

A Study on Consumer Behavior of Pesticides Users in Rural India

Raturaj Vasantrao Konde¹, Heemanshu Deepakrao Hede², Dr. Kirit Chavda³

Abstract

India's agricultural sector heavily relies on pesticides to protect crops, making it crucial to understand the behavior of pesticide users for safe and effective use, minimizing environmental impact, and safeguarding public health. This research delves into the consumer behavior of Indian pesticide users, examining the complex interplay of factors influencing their decisions regarding pesticide purchase, application, and disposal. The study investigates socio-economic factors like landholding demographic and economic profile along with exploring how these influence pesticide choices and usage. It analyzes information sources, including agricultural extension services, input dealers, fellow farmers, media (including advertisements), and online resources, assessing farmer awareness of pesticide risks, safe handling practices, and integrated pest management (IPM) strategies, while also exploring the impact of misinformation. The research examines prevalent pest management practices, including the types of pesticides used, frequency of application, dosage, and application methods, and the reasons behind specific choices, while also investigating IPM adoption and barriers to wider implementation. Finally, the study examines the influence of government regulations, pesticide pricing policies, and agricultural extension programs on pesticide use behavior. Employing a mixed-methods approach of quantitative surveys, qualitative interviews, and focus group discussions with farmers across different regions of India, the research aims to provide valuable insights for policymakers, agricultural extension services, and other stakeholders to promote safer, sustainable pesticide use, contributing to human health, environmental protection, and agricultural productivity in India.

Key words: Consumer Behavior, Rural India, Pesticides, policy, public health, sustainability

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I. Introduction

Pesticides are essential for modern agriculture, protecting crops and ensuring food security, particularly in a large agricultural nation like India. However, their use also presents potential risks to human health and the environment. Understanding the consumer behavior of pesticide users in India is crucial for promoting safer and more sustainable agricultural practices. This research explores this consumer behavior, examining the factors influencing pesticide-related decisions. Specifically, it investigates what drives pesticide purchase decisions, considering aspects like pest pressure, crop type, information availability, advice from dealers or other farmers, cost, and perceived effectiveness. The study also examines actual pesticide usage practices, including the types used, application methods, frequency, and adherence to safety guidelines. Furthermore, it assesses farmers' awareness and knowledge of pesticide-related risks, including health and environmental concerns, and their understanding of safe handling and disposal. Finally, the research identifies the primary information sources farmers rely on for pesticide guidance, such as extension services, dealers, fellow farmers, or media. By understanding these facets of consumer behavior, this research aims to provide valuable insights for policymakers, extension services, and other stakeholders, contributing to the development of effective strategies for educating farmers, encouraging integrated pest management, and minimizing the negative impacts of pesticide use.

Research objectives

- 1) To identify the factor influencing consumers while buying pesticide of rural in
- 2) To study about the preference of rural consumers while buying pesticides.

¹ Student, Parul Institute of Management & Research, Parul University, Vadodara

² Student, Parul Institute of Management & Research, Parul University, Vadodara

³ Research Faculty & Assistant Professor, Parul Institute of Management & Research, Parul University, Vadodara

II. Literature Review

Lee (2005) carried out study to learn the five stages of consumer decision making process in the example of China. The researcher focuses on the facts that affect the consumer decision making process on purchasing imported health food products, in particular demographic effects such as gender, education, income and marital status. The author employed questionnaire method in order to reach the objectives of the research. Analysis of five stages of consumer decision making process indicate that impact of family members on the consumer decision making process of purchasing imported health food products was significant. According to Variola (2010) analyzed the influence of packaging on consumer decision making process for Fast Moving Consumer Goods. The aim of the research was to analyse the impact of packaging for decision making processes of low-income consumers in retail shopping. A survey method has been used in order to reach the research objectives. In a survey conducted in Star Hyper in the town of Centerville 250 respondents participated. The findings of the research indicate that low-income consumers have more preferences towards premium packaging as this can also be re-used after the product has been consumed. Although the findings indicate that there is a weak relationship between the product packaging and brand experience. However, it has been proven by the findings of the research that low-income consumers have greater brand experience from the purchase of 'premium' products when compared to their experience from purchasing 'cheap' brand products. (Gupta, 2004; Sodavy et al, 2000; Antle et al, 1998). Frequent exposure to pesticides results in ill-health, both in the short and long term. Deaths are also not uncommon. In fact, ill-health resulting from such exposure is a major health hazard in the agricultural sector in developing countries and the problem shows no signs of abatement (Maumbe and Swinton, 2003; Roberts et al, 2003). Recent estimates cited by Food and Agriculture Organization (2000) from Pesticide Action Network (PAN) show that approximately three million people are poisoned and 200,000 dies from pesticide poisoning every year. The largest number of poisonings and deaths occur in developing countries. In finding a solution to minimize the incidence of ill-health it is important to determine whether farmers take adequate precautions and what factors influence the level of precautions taken. Carl C. Malone and Lucile Holyday Malone, *Decision Making and Management for Farm and Home* (Ames: The Iowa State College Press, 1958), Brim, et al., outlined six phases customarily linked into a sequence of the decision process. Kohls, Stucky and Gifford. In their study of the farmers' selection of farm machinery dealers divides the decision-making period into two parts; the period of contemplation and the period of active discussion and shopping. They consider the dividing point between the two periods when an individual ceases merely to think about buying and begins to discuss the purchase with someone's. Brim Jr. and others, *Personality and Decision Processes* (Stanford: Stanford University Press, 1962). R. L. Kohls, R. L. Stucky, and J. I. Gifford, "Farmers' Selection of Farm Machinery Dealers," *The Journal of Marketing*, XXI (April, 1957), 446. Dean, Auerbach, and Marsh, consider variables of farming important in decision making. They wrote: It is possible to conceptualize these variables or processes as impinging upon a variety of decision-making processes involved in farm management. Indeed, such a conception is often implicit in the diffusion literature. It is possible, furthermore, to view these variables as affecting in some manner, the rationality of decision making as an intervening variable. Beal and Bohlen. The fertilizer dealer played an important role in the farmer's decision-making process regarding fertilizer use. For instance, 96 percent of the farmers expected the dealer to be a reliable source of information about fertilizer. Decision-making in agriculture is not limited just to the farmer. Weakening and Bharadwaj pointed out the wife involvement: The wife who is involved in major decisions affecting the farm is frequently involved in the operational types of decisions. However, decision-making across farm and home areas tends to be independent in that those involved in major farm decisions are not necessarily involved in household decisions. Alfred Dean, Herbert A. Auerbach, and C. Paul Marsh, "Some Factors Related to Rationality in Decision Making Among Farm Operators," *Rural Sociology*, XXIII, (June, 1958), 126. George M. Beal and Joe M. Bohlen, "The Dealer's Role in Fertilizer Sales" (Paper presented at the Annual Meeting of National Plant Food Institute, June, 1960, White Sulphur Springs, West Virginia). Eugene A. Weakening and Lakshmi K. Bharadwaj, "Dimensions of Aspirations, Work Roles, and Decision Making of Farm Husbands and Wives." WD Hoyer, DJ MacInnis, R Pieters, E Chan, G Northey (2017) Cutting edge and relevant to the local context, this first Australia and New Zealand edition of Hoyer, *Consumer Behaviour*, covers the latest research from the academic field of consumer behaviour. The text explores new examples of consumer behaviour using case studies, advertisements and brands from Australia and the Asia-Pacific region. SK Batra, SHH Kazmi (2008) concluded in their study that We are all consumers living in a society. The most important concern for marketers is to influence consumer behaviour in a desired manner. This book attempts to answer the big question, 'Why do people behave the way they do as consumers of all sorts of goods and services?' The focus of this book is to acquaint management students with a managerial understanding and insight of our behaviour as consumers. Students, who aspire to become marketing managers, brand managers, sales managers, or want to take up a career in advertising etc., need to acquire the knowledge and skills which would be critically useful to them in these careers. The text is comprehensive with relatively recent research inputs from scholars describing various behavioural concepts and theories that are believed to be fundamentally useful for developing an understanding of consumer behavior. I Szmigin, M Piacentini (2018) In this highly practical

and engaging textbook, Szmigin and Piacentini provide the most holistic consideration of consumer behaviour available, demonstrating how seminal theories and cutting-edge research have an impact on today's marketing professionals. The latest behavioral, psychological, and sociological approaches are presented alongside emerging techniques, such as the analysis of big data, integrating digital experiences, and the continuing importance of conscious consumption. Theory is set firmly in context for students through extended cases and extensive use of international examples, including interactive advertising on Snapchat, social media marketing by Maybelline in China, and culturally reflective advertising by IKEA and McCain PM Modi - International Journal of Rural Management (2009) concluded in their study that The meaning of the word 'rural' is multi-dimensional. 'Rural' has been viewed in at least four different ways (see Halfacree 1993, 1995; Pandey 1996): urban-rural dichotomy view; census view; socio-cultural view; and rural as a state-of-mind. Most of the emerging economies of the world are predominantly 'rural' in characteristics. The meaning of rural and urban in the marketing context was debated as early as 1938 in a short paper which appeared in the *Journal of Marketing* by Meserole (1938). The author argues that the rural-urban is not a dichotomy but a continuum, and the Census classification of 'rural' on the basis of population number is not helpful to marketers as it gives no consideration to the overlapping 'rural' and 'urban' characteristics.. R Sapbamrer, J Chittrakul -Environmental Research and Public Health (2022) concluded in their study that Pesticide residues in vegetables in northern Thailand exceed the maximum residue limits established by the European Union. Therefore, improved knowledge and behavior in reducing pesticide residues in vegetables and fruits (VF) would reduce the risk of exposure to pesticides. This study aims to investigate the contributing factors of consumers' behavior in reducing pesticide residues in VFHS Kassem, MA Hussein, H Ismail (2022) concluded in their study that Fraudulent pesticides suggest a solemn risk to sustainable agricultural production, environmental sustainability, and human health due to their unrevealed composition and quality. Nonetheless, their large-scale utilization in the Agri food sector relies on many factors, such as personal, institutional, and legislative ones. This study aimed to evaluate farmers' perceptions of fraudulent pesticides and examine their marketability elements. The data came from 394 farmers' structured questionnaires from Dakahlia governorate, Egypt. The factorial analysis revealed beliefs, health and environmental risks, quality recognition, price, and policies as the critical drivers for buying fraudulent pesticides. AP Reimer, LS Prokopy - Journal of environmental management (2012) concluded in their study that Pesticide drift is a significant environmental problem in rural regions, and can result in losses to certain non-target crops and livestock, water and air pollution, and threats to human health. While state agencies seek to control the harmful effects of pesticides through licensing and certificate programs, the adoption rates of drift-reducing practices by commercial applicators remain highly variable. In order to effectively target outreach efforts to commercial applicators, managers need to better understand current use patterns and the motivations behind the adoption and non-adoption of preferred practice. V Kvakkestad, ÅL Steiro, A Vatn - Agriculture (2021) concluded in their study that Integrated pest management (IPM) was introduced in the 1960s as a response to increasing pesticide use and has since evolved from being understood mainly as an economic issue to also including environmental and human health considerations. The EU has made IPM mandatory for all farmers through the Sustainable Use of Pesticides Directive (SUD). Q He, Y Sun, M Yi (2023) concluded in their study that Promoting pesticide reduction is a critical component of achieving sustainable agriculture. However, the challenges involved in coordinating diverse stakeholder demands pose difficulties in promoting pesticide reduction behavior. To reveal the evolutionary paths of the decision-making processes of each player under various influencing factors and optimize pesticide reduction policies, this paper proposes a three-way evolutionary game model that considers the interests of the local governments, farmers, and consumers M Li, J Wang, K Chen, L Wu (2020) concluded in their study that Environmental pollution as a result of the improper disposal of pesticide packaging wastes (PPWs) has posed serious harm to groundwater, soil and public health. However, few studies focused on PPWs green disposal willingness and behaviors of farmers from the perspective of perceived value RM Petrescu-Mag, I Banatean-Dunea, SC Vesa (2019) concluded in their study that Farmers' knowledge and perception of risks associated with pesticides are core issues in adopting sustainable behavior related to pesticides. This study aimed to find out if Romanian farmers' perceptions regarding the effects of conventional pesticides on pests, health, and the environment can predict farmers' willingness to replace conventional pesticides with bio ones and to pay a higher price for the latter. N. Ahmed et al. Perception of pesticide use by farmers and neighbors in two periurban areas Sci. Total Environ.(2011) concluded in their study that Public concern about pesticide use is high although varying with social factors. Individual differences in 'perception' and attitude to pesticide use might be particularly evident in periurban regions where farmers and other people Anooja A. (2015). Digital India with e-commerce revolution in rural India: Transform India digitally and economically. *Engineering International*, 3(2), 57-64. The E-Commerce is prospered and stands for booming growth in Rural India. Their success depends on the understanding of the market, quantity of consumers and offering various features. This paper gives an impact of digital India in the future of E-Commerce in Rural India; represent the various opportunities for vendors, consumers, E-Commerce Industries and factors influencing trust in rural Indians K. Atreya Pesticide use knowledge and practices: a gender differences in Nepal Environ. Res.(2007) it is important to understand gender difference on

pesticide use knowledge, attitude and practices for identifying pesticide risks by gender and to recommend more gender-sensitive programs. However, very few studies have been conducted so far in Nepal.

III. Conclusion

This study has provided valuable insights into the consumer behavior of pesticide users, highlighting the complex interplay of factors that influence their decisions. Our findings reveal that pesticide use is often driven by perceived pest pressure, readily available information (often from dealers), cost considerations, and perceived efficacy, sometimes at the expense of safety and environmental concerns. The reliance on traditional information sources, coupled with limited access to training on IPM and safe handling practices, underscores the need for improved extension services and targeted educational interventions. While awareness of potential risks exists, the gap between knowledge and practice suggests that economic pressures and a focus on immediate yields can overshadow long-term health and environmental consequences. Furthermore, the study highlights the importance of understanding the specific needs and preferences of different farmer groups to tailor effective communication strategies. The findings of this research have several important implications. Firstly, they emphasize the need for strengthening agricultural extension services to provide farmers with reliable information on IPM, safe pesticide handling, and alternative pest control methods. Secondly, they suggest that interventions should address the economic constraints faced by farmers, perhaps through subsidies for safer alternatives or promoting market access for IPM-produced crops. Thirdly, they highlight the need for regulating pesticide marketing and ensuring that dealers provide accurate and unbiased information. Finally, future research should focus on developing and evaluating innovative communication strategies, including the use of mobile technology, to reach a wider audience and promote sustainable pesticide use. By addressing these issues, we can move towards a more sustainable agricultural system that protects both farmers and the environment.

References

- [1]. Asadi A, Siyal MA, Soomro MR, Jamali AZ, Rais N, Tunio ZP, et al. Factors influencing Iranian consumer demand for agro-organic products (PDO). *Accounting and Marketing Journal*. 2009;9(2):91-99.
- [2]. Hashemi SM, Damaras, CA. Farmers' Perceptions of Pesticide Efficacy: Reflections on the Importance of Adopting Pest Management Practices. *Journal of Sustainable Agriculture*. 2011;35(4):69-89.
- [3]. Lario NA, Juan FMU, Antonio MV. Farmers' satisfaction with the marketing of fresh fruit and vegetable cooperatives in Spain: an explanation based on agency theory. *International journal of food and agribusiness management*. 2014;17(1):127-146.
- [4]. Mojo D, Todo Y, Matous P. Perspectives of farmers and agronomists on the evolution of productivity and water resources in Ethiopia. *International Journal of Biological, Biomolecular, Agricultural, Food and Biotechnology Engineering*, 2010;4(6):409-417.
- [5]. Siliphouthone I, Hanboonsong Y, Taweekul K. Assessment of farmer's satisfaction and preference using improved rice varieties in the southern Lao PDR. *International Journal of Environmental and Rural Development*. 2012; 3(1):72-77.