European Journal of Business and Management
ISSN 2222-1905 (Paper) ISSN 2222-2839 (Online)
Vol.14, No.15, 2022

Market Channels, Determinants and Profitability of Vegetable Production: In Kewet Wereda, North Shewa Zone, Amhara National State, Ethiopia

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Abstract
This research attempted to analyze the market channels of vegetable production, and profitability of producers in kewet wereda with in our country particularly in Kewet woreda, vegetable product marketing is not integrated in appropriate supply channel system and this is one of the most important conditions for vegetable producers to find access to profitable market at a reasonable cost these in the studies area there have problem of selecting appropriate market channels to sale their vegetable products, The overall objective of this study is to investigate the role of market channel in improving marketability of vegetable product in Kewet woreda. The specific objectives of the study: to explore the current market channel system for vegetable production in Kewet woreda, to identify the major marketing constraints facing vegetable producers in the study area, to calculate profitability of producers in the existing market channel, to identify determinants of producers' choice of market channels. The study employed both qualitative and quantitative research approach. Both primary and secondary source of data are assumed to be used for the research. The research is based on both qualitative and quantitative data would be collected using the following data-collection instruments: Direct observations, Focus Group Discussions, Key informant interview (checklist). Different statistical and econometrics models such as Multiple Linear Regression Model and multinomial logit model were used to analyze the data. Based on these analysis majorities of the respondents were select the market channel of whole sellers those were preferable to producers which improve marketability of vegetable products.
Keywords: Market channel, Vegetables, multiple regression model, multinomial logit model
DOI: 10.7176/EJBM/14-15-02
Publication date: August 31st 2022

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Agriculture is the main sources of income the Ethiopian economy. It accounts for about 50% of the Ethiopian gross domestic product. It also provides employment opportunities for about 85% of the total working labor force and accounts for 90% of the total foreign exchange gaining's (MOFED, 2002). Ethiopia stands third in the world and first in Sub-Saharan Africa in terms of the gain of GDP that stems from agriculture (Block, 1999). Ethiopia is a country with great variety of climate and soil types that can grow diversity of vegetable crops for home consumption and foreign markets. Currently, the majority of the Vegetable crops product comes from the peasant smallholder farms. However, their areas of production and their contribution to the country's total agricultural output were not known much. Based on the survey per capital consumption of the annual fresh production assorted vegetables is about 2.86 million tons. From the total volume of horticultural products, 95% is fresh vegetable production. The status of vegetable production has been increasing for the last four years of the Growth and Transformation Plan (GTP-I), i.e. from 2010/11 – 2013/14. The GTP-I performance report for the four years for the agricultural sector indicates that vegetable production achieved 42% of the plan and grown by 60.9% (125.3 thousand tons in 2013/14) as compared to the base year 2009/10 (49 thousand tons).

Ethiopia adopts Agricultural Development Led Industrialization (ADLI) improvement strategy in 1994/95. The strategy argues that growth starts from agriculture and initiates the growth of other sectors especially the industry sector through backward and forward linkages (MoFED, 2006). Furthermore, Ethiopia launched and commenced implementing earnestly its Growth and Transformation Plan (GTP) in 2009/10. GTP envisages the ADLI strategy to continue with the bid to transform the Ethiopian economies from leading of agriculture and using agriculture itself as a stepping board (MoFED, 2010). Therefore, it is becoming increasingly essentials for

policy makers to focus immediate attention on agro-industries. Such industries, established along efficient supply channels, can increase significantly the rate and scope of industrial growth (UNIDO, 2009).

In Amhara National Regional State, agriculture contributes about 55.8 % of the total regional GDP accounting for employment of 88.7 % of the total population (BOFED, 2006).According to (Abay, 2007) the total land size of the region was 3.396 million hectors of land commencing which about 2.9 million hectors were covered by cultivation. Vegetables covered about 69.8 thousands of ha cultivation land from which 3.5 million quintal production was estimated.

Kewet wereda endowed with beautiful diverse natural resource has the capacity to grow different annual and perennial crops. Stream and rivers are great significance to the Woreda. They are used for irrigations during the winters mainly for vegetables. Major types of vegetable crops growing in the area include onion, tomato, peppers and some leafy vegetables.

Vegetable production in the Woreda is mainly for market except cabbage, which is utilized much for home consumption. The production is very fragmented and uncoordinated where all growers produce similar type of crop resulting in glut (mainly onion and tomato) typically in harvest seasons.

1.2 Statement of the Problem

The vegetables sub-sector has a great importance in the Ethiopian economy, since it is one of the most important sources of livelihood for rural communities. Vegetable production contributes nearly 30% of agricultural output; provide employment opportunities for more than 10% of the rural farmers in Ethiopia. With this lucrative potential, Ethiopia is nicknamed as “land of heaven” for agricultural products and agro-industrial processors. Currently, Ethiopia is pursuing the promotion and mainstreaming of rural transformation by increasing the productivity and quality of agricultural products especially that of vegetables. Despite the importance of vegetable production to the Ethiopian economy as indicated above, vegetable producers are not in a better position to acquire the benefits of their produce. This is partly because the sector fares very low in both international and domestic markets. Reports indicate that it contributes only about 5% of foreign exchanges owing to its low prices. That the vegetable sub-sector contributes very low to the national economy does mean a lot of things. For instance, when the vegetable price collapses, the producers are not able to buy basic necessities like clothes, consumable food, and health care services and even fail to send their children to school (Oxfam, 2009). One major problem faced by Ethiopian farmers related with the marketability of vegetable product is the seasonality and perish ability nature of the product. Because of these reasons, nowadays, instead of being engaged in vegetables production, farmers have started to explore other cash- crop like chat, inset, and cereals (Oxfam, 2009).

Another difficulty farmer’s face has a lot to do with lack of appropriate market channel that links them with sustainable marketing opportunities for vegetable produces. Let alone at international markets, even in local markets, farmers do not have access that can help them bring a great difference in terms of improving their income (Oxfam, 2009).

The Ethiopian government to enhance the marketability of the product and market channel among farmers and end users has made a lot of effort in issuing different proclamation and establishing cooperative facilitating institutions. By effort of these institutions many vegetable product producers established primary cooperatives and unions which will enable them to own marketing power, to have improved marketing system through viable and efficient supply channel system and also help producers to have control over the process of their product market (Demeke, 2007). However, in our country particularly in Kewet woreda, vegetable product marketing is not integrated in appropriate market channel system and this is one of the most important conditions for vegetable producers to find access to profitable market at a reasonable cost. Moreover, the productions of vegetable products and distribution of vegetable product in Ethiopia have a lot of challenges like weak integration between the vegetable producers and the parties engaged in value adding process. Beside to this vegetable producer in the studies areas have not gain sufficient or enough profits from their products and there have any other problems like the selection of market channels to face with sailing their products. According to these in the studies area there have problem of selecting appropriate market channels to sale their vegetable products. So, this research has shown that vegetable producers should choose market channel who can find better profit for their products.

1.3 Research question

This research becomes to answer the following basic research questions:

1. What is the current market channel system for vegetable product in Kewet woreda?
2. What are the major marketing constraints facing vegetable producers in Kewet woreda?
3. What is the effect of the current market channel system in improving marketability of vegetable product?

1.4 Objectives of the Study

1.4.1 The general objective of the study

The overall objective of this study is to investigate the role of market channel in improving marketability of vegetable product in Kewet woreda.

1.4.2 The specific objectives of the study

1. To explore the current market channel system for vegetable production in Kewet woreda,
2. To identify the major marketing constraints facing vegetable producers in the study area,
3. To calculate profitability of producers in the existing market channel
4. To identify determinants of producers' choice of market channel

CHAPTER TWO: REVIEW OF LITERATURE

2.1 THEORETICAL LITERATURE

2.1.1 The Concept of market Channel

Market channels are complex entities that serve many functions. They are institutional arrangements that link producers, processors, marketers and distributors. Market channels are forms of industrial organization which allow buyers and sellers who are separated by time and space to all the time more add and accumulate value as products pass form one element of the channel to the next (Hughes, 1994; Fearne, 1996). Market channel encompasses all activities associated with the flow and transformation of goods from the Producer (extraction), through to end Consumer, as well as the associated information flows. Products and information flood both up and down the supply channel. The market channel includes systems management, operation and gathering, purchasing, production preparation, order processing, and customers; every customer is in turn a provider to the subsequently downstream organization until the finished product reaches the ultimate end user. Market channel management is the incorporation of these activities in the course of improved market channel relationships to achieve a continuous competitive benefit (Monczka*et al*., 2002). Market channel is essential as a strategic weapon to build up and enhance continuous competitive advantage, for instance, by cost reduction as well as increasing customer fulfillment (Mentzer*et al*., 2001).

The achievement of market channel actors in successfully collaborate determine their success as a market channel and sustainability of their competitive advantage Spekman*et al*. (1998) defined supply channel management as a process for manipulative, emergent, Optimizing and supervising the internal and external components of the supply system, including material supply, and transforming materials and distributing finished products or services to customers that is reliable with on the whole objectives and strategies Mentzer*et al*. (2001) defined Supply channel Management as the universal, calculated bringing together of the traditional business functions and the tactics across these business functions within a fastidious company and transversely businesses within the market channel, for the purposes of educating the extended time performance of the individual companies and the market Channel as a whole. In this definition relationship between market channel actors is emphasized. This is relevant to this research in that these relationships means that the market channel partners' planned quickness concerns should be related not disjoint as individual or standalone companies. They are institutional arrangements that link growers, channel actors, marketers and distributors. Market channels are forms of industrial organization which allow buyers and sellers who are separated by time and space to increasingly add and accumulate value as products pass form one member of the channel to the next element (Hughes, 1994, Fearne, 1996).

2.2.2. Vegetable and vegetable production

The term vegetable is usually defined as the designate of the tender edible, shoot, leaves, fruits and roots of plants that are eaten whole or in part, raw or cooked, as a supplement to starchy food and meat. Vegetables are those plants, which are enthusiastic in relatively small quantities as a side dish or a relish with the staple food (Yadav, 2006). Most vegetables are the leaves, roots, or stems of herbaceous plants although flowers, calyces, immature seeds or fruits may also be consumed as vegetables.

Vegetable production is profitable. Farmers involved in vegetable production usually gain much higher farm earnings as compared to cereal producers. Cultivation of vegetables allows for productive pay where the labor/land ratio is high, since horticultural production is usually labor intensive. Increasing vegetable production contributes commercialization of the rural economy and creates many off-farm jobs. However, intensifying the level of horticulture production is often hindered by lack of market access, market information, and many natural factors (Weinberger and Lumpkin, 2005). Bezabih (2007) stated that production is seasonal and price is inversely correlated to supply. During the climax supply period, the prices decline. The situation is worsened by the perish ability of the products and poor storeroom facilities. Along the market channel, 25 % of the product is spoiled. From these review literatures relentless production seasonality, seasonal price fluctuations, poor pre-and post-harvest handling, pervasiveness of pest and diseases, lack of storeroom are some of the critical problems encountered vegetable production in Ethiopia.

There are a number of studies that have employed the market channel actors to vegetable products.

According to (Dawit 2015) the marketing actors were divided in to five basic market channel actors those are listed below. Market channel actors are those concerned in producing, dealing out, trade or intense a particular agricultural product. The main actors recognized in the vegetable market channel are wholesalers and their brokers. Smallholder farmers do not have any power or say on price resolve (price takers). Under is a detail discussion of each actor separately. Producer: It is the first link in vegetable market channel; the producer harvests products and supplies to the second agent. From the moment he/she decides what to produce, how much to grow and when to grow and sale. Rural assembler: Sometimes also known as farmer trader, he/she is the first link between producer and other middlemen. Middlemen/ broker: A broker is an individual or party that arranges contact between a buyer and seller for a commission when the deal is executed. A broker also acts as a retailer or as a customer, becomes a principal party to the deal. Wholesaler: They concentrate on the various intermediate sized loads and put the product into large homogeneous units. These activities all contribute to price formation. Retailers: Middlemen that include super market and other large-scale retailer who divides huge shipments of make and sell it to consumers in little units. The basic function they provide is bulk breaking. Consumer: It is the last link in the vegetable market channel, the participants and their respective functions often overlap. The most widespread combinations the following: producer's to wholesalers that collect goods and supply it to retailers, wholesalers to retailers wholesalers that also sell directly to consumers and wholesalers to consumers.

2.5. Conceptual Frame work of Vegetable market channel Actors

The conceptual frame works of vegetable market channel developed from four things those: are the producers which have the main actor in involving or participating vegetable marketing channels from the initials or producing/growing up to selling of vegetables, the second things including in the conceptual framework expected factors determine market channel which is the growers challenged by many constraints which sale their products to expected market channel /channels those are also the third things to develop market channel conceptual frame works. The last thing which can be developing the conceptual frame works of vegetable market channel were profitability.

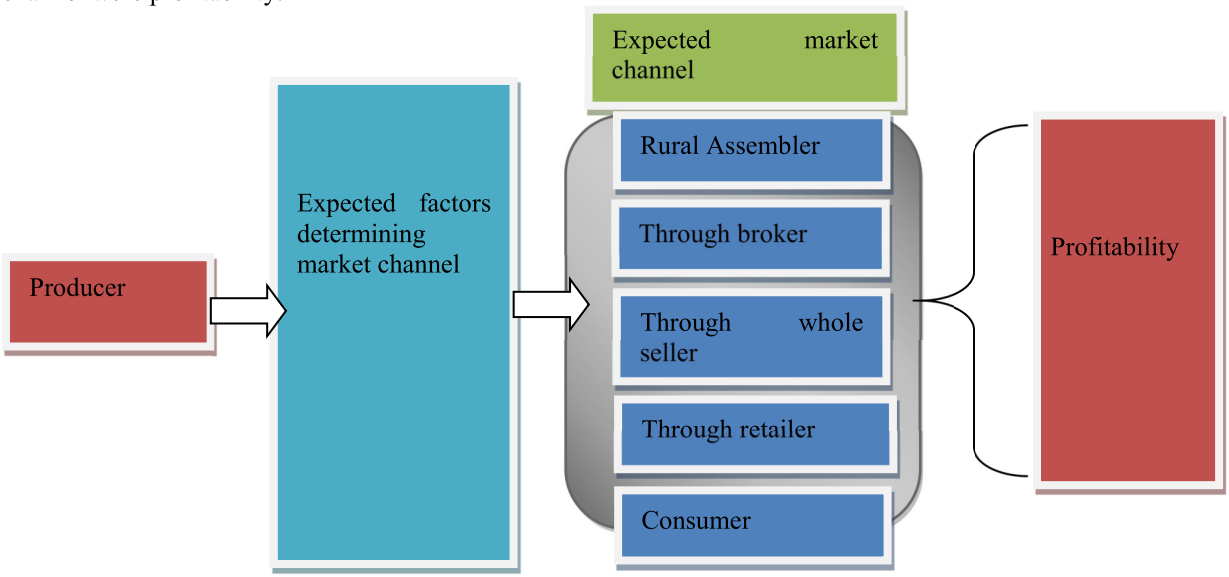

Figure 1: Conceptual Frame work of Vegetable supply channel Actors
Source: Own computation from survey data, 2016

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Research Design

The design employed in this study is somewhat mixed. This method is preferred because there is no evidence that shows research done in the area on the same topic of this research to the best knowledge of the researcher and there is no much is known about the role of supply channel in improving marketability of vegetable products. Moreover, the study employed both qualitative and quantitative research approach.

3.2 Sampling Techniques

Those kebeles were purposively selected because there is limited number of people that have expertise in the use of supply channel. Then a stratified simple random sampling was used to select vegetable markets from each kebeles. The vegetable markets are to be stratified in to two groups based on supply channel and non-supply channel. This is to ensure comparative analysis between these two groups of marketability of vegetable products.

3.3 Sample size of the Study

The total population of vegetable producers in those kebele is 48,000 and the researcher determined the sample size of this research by using the following formula:

$$n = \frac{N}{1+N(e)^2}$$

The determination of sample size is resolved by means of Wirs (2002) sampling formula with 95 % confidence level. n= sample size for the research use, N= total number of vegetable producers and e= margin of errors at 5%

$$n = \frac{48{,}000}{1 + 48{,}000(0.05)^2}$$

= 396.7 ≈397

3.4 Sources of Data

Both primary and secondary source of data are assumed to be used for the research.

3.5 Data collection instruments

The research is based on both qualitative and quantitative data would be collected using the following data-collection instruments.

3.6 Data Analysis Techniques

Data analysis for this study is to be involved both quantitative and qualitative research approach. Depending on the objectives of a study and nature of data available, analysis made required different approaches. This method of data analysis refers to the use of %ages, means, variances and standard deviations in the process of examining and describing the best marketing channel, determinant factors of profitability, and gross profit margin.

3.7 Econometric Analysis

This method of data analysis refers to the use of different economic and statistical tools or models for testing hypothesis related to the objective of the study.

3.7.1 Market profitability model

In this study, multiple linear regression models was used to analyze factors affecting farm level vegetables market channel to the market in the study areas.

Following Green (2003), the multiple linear regression models is specified as

$$Yi = F(x1, x2, \dots x13 \dots\dots\dots\dots\dots\dots\dots\dots (1)$$

Where Yi= profitability of vegetable product

X_1 =Age of Household Head

X_2 =Sex of the Household Head

X_3 = family size

X_4 =Access to extension service

X_5 = Member of iddir

X_6 = Access to credit

X_7 =Vegetable Farming Experience

X_8=Land Size

X_9 =Access to market information

X_{10}= Distance to Nearest Market

X_{11}=Martial status

X_{12}= Livestock

X_{13}=Education of the Household Head

$$Yi = \beta X + Ui \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots. (2)$$

Where: Yi= profitability of vegetable product

β = a vector of estimated coefficient of the explanatory variable

X = a vector of explanatory variables

Ui = disturbance term

Specifically, when the above general model is changed into the specified variables of this study, the regression equations are as follows to estimate the role of supply channel improving marketability vegetable products.

$$\text{PVP} = a + \beta_1 x_1 + \beta_2 x_2 \ldots\ldots\ldots \beta_{13} x_{13} + Ui \ldots\ldots\ldots\ldots (3)$$

Where: PVP = profitability of vegetable products

3.7.2 Model for Determinants of Choice of Market Channels

A multinomial logit (MNL) model was applied to explain inter producer variation in the choice of a specific marketing channel. This study assumes that producer's decision is generated based on its utility maximization. This implies that each alternative marketing channel choice entails different benefits, and hence different utility, to a household decision maker. Based on McFadden (1978), a household's utility function from using alternative j can then be articulated as follows:

U (Choice of j for producer i) $U_{ij} = V_{ij} + \varepsilon_{ij}$

Where, U_{ij} is the overall utility,

V_{ij} is an indirect utility function and

ε_{ij} is a random error term.

The probability that household i select alternative j can be specified as:

$P_{ij} = \Pr(V_{ij} + \varepsilon_{ij} > V_{ik} + \varepsilon_{ik})$

$P_{ij} = \Pr(\varepsilon_{ik} < \varepsilon_{ij} + V_{ij} - V_{ik}, \forall k \neq j)$

Assuming that the error terms are identically and independently distributed with type i extreme value distribution, the probability that a household chooses alternative j can be explained by a multinomial logit model (Greene, 2000) as follow:

$$Pij = \frac{\exp(\beta jXij}{\sum_{j=0}^{J} \exp(\beta jXij)} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \textbf{(4)}$$

Where,

Xij is a vector of household of the ith respondent facing alternative j

βj is vector of regression parameter estimates associated with alternative j.

Following equation (4) above, we can adapt the MNL model fitting to this study as follow:

$$P(CHOICEij = j) = \frac{\exp(\beta jXij)}{\sum_{j=1}^{J} \exp(\beta jXij)} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5)$$

Where, i represents ith farm household, and i=1,2,3,…,397, j represents different marketing outlets, j=0 for sale to wholesalers, j=1 for sale to rural assembler, j=2 for sale to brokers, j=3 for sale to retailers, and j=4 for sale to consumers and P represents the probability of vegetables marketing outlet j to be chosen by farm household i.

CHOICEij = j means that vegetables marketing outlet j is chosen by farm household i and Xi is independent variables

In this regard, the MNL model can alternatively be specified as follow:

$$Pij = \frac{\exp(\beta jXij}{\sum_{j-1}^{J-1} \exp(\beta jXij)} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (6)$$

The coefficients of explanatory variables on the omitted or base category are assumed to be zero. The probability that a base category will be chosen can be calculated as follows:

$$P_{ij} = \frac{1}{1+\sum_{j-1}^{J-1} \exp(\beta_j x_{ij})} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (7)$$

The determinant effects of the attributes on probability of choice are determined by differentiating equation (4):

$$\delta_j = \frac{\partial P_j}{\partial X_J} = P_j = P_j \left[\beta_j - \sum_{j=0}^{J} (P_j)(\beta_j)\right], for\ j = 1,2 \ldots J$$

Where, Pj is the probability that farmers choose market outlet j

βj is a vector of regression parameter estimates associated with alternative *j* .

In the case of this study, farmers have five market outlets to sell most of their vegetable produce, *J* = 5, and the alternatives *j* = 1, 2, 3, 4, 5 represent sale outlets to wholesalers, to rural assemblers, to brokers, to retailers, and consumers respectively. The dependent variables (the marketing outlet (CHOICE) chosen) in the analysis are measured by the probability of selling vegetables to either of these markets. According to the survey result, five main different marketing channels were identified. These include sales to wholesalers (0=Wholesaler); sales to rural assembler (1=rural assembler), sales to broker (2=broker), sales to retailers (3=retailers) and sales to consumers (4=consumers).

CHAPTER FOUR: RESULTS AND DISCUSSIONS

4.1 Descriptive Results

Table 4.1: Demographic characteristics of samples continuous (variables)

Variable	Obs	Mean	Std. Dev.	Min	Max
Age	397	38.27204	7.072964	26	65
Education	397	4.856423	3.270937	0	12
Profit	397	7917.461	7219.485	986	40000

Source: Own computation from survey data, 2016

The age of the respondents shows a large variability where the youngest respondent of the study is 26 year old while the oldest respondent household aged 65 years. Additionally, Looking on its relation with profit outcome, a scatter plot of age and profit (*See Appendix 5)* shows that profitability increases up to the age of 50 and gradually diminishes after this age onwards.

From the table, also shows that the mean educational achievement result implies that most of the respondent household heads, given the average deviation, has a primary educational status. The two way plot of educational status and profit as indicated in (*See Appendix 6)*. This increased educational entitlement has supported the ability to acquire new idea in relation to market information and improved production practice of the households. With regard to profitability profile of respondents, household heads that produces vegetable products, The highest and the lowest level of profit gain is also vary greatly where the most profitable households gain an annual average profit of 40,000.00 ETB while respondents with worth profitability gets annual profit gain of 986 ETB.

4.1.1.2. Sex and marital status

The tabulation of the demographic characteristic of sample respondents based on sex and marital status shows that most of the respondents, 85.14%, are male respondents while the rest 14.86% is contributed by female respondents. This could be attributed to the fact that in the areas vegetable production farms male are highly involved than females.

Table, 3 Demographic characteristics of samples respondent's categorical (variables)

Variable	**Category**	**freq.**	**%**	**cum.**
Sex	Female	59	14.86	14.86
	Male	338	85.14	100
marital status	Unmarried	34	8.56	8.56
	Married	363	91.44	100

Source: Own computation from survey data, 2016

On the other hand, with regard to marital status, the larger proportion of respondents are married contributing about 91.44% from the total sampled respondents while single headed or unmarried household respondents contribute 8.56%.

4.1.1.3. Family size

Table 4 Socioeconomic/asset characteristics of samples continuous (variables)

Variable	Obs	Mean	Std. Dev.	Min	Max
Family size	397	3.813602	1.782495	1	9
Numoflivestock	397	5.476071	2.408436	2	13
Land size	397	1.098866	0.514148	0.25	2
VProexperience	397	7.680101	5.628295	1	31
Profit	397	7917.461	7219.485	986	40000

Source: Own computation from survey data, 2016

The descriptive statistics on family size of respondents indicated (Table 4) that average family size of the respondents is 3.81.The observed largest family size among respondents is 9 while the smallest is observed in the case of single headed household heads with one member only. Bigger family size may have an adverse effect on Market channel of vegetable products in the study areas as well as impact negatively the participation of households in the markets. As indicated on the (see Appendix 7), the two way plot of family size and profitability also supports this premise. It clearly depicted that the profitability of vegetable products increased until the family size of the respondents reach to 4 and the sharply declines then after.

4.1.1.4. Vegetable farm Experience

The respondents have an average of 7.68 years of experience in vegetable production, ranging from 1 to 31 years. Besides, to this education level of the respondents have an average of 4.85 years and also the level educations ranging from 0 to 12. And also more experienced and educated people have positively affected Market channel of vegetables. Experience in vegetable farming was expected to have a positive influence on profitability.

4.1.1.5. Number of Livestock

The livestock holding of sample households ranging between 2 and 13.and also the average livestock's of the

study areas were 5.47. The above table indicates that, most respondents were profitable between the numbers of livestock reached at 4-7. Even if their profitability begins from livestock number 2 the more the number of livestock the more they are profitable. Livestock is the farmers' most important source of income, food and draft or traction power for cultivation of land in the study area. Hence, households with larger livestock holding have better access to draft power than those with less. Livestock holding is also one of the main cash sources to purchase agricultural inputs.

4.1.1.6. Distance to nearest market land size

As shown from table 4, the mean of distance nearest to the central market from the vegetable farming area ranging between 2km and 70kms. And also the average distance of central market areas were 29.30 km in the study area. As (see Appendix 3) indicates that the profitability of vegetable producers would be increase up to the distance of 20 km from the market. As indicates from Table 4, 0.25 hectare up to one hectare of land most of the respondents' would gain relatively more profit than others. Regardless of other constraints, when the number of land size increase, profitability of vegetable products also increase.

4.1 Access to services and institutions

Table, 5 Socioeconomic and institutional characteristics of samples respondent's categorical (variables)

Variable	Category			
Access to Extension Service		Freq.	%	Cum.
	No	40	10.08	10.08
	Yes	357	89.92	100
Member to Iddir				
	No	2	0.5	0.5
	Yes	395	99.5	100
	Total	397	100	
Access to Credit				
	No	79	19.9	19.9
	Yes	318	80.1	100
	Total	397	100	
Market Information				
	No	141	35.52	35.52
	Yes	256	64.48	100
	Total	397	100	

Source: Own computation from survey data, 2016

As evident from Table, the data 89.92% of the producers were used accessibility of extension service and 10.08% of the producer were not used the access of extension service. And also majority of the farmer were a member of iddir. Beside to this, 80.1% of farmer were used the credit access of in the sample respondents. In terms of market information, majority of the respondents were used. In numerical 64.48% of the sample respondents were used current market information.

4.1.2. Producers' characteristics by market channel

Tables 6 sex of sample respondents across the level of market channel

Type of market channel	SEX=Male		SEX = Female			
	%	Cum.	%	Cum.	chi2	pr.
Rural Assembler	9.76	9.76	0.000	0.000		
Broker	9.47	19.23	38.98	38.98	42.8801	0.000
Wholesaler	43.49	62.72	37.29	76.27		
Retailer	20.41	83.14	6.78	83.05		
Consumer	16.86	100	16.95	100		
Total	100		100			

Source: Own computation from survey data, 2016

As it is clearly observed from Table 6, female vegetable producers have not used the rural assembler's as their preferred market channel while the higher proportion of them (38.9%) prefers to use brokers market channel to sell their vegetable production. As well, female vegetable producers also exploit marketing opportunities in the wholesalers' market channel with relatively better magnitude (37.29%). On the other hand, male vegetable producers prefer mostly to market their product through wholesalers' market channel. 43.5% of male respondents of the study prefer to use this kind of market channel while those that sell directly for retailers follows next with 20.41% contribution from the total, male respondents. Generally, in an overall consideration the larger proportion of the respondents prefers to use wholesalers' market channel to market their vegetable products.

A chi2 test of statistic 42.88 significant at 1% level indicates the presence of dependence of types of market

channel and the sex of respondents. The result implies that the preference of market channel for vegetable products marketing is significantly depends on the sex of the respondents.

Tables 7 Martial status of sample respondents across the level of market channel

Type of market channel	MARST = Married		MARST = Unmarried			
	%	Cum.	%	Cum.	chi2	pr.
Rural Assembler	9.09	9.09	0.000	0.000		
Broker	15.15	24.24	0.000	0.000		
Wholesaler	45.18	69.42	14.71	14.71	43.0616	0.000
Retailer	16.53	85.95	38.24	52.94		
Consumer	14.05	100	47.06	100		
Total	100		100			

Source: Own computation from survey data, 2016

As observed from the above table, the total of 100% unmarried vegetable producers 14.71%, 38.24%, and 47.06%, were sold their products to wholesalers, retailers, and, consumers respectively. On the other hand, out of the total % of married vegetable producers majority of the married producers were sold their products to wholesalers. This results shows that there were significantly difference selection of market channels between married and unmarried vegetable producers.

Tables 8 access to extension service of sample respondents across the level of market channel.

Type of market channel	AccessExtSer=yes			AccessExtSer=no			
Rural	Freq.	%	Cum.	Freq.	%	Cum. chi2	pr.
Assembler	25	7	7	8	20	20	
Broker	49	13.73	20.73	6	15	35	
wholesaler	163	45.66		6	15	20.1221	0.000
Retailer	60	16.81	66.39	13	32.5	50	
Consumer	60	16.81	83.19	7	17.5	82.5	
Total	357	100	100	40	100	100	

Source: Own computation from survey data, 2016

As observed from the above table, majorities of the farmers which has an extension services to sell their products for wholesalers or 45.66%of the total vegetable producers sell their products to whole sellers. Beside to this, the table indicates out of 397 respondents 357 were have access to extension service and the remaining 40 respondents were have not access to extension service .According to the above table 16.81%,18.81%,13.73%, and 7%of vegetable producers were selected consumers, retailers, brokers, and rural assemblers and 20.12 chi2 results and 0.000 p values.

Tables 9 membership of idder sample respondents across the level of market channel

Type of market		MemIddir = Yes			MemIddir = No			
Channel	Freq.	%	Cum.	Freq.	%	Cum.	Chi2	Pr.
Rural Assembler	33	8.35	8.35	0	0.000	0.000		
Broker	53	13.42	21.77	2	100	100	12.4993	0.014
Wholesaler	169	42.78	64.56	0	0.000	0.000		
Retailer	73	18.48	83.04	0	0.000	0.000		
Consumer	67	16.96	100	0	0.000	0.000		
Total	395	100		2	100			

Source: Own computation from survey data, 2016

According to table 9, membership of idder42.79% producers were sell their products to wholesaler the other membership of idder8.35% to rural assembler, 13.42% to broker, 18.48% to retailer, and 16.96% to consumers sell their products. Member ship of idder has significantly emphasized the selection of market channel within 12.49 chi2 results.

Tables 10access to credit sample respondents across the level of market channel

Type of market	AccessToCridet = Yes			Access ToCredit =No			Chi2 test	
Channel	Freq.	%	Cum.	Freq.	%	Cum.	chi2	pr.
Rural Assembler	16	5.03	5.03	17	21.52	21.52		
Broker	42	13.21	18.24	13	16.46	37.97		
Wholesaler	136	42.77	61.01	33	41.77	79.75		
Retailer	65	20.44	81.45	8	10.13	89.87		
Consumer	59	18.55	100	8	10.13	100		
Total	318	100		79	100		27.5143	0.000

Source: Own computation from survey data, 2016

As observed from the above tables out of 397 respondents318 respondents were the accessibility of credit in the vegetable producers the other 79 respondents were not accessibility of credits .In addition to this, the total number of vegetable producers 42.77% were sell wholesalers and the remaining 20.44% and 18.55% sample respondents were sell their products to retailers and consumers respectively. On the other hand the total of 79 vegetable producers respondents that has not access to credit which sale their products to 41.77% of their products were sales to whole sellers.

Tables 11access to market information sample respondents across the level of market channel

Type of market	AccesToMktInfo = Yes			AccessToMktInfo = No		Cum. chi2 pr.
Channel	Freq.	%	Cum.	Freq.	%	
Rural Assembler	15	5.86	5.86	18	12.77	12.77
Broker	26	10.16	16.02	29	20.57	33.3328.2917 0.000
wholesaler	103	40.23	56.25	66	46.81	80.14
Retailer	60	23.44	79.69	13	9.22	89.36
Consumer	52	20.31	100	15	10.64	100
Total	256	100	Total	141	100	

Source: Own computation from survey data, 2016

As observed from the above tables out of 397 respondents 256 respondents were the accessibility of market information in the vegetable producers the other 141 respondents were not accessibility of market information's .In addition to this, the total number of vegetable producers majorities (40.23%) were sell wholesalers. 28.29 in the chi2 results. On the other hand not access to market information, majority of the producers sells their products to whole seller's within28.2917 chi2 results. Closer look at access to market information depicted; as there is no system in place that systematically collect, analyze and disseminate information relevant to the needs of different actors.

Table 12statistical test of categorical variables by the level of vegetable profitability

Row Mean-				
Col Mean	Rural As	Broker	Wholesaler	Retailer
Broker	555.061			
	0.998			
Wholesaler	5144.27	4589.21		
	0.004	0.001		
Retailer	-40.3541	-595.415	-5184.62	
	1.000	0.993	0.000	
Consumer	-29.7182	-584.779	-5173.99	10.6359
	1.000	0.994	0.000	1.000

Source: Own computation from survey data, 2016

The table 12 shows that comparison of profit by type of market channel in the study area the producer's sale there vegetable product for best channels comparing which channels were more profitable. As observed from the above table brokers were profitable than rural assemblers at insignificant value of 0.998.And also the comparison of profits of vegetable products between wholesaler and rural assembler the producers were profitable to sale their products to wholesaler by the mean difference 5144.27 and 0.004 significant level. And comparison of profit between rural assembler and retailer & consumers vegetable producer could be more profitable to sell their products for rural assemblers than retailer & consumers respectively insignificantly. As the study indicates the producer has been profitable significantly to sell their products to wholesaler to compare with brokers. Based on the above data comparison of marketable channels more profitable channels for the producers were wholesalers.

4.2 Producers' characteristics by marketing channel actors

In this study, five major vegetable market channels were identified as alternatives to farmers to sell majority of

their vegetable products. These were wholesalers which accounts for 169 respondents were select out of the total respondents, rural assembler 33, broker 55, retailers73 and consumers 67.

Tables 8 to 13 present demographic characteristics of sample respondents across marketing channel actors. The study indicated that the majority farmers in Kewet wereda sales vegetables to wholesalers and in some extents those wereda people sales their vegetable to retailers. ANOVA test result also showed that there was also significant difference in market channel actor's choice between the Woredas people at less than 1% significant level. The reason for the difference is the existence of high market intermediaries in Kewet Woreda and the difference in vegetables production and marketing access of the Woredas

4.3 Market Channel Actors Map of Vegetable in Kewet wereda

According to Kotler and Armstrong (2003), marketing channel is a business structure of interdependent organizations that achieve from the point of product source to the consumer with the purpose of moving products to their final consumption destination. The analysis of marketing channels is deliberate to offer a systematic knowledge of the flow of the goods and services from their origin (producer) to the final destination (consumer). Since the channels to different vegetables were different the analysis was done on vegetable produced in the study area. The study identifies the five major marketing channels for vegetable market Dawit (2015). The five major vegetable marketing channels actors identified in this study include: i) producers sold their products to consumers directly, ii) producers sold their products to wholesalers directly, iii) producers sold their products directly to retailers, iv). Producers sold their products to rural assemblers, v). Producers sold their products to broker.

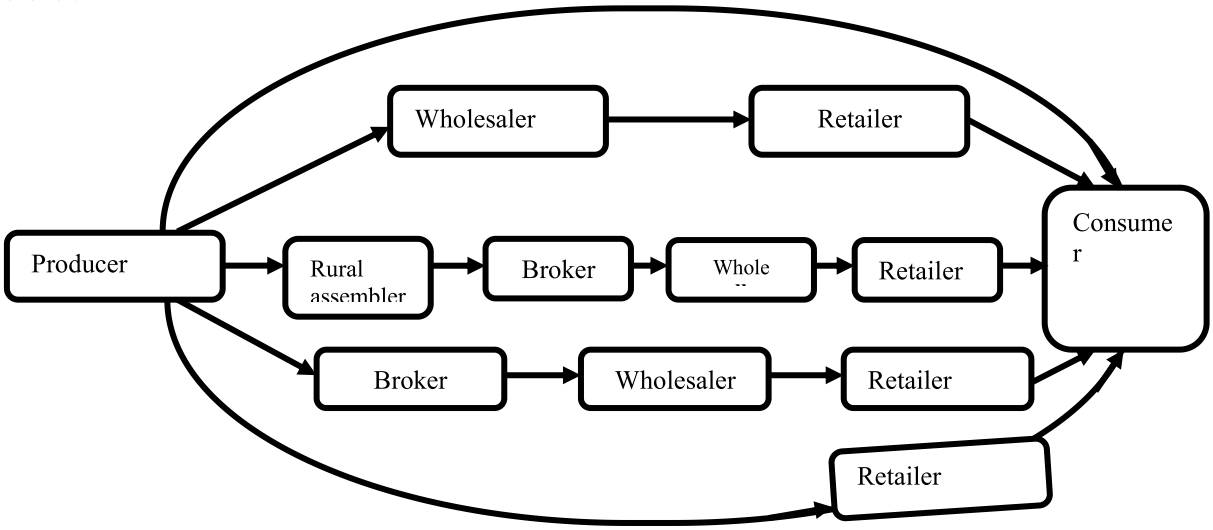

Fig.2 market channel actors

Source: Own computation from survey data, 2016

The producers sell their products to brokers in these channel actors the producer has select these channel actors' secondly in profitability level of vegetable production. According to Mohammed (2011) these are agent middlemen who facilitate trades (buying and selling) between farmers and traders (wholesalers, urban assemblers, retailers), but does not usually physically handle products. These agents are not permanent brokers rather their main economic activity is farming during production season of the year. These intermediaries play important role in bringing farmers of their home residence sell their marketable surplus to the trader whom they undertook their brokerage activity.

According to Abraham (2013) Consumers were purchasing the products for consumption. About three types of vegetable consumers were identified: households, restaurants and institutions which give services such as higher education institutions, hospitals, etc. The private consumers are employees, and urban and rural dwellers who purchase and consume vegetables. The above figure shows that the direct relationship between producers and consumers which were producers sold their products to consumers directly.

As observed from Fig.2 producers sell their vegetable products directly those Five market channel actor's. Among the above channel actors producers would be selected majority of respondents were select whole seller's participants of the marketing system who usually buy vegetable products of larger volume than any other actors in the marketing system and resell the products to retailer and customers. Wholesalers reside in woreda market town and purchase vegetable either through broker or directly from farmer or farmer trader or urban assemblers. Commodities bought from different sources put together in one place (store) to be processed so that uniformity of the product will be attained.

4.4 Analysis of vegetable profitability

4.4.1Producers' profitability analysis

Whenever profitability analysis of any activity is under taken, production costs and revenues (benefits) obtained must be included in the analysis. In economics terms these costs are termed as either fixed or variable costs a farmer incurred in the production and production process of vegetable. Fixed costs are costs that do not change with a change in output (production). On the other hand fixed costs simply mean costs incurred regardless of the presence or absence of production.

The total revenue obtained from the production of vegetable production per a year was simply estimating the amount of vegetable produced multiplied by a corresponding average price a farmer received in the production year. The net profits of a sample farmer owned from the total revenue of vegetable production Subtracting the total production costs or expenses.

4.4.1.1. Producers characteristics by the level of profit

Tables 4, demographic and socio-economic characteristics of sample respondents were across the level of vegetable profitability. The study indicated that sex of producer were not significant but there were the mean difference between the female producers and male producers which is majority of vegetable producers were male and the study show that male producer was more profitable than the females.

Table 13 Demographic variables by the level of vegetable profitability

Variable	Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval] Value	t-
Sex	Female	59	7264.881	674.598	5181.686	5914.527	8615.236	
	Male	338	8031.373	408.987	7519.135	7226.884	8835.862	0.7521
	combined	397	7917.461	362.3356	7219.485	7205.119	8629.803	
	Diff		-766.491	1019.191		-2770.21	1237.225	
Marital status	Unmarried	34	4247.794	941.5176	5489.944	2332.262	6163.326	
	Married	363	8261.176	381.6938	772.243	7510.561	9011.792	3.1339
	combined	397	7917.461	362.3356	7219.485	7205.119	8629.803	
	Diff		-4013.38	1280.633		-6531.09	-1495.67	

Source: Own computation from survey data, 2016

In addition to this, the study indicates married producers were more profitable than unmarried producers by 3.13 significant levels. On the other hand the vegetable producers those the mean difference between that have access to extension services and have not access to extension services in this difference the producers that have access to extension services were more profitable than that of not access to extension services in the significant level of 2.76. The study indicates member ship of iddir not significantly the mean difference between member ship of iddir and not a member ship.. The farmer that has market information was more profitable than the farmers that do not have market information

Table 14, Institutional variables by the level of vegetable profitability

Variable	Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]	t-value
MemIddir	No	2	14000	0.000	0.000	4000	14000	
	Yes	395	7886.7	363.516	7225	7172	8601.34	1.1952
	combined	397	7917.5	362.336	7219	7205.1	8629.8	
	Diff		6113.3	5115.09		-3943	16169.5	
Access tocredit	No	79	6022.4	449.522	3995	5127.4	6917.3	
	Yes	318	8388.3	434.607	7750	7533.2	9243.33	
	combined	397	7917.5	362.336	7219	7205.1	8629.8	-2.6262
	Diff		-2365.9	900.875		-4137	-594.778	

Source: Own computation from survey data, 2016

Based on table, the producer accessibility of credit the mean differences the producer that has access to credits were more profitable than that of the producer has not access to credits in a significant level of 2.62.Credit is important to facilitate the introduction of innovative technologies and for input and output marketing arrangements. Access to credit enhances the financial capacity of the farmer to purchase the necessary inputs. Therefore, it was hypothesized that access to credit would have positive influence on profitability. The further away the production area is to the market, the lesser would be the probability to participate in commercial vegetable production, hence poor profits because of high transport costs. Therefore, it was expected that the variable would positively affect profitability.

Table 15, Socio economic variables by the level of vegetable profitability

Variable	Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]	T-value
Access to extension service	No	40	4953	683.41	4322	3570.6	6335.3	
	Yes	357	8249.6	391.909	7405	7478.9	9020.36	-2.7615
	combined	397	7917.5	362.336	7219	7205.1	8629.8	
	diff		-3296.6	1193.81		-5644	-949.63	
AcessToMktInfo	No	141	6580.6	403.379	4790	5783.1	7378.13	
	Yes	256	8653.8	510.868	8174	7647.7	9659.82	-2.761
	combined	397	7917.5	362.336	7219	7205.1	8629.8	
	diff		-2073.1	750.88		-3549	-596.921	

Source: Own computation from survey data, 2016

Based on table 15, access to market information was set as a dummy variable, where a farmer having access to market information took the value one and no access to information took a value of zero. Access to information was assumed to positively influence profitability, and similarly, access to extension services was set as a dummy variable equal to one if a farmer had access to extension service, otherwise zero. The aim of the extension service is to introduce farmers to new and improved agricultural inputs in order to improve production and productivity in turn increase market channel which has a positive effect on profitability.

4.5 Econometrics Analysis

4.5.1Determinants of Vegetable Profitability

According to findings of the research, all sample respondents were good suppliers of the commodity to the market. Analysis of factors affecting farm level profitability of vegetable product was found to be important to identify factors constraining vegetable supply to market. In this respect, 13 variables were hypothesized to affect farm level profitability of vegetable. Multiple linear regression models were employed to identify the factors. For the parameter estimates to be efficient, assumptions of multiple Linear Regression (MLR) model should hold true. Hence, Multi-co linearity and heteroscedasticity detection test were performed using appropriate test statistics for each as follows.

Test for Multicolleaniarity: All VIF values are less than 5. This indicates absence of serious multicolleaniarity problem among independent continuous, dummy, and categorical variables .And contingency Coefficient results indicated absence of serious multicolleaniarity problem among the independent dummy variables in (Annex 4). Since there is heteroscedasticity problem in the data set, Therefore, to overcome the problem, Robust OLS analysis with heteroscedasticity consistent covariance matrix was estimated (Table 14). Thirteen explanatory variables were hypothesized to determine the producer level profitability of vegetable products. Among these variables, only seven variables namely (family size, vegetable producer experience, marital status, member of iddir, market information, access to credit, and access to extension service) were found significant profitable for vegetable products.

Table 16: OLS regression between factors and profitability

		Robust				
Log profit	Coef.	Std. Err.	T	P>t	[95% Conf.	Interval]
Age	0.0010619	0.00838	0.13	0.899	-0.01539	0.01754
Education	-0.0114464	0.01436	-0.8	0.426	-0.0396797	0.01677
Family size	-0.055834	0.02496	-2.24	0.026	-0.104843	0.00682
Numoflivesto	0.0006565	0.01262	0.05	0.959	-0.0242394	0.02553
Land size	-0.0466975	0.08121	-0.57	0.566	-0.2064901	0.11305
Distance	0.0002072	0.00204	0.1	0.919	-0.0037929	0.00427
VProexperien	0.0149951	0.00686	2.2	0.029	0.0015737	0.02847
SEX	0.0589954	0.08192	0.72	0.472	-0.1020767	0.22008
MARST	0.9177285	0.18058	5.08	0.000	0.5626801	1.27277
AccessExtSer	0.4584046	0.15938	2.88	0.004	0.1450983	0.77171
MemIddir	-0.9229101	0.12164	-7.59	0.000	-1.162083	0.68374
AccessToCri	0.3254912	0.09596	3.39	0.001	0.1367461	0.51426
AccessToMktI	0.1582905	0.07345	2.15	0.032	0.0138264	0.30275
_cons	8.099793	0.29929	27.07	0.000	7.511496	8.68801

Source: Own computation from survey data, 2016

Access to credit (Accesstocri): As the multiple regression model result indicates, the variable access to credit had positive and significant influence on volume of vegetable profit at 5% significance level. From this result it can be stated that those farmers who have access to credit, are more probable to profitable vegetable products than those who have no access to credit.

Access to Market Information (AccessMktInfo): It profitability of vegetable products positively and significantly at 5%. This suggests that access to market information reduces farmers risk aversion behavior of getting a market and decreases marketing costs of farmers that affects the marketable surplus.

Extension access: the other significant variable was extension services, which affected positively the profitability of vegetable products. This suggests that access to get extension service avails information regarding technology which improves profit that affects the marketable surplus.

4.5.2Determinants of vegetable market channel choices

The MNL model as specified with five choices was tested for the independence of relevant alternatives of market channel actors. The possible heteroscedasticity and multicolleaniarity problems are also corrected. The command robust (in Stata) was used to correct for heteroscedasticity. There is no multicolleaniarity problem because the result of VIF is less than 10 for all variables (Appendix Table 12).

Table 17 below presents the coefficients from multinomial logit regression on the existing alternative marketing channel actors in the respondents. According to Green (2012), the coefficient values measures the expected change in the logit for a unit change in the corresponding independent variable. The sign of the coefficient shows the direction of influence of the variable on the logit. It follows that a positive value indicates an increase in the likelihood that a household will change to the alternative option from the baseline group. The result showed that some of the variables were significant at the market channel actors while some others were significant in one marketing channel but not in the other actors. The positive estimated coefficients of a variable indicates that the probability of the producers being in either supplying to rural assembler market channel, retailer market channel, broker market channel, and consumer relative to supplying to wholesaler market channel increases as these explanatory variables increase. The implication is that the probability of the producers to be on these outcomes is greater than the probability of being wholesaler channel (the base category). The negative and significant parameter indicates the probability of using wholesale channel is higher than the probability of being in the four alternatives. Estimates not significantly different from zero indicate that the explanatory variable concerned does not affect the probability of the producers decision to use wholesaler channel category than in the other four categories. The result of the MNL their possible explanations are presented below.

The alternative “wholesaler” was used as a base category (bench mark alternative). This implies that the discussion of the results focuses on the impact of the explanatory variables on a use of rural assembler, broker, retailers, and consumer category relative to use of wholesalers (the base category).

Table 17: Determinants of vegetable product for the choice of marketing channel actors

Market Channel	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
Rural Assembler						
Age	0.241619	0.1002849	2.41	0.016	0.0450643	0.43814
Education	0.6471978	0.1428332	4.53	0.000	0.36725	0.92716
Family size	-1.524235	0.4678761	-3.26	0.001	-2.441255	-0.60721
Numoflivestock	-0.8853252	0.242966	-3.64	0.000	-1.36153	-0.40912
Land size	3.119055	0.7731568	4.03	0.000	1.603696	4.63445
Distance	-0.1015875	0.0278054	-3.65	0.000	-0.1560851	-0.04709
VProexperiance	0.1262823	0.0643454	1.96	0.050	0.0001676	0.25237
SEX	20.28237	1452.926	0.01	0.989	-2827.4	2867.94
MARST	21.49098	2145.146	0.01	0.992	-4182.919	4225.91
AccessExtSer	-2.068675	0.8870554	-2.33	0.020	-3.807272	-0.33008
AccessToCridet	-2.101393	0.7578594	-2.77	0.006	-3.58677	-0.61602
AccessToMktInfo	-0.3038492	0.5474908	-0.55	0.579	-1.376911	0.76923
_cons	-44.73848	2590.883	-0.02	0.986	-5122.775	5033.28
Broker						
Age	-0.0739662	0.0457629	-1.62	0.106	-0.1636598	0.015727
Education	-0.1779361	0.0804002	-2.21	0.027	-0.3355175	-0.02035
Family size	-0.4580047	0.1714534	-2.67	0.008	-0.7940472	-0.12196
Numoflivestock	-0.1908908	0.1003024	-1.9	0.057	-0.3874799	0.005698
Land size	0.7247202	0.3898822	1.86	0.063	-0.0394349	1.488875
Distance	0.0015652	0.0103932	0.15	0.880	-0.018805	0.021936
VProexperiance	0.150948	0.0417543	3.62	0.000	0.0691111	0.232785
SEX	-1.834448	0.465345	-3.94	0.000	-2.746507	-0.92239
MARST	17.82258	2487.071	0.01	0.994	-4856.747	4892.393
AccessExtSer	-1.173091	0.7518634	-1.56	0.119	-2.646716	0.300534
AccessToCridet	-0.7408815	0.4553036	-1.63	0.104	-1.63326	0.151497
AccessToMktInfo	-0.4373597	0.3774088	-1.16	0.247	-1.177067	0.302348
_cons	-11.24025	2487.072	0.000	0.996	-4885.812	4863.331
Retailer						
Age	0.0929623	0.0470961	1.97	0.048	0.0006556	0.185269
Education	0.2747741	0.0778071	3.53	0.000	0.122275	0.427273
Family size	-0.1135467	0.1347684	-0.84	0.399	-0.3776879	0.150595
Numoflivestock	-0.0730132	0.0659381	-1.11	0.268	-0.2022495	0.056223
Land size	1.542435	0.372372	4.14	0.000	0.8125996	2.272271
Distance	-0.0145032	0.0086219	-1.68	0.093	-0.0314017	0.002395
VProexperiance	-0.0175992	0.0348144	-0.51	0.613	-0.0858342	0.050636
SEX	2.118011	0.6343983	3.34	0.001	0.8746128	3.361408
MARST	-1.358829	0.773561	-1.76	0.079	-2.874981	0.157322
AccessExtSer	-1.80541	0.6693685	-2.7	0.007	-3.117348	-0.49347
AccessToCridet	0.1940123	0.4998001	0.39	0.698	-0.7855779	1.173602
AccessToMktInfo	1.456437	0.394319	3.69	0.000	0.6835856	2.229288
_cons	-6.242138	2.209569	-2.83	0.005	-10.57281	-1.91146
Consumer						
Age	0.1870826	0.0475584	3.93	0.000	0.0938698	0.280295
Education	0.196215	0.0802315	2.45	0.014	0.0389641	0.353466
Family size	-0.6541648	0.1574905	-4.15	0.000	-0.9628405	-0.34549
Numoflivestock	-0.0783571	0.0761477	-1.03	0.303	-0.2276039	0.07089
Land size	1.050596	0.3628154	2.9	0.004	0.3394911	1.761701
Distance	-0.0385839	0.0105506	-3.66	0.000	-0.0592627	-0.01791
VProexperiance	-0.0789692	0.0426358	-1.85	0.064	-0.1625337	0.004595
SEX	0.7666727	0.5102506	1.5	0.133	-0.2334001	1.766745
MARST	-0.6156395	0.7429861	-0.83	0.407	-2.071866	0.840587

AccessExtSer	-1.272667	0.7283199	-1.75	0.081	-2.700147	0.154814
AccessToCridet	0.5826558	0.5158392	1.13	0.259	-0.4283705	1.593682
AccessToMktInfo	0.7618988	0.3850862	1.98	0.048	0.0071437	1.516654
_cons	-5.64716	2.1599	-2.61	0.009	-9.880485	-1.41383

Wholesale outlet is base outcome. Log likelihood = -411.19671 Pseudo R2 = 0.2885 Prob> chi2 = 0.0000

Source: Own computation from survey data, 2016

Access to Extension Service (AccExtser): The variable was negatively and significantly associated with use of rural assembler and retailer market channel actors at less than 5% significance level. Farmer's access to extension service increased the ability of farmers to acquire important market information as well as other related agricultural information which in turn increases farmer's ability to choose the best market channel actors for its product

Educational Level of Household Head (HEduc): It was negatively and significant related with broker market channel actor's choice at less than 5% significance level. The result also confirmed that, if the household head is educated the probability of choice of rural assemblers channel decrease relative to wholesalers. Education is related with the wholesale market channel because as the education level increases farmers' ability to post harvests handling activities increases and strengthen the linkage with wholesalers.

Family size: It was negatively and significant related with broker, rural assembler, and consumer market channel actor's choice at less than 5% significance level. The result also confirmed that, if the number of family size is increased the probability of choice of rural assemblers, broker, and consumer channel decrease relative to wholesalers.

Distance to nearest market: It was negatively and significant related with broker, rural assembler, and consumer market channel actor's choice at less than 5% significance level. The result also confirmed that, if the vegetable producers are nearest to the market probability of choice of rural assemblers, and consumer channel decrease relative to wholesalers.

4.6. Farmers' marketing problems

Farmers in the study area were frequently liable to cheating in weighing scale while selling their product in the market. The case was particularly intense at time of peak supply or harvesting season, where sample farmers sell in bulk. In the meantime, the price traders offered to farmers was low, without actual interaction of supply and demand in the market.

4.7. Production constraints

There are factors that hinder the production of vegetables products in the study area. The majority of the sample producers indicated seed shortage, pesticide shortage, diseases, insects, drought and frost as major constraints of vegetables production.

The most important physical inputs for vegetable production are improved seeds, fertilizers, pesticide, and irrigation water. Research and extension services, information and appropriate technological support are non-physical inputs that are equally important for higher yields. Among the total sample of respondents, majority replied limited access and supply of inputs as their production problem. The other production constraints were diseases and pests this was directly related to agricultural input access problem. Unavailability of pesticide and herbicides mainly create these problems in addition to the problem of accessing to improve and diseases resistance seeds. Inadequate farmer skills and knowledge on production and farm management creates such problems. This is mainly related with poor extension service in the areas.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS AND RECOMMENDATIONS

In this study market channel of vegetable were analyzed. And attempts identify key vegetable marketing actors; examining market maps for major actors; and channels by profit margins. Besides to this, marketing constraints of vegetable were also discussed. This study examine the best market channel, determinants factors the profitability of vegetable production. The study shows that access to credit, access to extension service, access to market information, and marital status were significant and positively related to the profitability of the vegetable farmers while member of iddir was negatively related to profitability of vegetable products. The result of the multiple regression models indicates that profitability vegetable products were significantly affected by access to market information, access to extension service, access to credit, member of iddir, marital status, vegetable production experience, and family size.

The MNL model as specified with five choices was tested for the independence of relevant alternatives of market channel actors. Based on the market channel selection and determinant factors of vegetable production the producer select Producer sell vegetable products by the market channel of wholesaler-Retailer to Consumers in these channel the vegetable producer earning profits better than other market channel.

Based on the research findings of this study, the following points are recommended to determinants of

vegetable production; improve marketability of vegetable product, and selection of the best market channel improving profitability of vegetable products in the study area. Therefore, there is a need to improve the selection of vegetable market channel actors system of vegetables. Producers be supposed to form a production clusters to improve their market intelligence. This could be achieved through the market information.

The local governments should be developed to enhance productivity of vegetable farmers through the stipulation of seminars where farmers would acquire more training or educated on vegetable market and production. This would enable farmers to improve their productivity and hence profitability. Agriculture extension systems should be market driven, decentralized and farmer-led in order to improve vegetable productivity and profitability.

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