REGRESSION ANALYSIS OF EXTENSION NEEDS OF VEGETABLE GROWERS IN AMARAVATI DIVISION OF MAHARASHTRA STATE, INDIA

ABSTRACT

Indian sub-continent is blessed with different agro-climatic conditions, which favours the cultivation of vegetables throughout the year. Vegetable cultivation has always been a source of supplementary income besides providing gainful employment through intensive cultivation. The present study aims to analyze the regression analysis of extension needs of vegetable growers in Amaravati division of Maharashtra state. The study was carried out in 10 villages located inthe Akola and Amravati districts of the Vidarbha region of Maharashtra state with a sample size of 120 respondents. An exploratory research design was used for conducting the study. The results of multiple regression analysis of various characteristics of the vegetable growers with their extension needs showed that selected variables arepositively significant with extension needs and the selected independent variables collectively contributed only to the extent of 64.52 percent variation in the dependent variable. The findings of this study contributed for a better understanding of the extension needs of the vegetable growers and helps in developing targeted interventions and support services for their specific needs.

Key words: Multiple regression analysis, Extension needs, Vegetables, Vegetable growers

INTRODUCTION

"It is a fact that developed, under developed, and developing countries get food from agriculture. It tends to believe that development and growth in the agriculture sector provide a better chance for the nation. Agriculture plays a crucial role in the development of human history. Agriculture sector growth is the backbone of the civilization and its importance is blooming day by day in every sector. The food and nutritional security inIndia were achieved by producing cereals, pulses,oilseeds, vegetables etc. For boosting of agriculturalgrowth farmers need to be encourage to diversifycereal based production with high value crops preferable with vegetables" (Walia et al., 2022)."Additionally, it helps in reducing dependency on imports and ensures a steady supply of fresh and healthy produce for the growing population. The Indian subcontinent is endowed with a salubrious climate which permits growing vegetables like tomatoes, onions, potatoes, brinjal, radish, cucumber, cauliflower, etc.Vegetables provide handsome income to meet theday-to-day need. There is

need to upscale the nutritionalgardening in rural areas with nutrition education to promote increased consumption of diverse andnutrient rich food" (Singh et al., 2019)."A diversified cropping pattern with the inclusion of vegetables could be a prospective option for smallholder farmers to generate cash income and reduce the risks of crop failure due to irregular rainfall".(Septembre et al, 2018)

"Vegetables being rich in nutrients is a part of balance and varied diet. They provide several minerals and vitamins required for quality life. These vegetables are low in energy, fat and full of nutrients" ((Noopur et al,2023). As stated by Mullie and Clarys, (2011) that"higher amount of vegetable intake is associated withlower risk of cardiovascular disease in human.Most of the vegetables are marketed fresh with only a small portion processed. Almost three-fourths of the world's production of vegetables occurs in Asia, mostly in China and India, which produces over half of the world's vegetables".

Vegetable cultivation in India is crucial for food security, nutritional balance, and economic stability. It provides diverse range of essential nutrients has been found to be more profitable than others, particularly food crops, as food crops are highly labor-intensive and mainly cultivated by marginal rural farmers. These vegetable growers need timely access and exposure to the latest/ best agricultural practices (Basannagari,2010). It is therefore necessary to equip the vegetable growers with scientific knowledge and skills so that agriculture in the state can be improved. There is a need to design and develop effective extension strategies and to study the needs and expectations of vegetable growers from the existing extension system. This study would enable the extension system to developa suitable extension strategy and policy framework for enhancing vegetable production in the state.

OBJECTIVE

To ascertain the regression analysis of extension needs of vegetable growers

MATERIAL AND METHODS

The research design used for conducting the present study is an exploratory type of research design. Akola and Amaravati districts of Amravati Division of the Maharashtra state have been used for conducting the study. In Akola district, Patur taluka was selected purposively as the area under vegetables was found to be higher in this taluka than in other talukas of the district. Similarly in the Amravati district, Achalpur taluka was selected. From each taluka, 5 villages were selected, which became 10 villages in total. A list of vegetable growers having a minimum area of 0.20 ha under vegetable cultivation was obtained from the

Taluka Agriculture Office of selected talukas. Thus, from selected two talukas and 10 villages, 120 respondents were selected i.e. 12 respondents from each village were selected randomly and they were considered as sample respondents in the present study.

"Regression analysis and correlation examine the connection of dependent and independent variables, except that regression analysis in addition to establishing the existence of links between two or more variables also achieves prediction of change in the dependent variable in regards to changes in the independent variables. In other words, by use of the regression analysis, the type and intensity of the connections are defined, as well as the quantity of change in one variable in relation to a unit change of the second variable" (Sindhura *et.al*, 2022). "The regression is an analysis of causality. How we can get to the cause of what is now emerging as aconsequence?The goal of regression analysis is to estimate the regression model that minimizes the total distances of the dependent variable from the regression line" (Horvat and Mijoc, 2012). When the dependence of a phenomenon with two or more independent variables is examined, then we talk about multiple regressions. An important goal while creating a regression model is to explain the largest possible percentage of the dependent variable.

RESULTS AND DISCUSSION

Multiple regression analysis was done to determine the contribution of profile characteristics of the vegetable growers towards extension needs. The results obtained are presented in Table1. In multiple-regressionanalysis, twelveindependentvariables (personal, socio-economic, communicational, and psychological characteristics) were fitted to explain the variation in the extension needs of vegetable growers.

Table 1. Multiple regression analysis of the extension needs of the vegetable growers

S.N.	Independent variable	Regression coefficient values (β)	Standard Error	"t" Value
1	Age	-0.299	0.249	-1.203
2	Education	0.514	0.573	0.898
3	Family size	1.801	1.328	1.356
4	Annual income	0.459	0.509	0.900
5	Land holding	-0.150	0.648	-0.235
6	Area under vegetables	-2.874	2.648	-1.085
7	Experience in vegetable cultivation	0.099	0.367	0.269

8	Social participation	-0.221	0.426	-0.517
9	Information sharing behaviour	0.857	0.863	0.993
10	Source of information	-0.089	0.223	-0.402
11	Innovativeness	-0.502	0.572	-0.877
12	Risk orientation	-1.049	0.571	-1.836

$\beta_{\circ}$= 60.61; R^2 = 0.6452; f cal = 0.279; Dependent Variable: Extension needs of vegetable growers

From the above Table1, it was revealed that out of twelve variables, only five variables namely education, family size, annual income, experience in vegetable cultivation, and information sharing behavior were found positively significant with extension needs of vegetable growers which were in line with the findings of (Anitha, 2017) and (Jyoti Rawal, 2019). It was also evident that the selected twelve independent variables contributed differentially towards the extension needs of vegetable growers. However, the value of the coefficient of determination R^2 was 0.6452 which indicates that the selected independent variables collectively contributed only to the extent of 64.52 percent variation in the dependent variable. The rest unexplained contributions may be due to the factors not covered in the study or by extraneous or intervening variables. Nevertheless, the high value of R^2indicates that the researcher has accounted for the major components that determines the extension needs of the vegetable growers.

CONCLUSION

The study gave an overview of the regression analysis ofthe socio-personal characteristics of the vegetable growers and their extension needs. It concludes that vegetable growers with higher education, medium family size and good farming experience had better access to information about vegetable cultivation and achieved higher annual income. The extension needs of vegetable growers are crucial for their success and sustainability in the highly competitive agriculture sector. The findings suggest that the government should strengthen the extension advisory system to provide immediate support and guidance to farmers and develop policies that address the low awareness among vegetable growers related to extension services. Policy makers should utilize the findings to develop a better understanding of the reasons for low awareness and come up with suitable policies that will benefit vegetable growers. Theses policies should aim to equip vegetable growers with scientific knowledge and skills to improve agriculture in the state. Additionally, effective

extension strategies should be designed and developed to meet the needs and expectations of vegetable growers. Overall, the study suggests that a suitable extension strategy and policy framework should be developed to enhance vegetable production in the state.

REFERENCES:

Anita, B. M.2017. Production and Marketing Behaviour of Onion growers. M.Sc. *(Agri) Thesis (Unpub),* Dr.PDKV, Akola.

Basannagari, B. 2010. Risk management information needs of farmers along vegetable supply chain: implications for extension outreach programs. *Journal of Software Project Management and Quality Assurance.* 1(1): 37-41.

Horvat, J., Mijoc, J. 2012. Fundamentals of Statistics; Ljevak doo, Zagreb

Mullie, P. and Clarys, P. (2011). Association between cardiovasculardiseases risk factor knowledge and lifestyle.Food and Nutri. Sci.,2 (10): 1048-1053.

Noopur, K. Chauhan, J.K. Kumar, L. Chandegara, A.K. and Panwar, S.S. 2023. Vegetables for Food and Nutritional Security: A Review. Indian Research Journal of Extension Education. 23(4): 21-27.

Rawal, J and Ansari, A. 2019. Extension Needs of Vegetable Growers: A study in Kumaon Region of Uttarakhand. Asian Journal of Agricultural Extension, Economics &Sociology.36(4):1-10.

Septembre, M.; Remizeb, A. and Pouchereta, F.P. 2018.Fruits and vegetables as a source of nutritionalcompounds and phytochemicals: Changes in bioactivecompounds during lactic fermentation. Food ResearchInternational.104: 86-99.

Sindhura, K. Yadav,M. Srujana, P. 2022. Role of Regression Modelling in Agricultural Research in General. Just Agriculture Multidisciplinary-e-Newsletter.11(2):1-5.

Singh, A., Singh, A.K., Singh, S.K., Singh, S., Sahay, R., Tiwari, D.K. and Maurya, R.C. 2019. Food and nutritional security through nutritional gardening in Unnao district, Indian Journal of Extension Education.55(3): 60–64.

Walia, S.S.; Babau, S.; Gill, R.S.; Kaur, T.; Noopur, K.; Panwar, A.S.; Yadav, D.K.; Ansar, M.A.; Ravisankar, N.; Kumar, S.; Kaur, K. and Ansar, M.H. 2022. Designing resource-efficient and environmentally safe cropping systems for sustainable energy use and economic returns in Indo-gangetic plains, India. Sustainability.14 (21): 14636.