063L$$

$$S^e = 14173.33 \quad 362.0156 \quad 1686.440$$

$$t = (-1.024050) \quad (0.196677) \quad (2.262791) \quad \text{adjusted R-squared} = 0.320081 \quad df = 57$$

$$P\text{-Value} = (0.3101) \quad (0.8448) \quad (0.0275)$$

Constant: The p value of the intercept is greater than alpha value (0.05). Therefore, statistically, it is not significant. The t calculated is less than the t tabulated, therefore the null hypothesis has accepted. That is the constant term is zero. This indicates that there is no mushroom supply at zero price and labor.

Price: As can be seen from the analysis of this study, the p value of price of mushroom is greater than alpha value. Therefore, statistically it is not significant. This implies that price has less impact on market supply of mushroom.

Number of labors employed: The p value is less than alpha value. Therefore, statistically it is significant.

Adjusted R-squared: 0.320081 has less predictive power on mushroom market supply. 32% of the variance in mushroom market supply can be predicted from price and Number of labors employed in the business. The rest 68% of mushroom market supply can be predicted from the error term/unobservable variables.

Since the p value associated with f value (0.000006) is less than alpha value (0.05) and very small, both Price and number of labors employed are reliably predict mushroom market supply.

Hypothesis testing

One tailed test: Constant: The t calculated is less than the t tabulated, therefore the null hypothesis has accepted. That is the constant term is zero. This indicates that there is a probability of zero mushroom supply at zero price and labor of the true population.

Price parameter: The price coefficient in the supply function is expected to be positive.

Interpretation

Constant/intercept: It is the depth of regression line. The t calculated is less than the t tabulated, therefore the null hypothesis has accepted. That is the constant term is zero. This indicates that there is a probability of zero mushroom supply at zero price and labor the true population.

Price: Price and mushroom market supply has a direct relationship. For every unit increase/decrease in price (ETB) of mushroom in the city of Addis Ababa, a 71.2000 Kg increase/ decrease in mushroom is predicted, holding number of labors employed in the business constant. This is to mean that there is a movement of mushroom market supply along the supply curve.

Change in Supply (Shifts in the Supply Curve)

Number of labors employed in the business: Number of labors employed in the business and mushroom market supply has a direct relationship. For every unit increase/decrease in number of labors employed in the business, there is a 3816.063 Kg mushroom increase/ decrease in the predicted mushroom market supply, holding price constant. This is to mean that as a unit labor employed in the business, then there is a shift of supply curve to the right-supply increased and as a unit labor with draw from the business, then there is a shift of mushroom market supply to the left-supply decreased ,holding price constant.

Conclusions and Recommendations

Conclusions

The overall study aims to assess ordinary least estimators (OLS) of mushroom market supply in the city of Addis Ababa. The researcher has believed that putting generalization of this study is a crucial aspect. Based on the result acquired from the study, price of mushroom and number of labors employed in the business are the relevant variables of mushroom market supply so that they have direct relationship with that of mushroom market supply.

For every unit increase/decreases in price (ETB) of mushroom in the city of Addis Ababa, a 71.2000 Kg increase/decrease in mushroom is predicted, holding number of labors employed in the business constant. But the change is insignificant. This exogenous variable has less power to exit mushroom market suppliers in the city of Addis Ababa as the expense of the hypothesis test. Number of labors employed in the business and mushroom market supply also has a direct relationship. This exogenous variable has a power to exit the mushroom market suppliers in the city of Addis Ababa vis -a -vis. For every unit increase/ decrease in number of labors employed in the business, there is a 3816.063 Kg of mushroom increase/decrease in the predicted market mushroom supply, holding price of mushroom constant. That is why; right now the potential suppliers are exiting from the market. Stating variable significance alone has no power to predict the model.

So far what the studies saying about mushroom market supply model in this study area has less predictive power on mushroom market supply of the population function. Adjusted R-squared has less predictive power on mushroom market supply. 32% of the variance in mushroom market supply can be predicted from price and number of labors employed in the business. The rest 68% of mushroom market supply can be predicted from the error term.

This model cannot accurately predict real-world events. This product is not price sensitive rather time, because it is an emerging and perceivable product.

In sum, although the model is not good fit, price of mushroom and number of labors employed in the business are the relevant variables so that they have direct relationship with that of mushroom market supply. Being exit from mushroom market via mushroom producers is as an expense of labor factor, rather not as an expense of price.

Recommendations

Ethiopia, as labor intensive strategic country, every mushroom supplier should extensively utilize this resource to enhance mushroom market supply. A 7613.999 kg of mushroom is going to be expected from 3 technically and economically efficient labors with 50 birr of a unit kg of mushroom per plot of land. Being exit from the market is not as expense of price rather labor availability in the market. Anyone who

is going to repeat this research cannot include price of mushroom and labor as a factor in favour of other relevant exogenous variables.

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