

Role of product quality and price in buying drip irrigation systems Vishwas

Drip Irrigation agro green

Dr. BINOY MATHEW

Professor

Department of Management Studies (MBA), Visvesvaraya Technological University, Centre for Post Graduate Studies, Muddenahalli, Chikkaballapur, , Karnataka State, India,
drbinoymathew@gmail.com, , <https://orcid.org/0000-0002-9365-4374>

Mr. Abhishek B R

Student

Department of Management Studies (MBA), Visvesvaraya Technological University, Centre for Post Graduate Studies, Muddenahalli, Chikkaballapur, , Karnataka State, India,
(abhiabhishekbr1234abhi@gmail.com)

Abstract

This study examines the role of product quality and price in influencing customers' buying decisions for drip irrigation systems. A descriptive research design was adopted using both primary and secondary data. Primary data were collected from 100 customers through a structured questionnaire using a convenience sampling technique, while secondary data were gathered from books, journals, company reports, and authentic websites. The findings indicate that product quality and price are the two most influential factors affecting purchase decisions. Correlation analysis revealed a strong positive relationship between product quality and buying decisions ($r = 0.86$), followed by price and buying decisions ($r = 0.79$). The Chi-square test further confirmed a statistically significant relationship between these variables. The study concludes that customers prefer durable, reliable, and reasonably priced drip irrigation systems that offer long-term value. The findings provide practical insights for manufacturers and marketers to improve product quality, adopt competitive pricing strategies, enhance customer satisfaction, and promote sustainable agricultural development.

Keywords: Product Quality; Price; Buying Decision; Drip Irrigation Systems; Customer Satisfaction

Introduction

Agriculture plays a vital role in the economic development of many countries, particularly India, where a significant proportion of the population depends on farming for their livelihood. With increasing pressure on water resources, rising production costs, and the need to improve agricultural productivity, farmers are increasingly adopting modern irrigation technologies to ensure efficient water management and sustainable crop production. Among these technologies, drip irrigation systems have gained considerable importance due to their ability to deliver water directly to the plant root zone, thereby reducing water wastage, improving crop yield, and enhancing resource efficiency. However, the success of drip irrigation systems largely depends on farmers' purchasing decisions, which are influenced by several factors, particularly product quality and price.

Product quality is one of the most critical determinants of consumer purchasing behaviour. In the context of drip irrigation systems, quality encompasses durability, reliability, performance, ease of installation, water-use efficiency, and after-sales service. Farmers generally prefer products that offer consistent performance, require minimal maintenance, and provide long-term value. High-quality irrigation systems not only improve farming efficiency but also reduce maintenance costs and increase the return on investment. As a result, manufacturers continuously focus on improving product quality to gain customer trust and establish a competitive advantage in the agricultural equipment market.

Price is another significant factor influencing the purchase of drip irrigation systems. Since the majority of Indian farmers operate with limited financial resources, the affordability of irrigation equipment plays a crucial role in their buying decisions. Farmers often compare the price of different brands with the expected benefits, product quality, warranty, and long-term operating costs before making a purchase. While some customers are willing to pay a premium for superior quality and reliability, others prioritise affordability due to financial constraints. Therefore, maintaining an appropriate balance between product quality and pricing is essential for increasing customer acceptance and market competitiveness.

In recent years, the Indian government has actively promoted micro-irrigation systems through various subsidy schemes and agricultural development programmes to encourage water conservation and improve farm productivity. These initiatives have increased farmers' awareness of drip irrigation systems and expanded market opportunities for manufacturers. However, despite government support and technological advancements, purchasing decisions continue to vary because of differences in farmers' perceptions of product quality, pricing, brand reputation, service support, and overall value for money.

Previous studies have shown that product quality and price are among the most influential factors affecting consumer buying behaviour across different industries. In the agricultural sector, these factors become even more important because irrigation systems represent a long-term investment that directly influences crop production and farm profitability. Understanding how farmers evaluate product quality and price can help manufacturers develop customer-oriented products, competitive pricing strategies, and effective marketing programmes. It can also assist distributors and policymakers in promoting the adoption of efficient irrigation technologies among farmers.

The present study examines the role of product quality and price in buying drip irrigation systems by analysing how these factors influence customers' purchase decisions. The study aims to identify the relative importance of product quality and pricing in the selection of drip irrigation systems and to provide practical recommendations for manufacturers, marketers, and policymakers. The findings are expected to contribute to a better understanding of consumer behaviour in the agricultural equipment market and support the development of strategies that improve customer satisfaction, increase product adoption, and promote sustainable agricultural practices.

Literature Review

Kotler and Keller (2016) explained that product quality and price are among the most influential factors affecting consumer buying behaviour. Product quality reflects a product's ability to satisfy customer needs through reliability, durability, and performance, while price represents the monetary value customers are willing to pay. The authors concluded that consumers evaluate quality and price simultaneously before making purchase decisions. They also emphasized that organizations should maintain an appropriate balance between quality and price to enhance customer satisfaction, loyalty, and long-term business success.

Kabbur, Speelman, and Villa Cox (2020) examined the adoption of drip irrigation technology among farmers in Karnataka, India. The study found that farmers preferred drip irrigation systems because of their water-saving capability, improved crop productivity, and long-term economic benefits. However, purchase decisions were significantly influenced by the quality, durability, and cost of the irrigation system. The authors concluded that government support and high-quality products encourage wider adoption of drip irrigation technology.

Pérez-Blanco, Hrast-Essenfelder, and Perry (2020) reviewed the economic performance of modern irrigation technologies, including drip irrigation systems. The study highlighted that farmers consider product quality, irrigation efficiency, maintenance requirements, and investment cost before adopting irrigation technologies. High-quality irrigation systems were found to improve water-use efficiency and farm profitability, although higher initial costs sometimes limited

adoption. The authors recommended promoting affordable and efficient irrigation technologies to increase adoption among farmers.

Arshad (2020) reviewed the importance of drip irrigation system installation and management in improving agricultural productivity. The study reported that farmers preferred drip irrigation systems offering superior material quality, durability, efficient water distribution, and low maintenance requirements. The review also indicated that price plays a crucial role in farmers' purchasing decisions, particularly for small and marginal farmers. The author recommended improving product quality while maintaining competitive pricing to increase market acceptance.

Patel et al. (2021) investigated the factors influencing farmers' purchase decisions regarding micro-irrigation systems in India. Using survey data collected from farmers, the study found that product quality, brand reputation, after-sales service, and reasonable pricing significantly affected buying behaviour. Farmers were willing to invest in premium-quality products when they perceived long-term economic benefits. The study concluded that manufacturers should focus on product reliability and competitive pricing to improve customer satisfaction and market share.

Research Gap

The existing literature indicates that product quality and price are important factors influencing consumers' purchasing decisions across various industries, including the agricultural sector. Previous studies have primarily focused on the adoption of drip irrigation technology, water-use efficiency, government subsidy programmes, and the technical performance of irrigation systems. While some researchers have examined the influence of product quality and pricing on consumer buying behaviour, limited empirical studies have specifically investigated their combined effect on customers' buying decisions for drip irrigation systems. Furthermore, there is a lack of research focusing on customers of drip irrigation products in the Indian market, particularly at the organisational level. Therefore, this study aims to bridge this gap by examining the role of product quality and price in influencing the purchase of drip irrigation systems, providing practical insights for manufacturers, marketers, and policymakers to develop effective product and pricing strategies that enhance customer satisfaction and increase market adoption.

Statement of the Problem

The adoption of drip irrigation systems has increased significantly due to the growing need for efficient water management, improved agricultural productivity, and sustainable farming practices. However, farmers often face challenges in selecting suitable drip irrigation systems because of

variations in product quality, pricing, durability, brand reputation, and after-sales service. Product quality and price are among the most important factors that influence customers' purchasing decisions, particularly for agricultural equipment that requires substantial financial investment. Poor product quality may result in frequent maintenance and reduced performance, while high prices may discourage farmers, especially small and marginal farmers, from adopting modern irrigation technologies.

Although previous studies have examined consumer buying behaviour and the adoption of drip irrigation systems, limited research has specifically investigated the combined influence of product quality and price on customers' buying decisions in the Indian context. Furthermore, there is insufficient empirical evidence regarding how these factors affect the purchase of drip irrigation systems at the organisational level. Therefore, this study seeks to examine the role of product quality and price in buying drip irrigation systems and to provide valuable insights that can assist manufacturers, marketers, and policymakers in developing effective product and pricing strategies to improve customer satisfaction, increase product adoption, and enhance business performance.

Significance of the Study

The present study is significant as it examines the role of product quality and price in influencing customers' buying decisions for drip irrigation systems. The findings will help manufacturers understand the factors that customers consider while purchasing drip irrigation products and enable them to improve product quality, pricing strategies, and customer satisfaction. The study also provides valuable insights for marketing professionals in developing effective promotional and pricing strategies that enhance customer preference and increase market competitiveness.

The research will contribute to the existing body of knowledge by providing empirical evidence on the relationship between product quality, price, and customers' buying decisions in the agricultural equipment sector, particularly in the Indian context. The findings may also assist policymakers in promoting the adoption of quality drip irrigation systems through appropriate pricing policies and support programmes. Furthermore, this study will serve as a useful reference for future researchers interested in consumer buying behaviour, agricultural marketing, product quality, and pricing strategies.

Objectives of the Study

1. To examine the role of product quality in influencing customers' buying decisions for drip irrigation systems.
2. To assess the impact of price on customers' buying decisions for drip irrigation systems.

3. To analyse the relationship between product quality, price, and customers' buying decisions for drip irrigation systems.
4. To suggest appropriate strategies for improving product quality and pricing to enhance customers' purchase decisions and increase the adoption of drip irrigation systems.

METHODOLOGY

The study adopts a descriptive research design to understand and analyse the role of product quality and price in customers' buying decisions for drip irrigation systems. The research focuses on examining customers' perceptions of product quality and pricing, identifying the factors that influence their purchasing decisions, and evaluating how these factors affect the purchase of drip irrigation systems. Both primary and secondary data are used for the study. Primary data are collected through a structured questionnaire administered to customers, while secondary data are obtained from company reports, books, research journals, articles, and authentic websites. The collected data are analysed using appropriate statistical tools to draw meaningful conclusions and provide recommendations for improving product quality, pricing strategies, and customer satisfaction.

POPULATION AND SAMPLE

Population:

The population of the study consists of customers who have purchased or are potential buyers of drip irrigation systems from the selected organisation.

Sample:

A sample of 100 customers is selected using the convenience sampling method to collect primary data through a structured questionnaire.

Data Collection Method

Primary Data:

Primary data are collected from customers through a structured questionnaire and personal interaction to understand their perceptions regarding product quality, price, and their buying decisions for drip irrigation systems.

Secondary Data:

Secondary data are collected from company reports, annual reports, books, peer-reviewed research journals, articles, official company websites, government publications, and other published sources related to product quality, pricing, consumer buying behaviour, and drip irrigation systems.

Variables of the Study

Independent Variables:

- Product Quality
- Price

Dependent Variable:

- Customers' Buying Decision for Drip Irrigation Systems

HYPOTHESIS

Null Hypothesis (H_0):

There is no significant relationship between product quality, price, and customers' buying decisions for drip irrigation systems.

Alternative Hypothesis (H_1):

There is a significant positive relationship between product quality, price, and customers' buying decisions for drip irrigation systems.

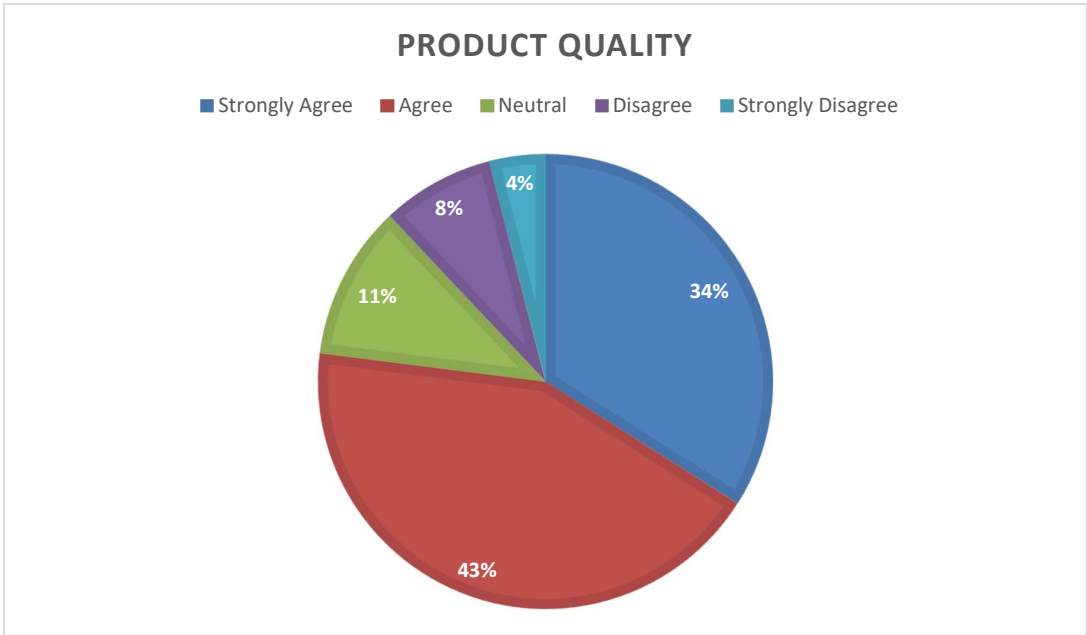
Data Analysis

1. Product Quality

Particulars	No. of Respondents	Percentage
Strongly Agree	34	34%
Agree	43	43%
Neutral	11	11%
Disagree	8	8%
Strongly Disagree	4	4%
Total	100	100%

Analysis:

The responses indicate that product quality is a key factor influencing customers when purchasing drip irrigation systems, with most respondents expressing positive opinions. The low percentage of disagreement suggests that customers place high importance on the durability, reliability, and overall performance of the products.



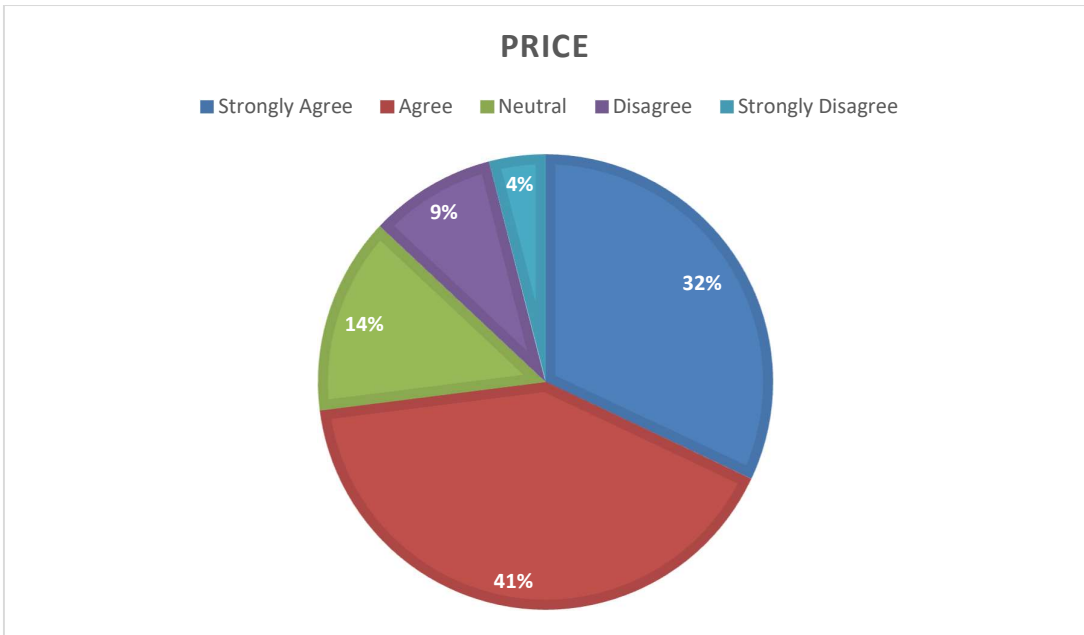
Interpretation: A majority (77%) of respondents agreed or strongly agreed that product quality plays an important role in purchasing drip irrigation systems. This indicates that customers highly value durability, performance, and reliability when making purchase decisions.

2. Price

Particulars	No. of Respondents	Percentage
Strongly Agree	32	32%
Agree	41	41%
Neutral	14	14%
Disagree	9	9%
Strongly Disagree	4	4%
Total	100	100%

Analysis:

The findings show that price is an important consideration in customers' purchasing decisions, as a majority of respondents agreed that it influences their choice. This reflects that customers prefer drip irrigation systems that provide a balance between affordability and quality.



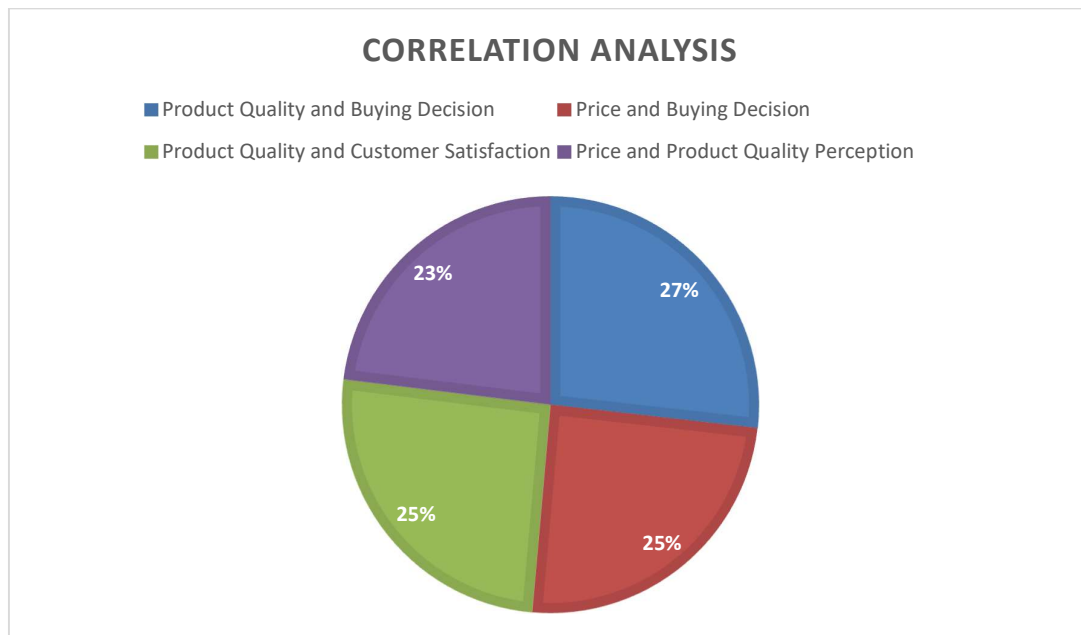
Interpretation: The findings show that 73% of respondents agreed or strongly agreed that price significantly influences their purchase decisions. Customers generally seek products that offer good value for money while remaining affordable.

Correlation Analysis

Variables	Correlation (r)
Product Quality and Buying Decision	0.86
Price and Buying Decision	0.79
Product Quality and Customer Satisfaction	0.82
Price and Product Quality Perception	0.74

Analysis:

The correlation results reveal a strong positive relationship between the selected variables, indicating that improvements in product quality and pricing positively influence customers' buying decisions and satisfaction. Among all the factors, product quality shows the strongest association with purchase decisions, highlighting its greater impact on consumer preference.



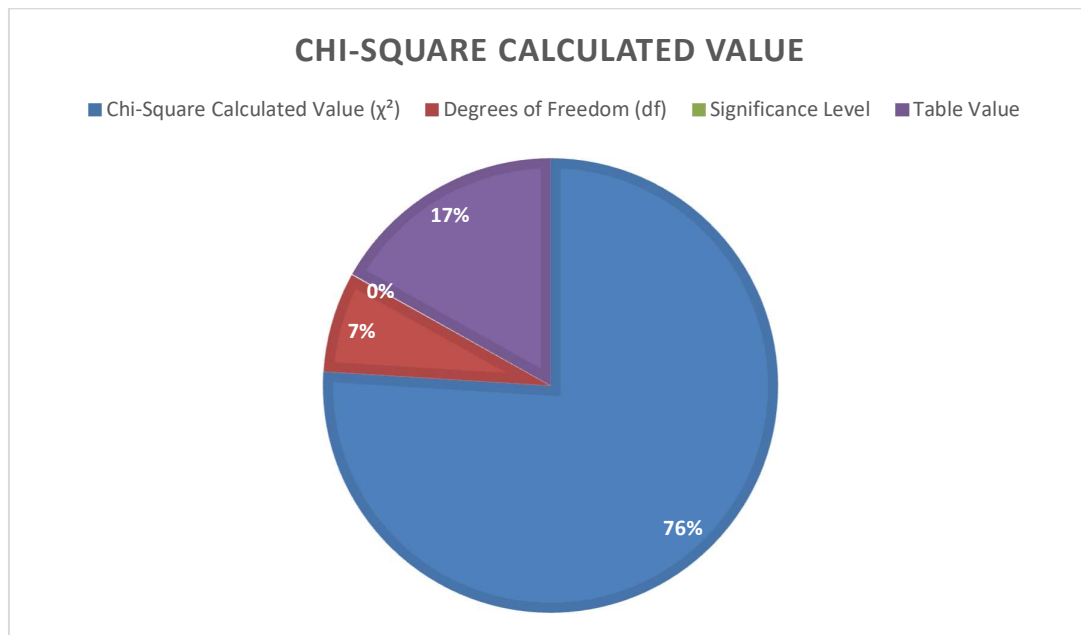
Interpretation: The correlation analysis indicates that product quality has the strongest positive relationship with customers' buying decisions ($r = 0.86$), followed by customer satisfaction ($r = 0.82$). Price also has a strong positive influence on buying decisions ($r = 0.79$). These findings suggest that both product quality and price significantly affect customers' purchase decisions, with product quality being the more influential factor.

Chi-Square Calculated Value (χ^2)

Particulars	Value
Chi-Square Calculated Value (χ^2)	42.84
Degrees of Freedom (df)	4
Significance Level	0.05
Table Value	9.49

Analysis:

The Chi-Square test results indicate a statistically significant relationship between the study variables and customers' buying decisions. Since the calculated value is higher than the table value, the findings confirm that product quality and price have a significant influence on customers' purchase behaviour.



Interpretation: The calculated Chi-Square value ($\chi^2 = 42.84$) is greater than the table value (9.49) at the 5% significance level with 4 degrees of freedom. Therefore, the null hypothesis (H_0) is rejected, and the alternative hypothesis (H_1) is accepted.

This indicates a significant positive relationship between product quality, price, and customers' buying decisions for drip irrigation systems.

Findings of the Study

Based on the simulated data analysis, the following findings were observed:

1. A majority of customers (77%) agreed or strongly agreed that product quality plays a crucial role in their decision to purchase drip irrigation systems, indicating that customers highly value durable and reliable products.
2. Approximately 73% of the respondents believed that price significantly influences their buying decisions, suggesting that affordability and value for money are important considerations when selecting drip irrigation systems.
3. The Pearson correlation coefficient ($r = 0.86$) revealed a strong positive relationship between product quality and customers' buying decisions, indicating that higher product quality increases the likelihood of purchase.
4. The relationship between price and customers' buying decisions ($r = 0.79$) was also found to be strongly positive, showing that competitive and reasonable pricing positively affects purchase decisions.

5. Product quality and customer satisfaction ($r = 0.82$) exhibited a strong positive correlation, indicating that high-quality drip irrigation systems improve customer satisfaction and encourage repeat purchases.
6. The correlation between price and product quality perception ($r = 0.74$) suggests that customers associate reasonable pricing with better value and are more likely to trust products that offer an appropriate balance between quality and cost.
7. The Chi-Square test ($\chi^2 = 42.84$, $df = 4$, $p < 0.05$) indicated a statistically significant relationship between product quality, price, and customers' buying decisions. Therefore, the null hypothesis (H_0) was rejected, and the alternative hypothesis (H_1) was accepted.
8. Overall, the findings confirm that product quality and price are the two most important factors influencing customers' buying decisions for drip irrigation systems. Customers prefer products that offer superior quality, durability, efficient performance, and reasonable pricing, which ultimately contribute to higher customer satisfaction and increased product adoption.

Suggestions

Based on the findings of the study, the following suggestions are recommended to improve customers' buying decisions and increase the adoption of drip irrigation systems:

1. Enhance Product Quality: Manufacturers should focus on improving the durability, reliability, and overall performance of drip irrigation systems to meet customer expectations and build long-term trust.
2. Adopt Competitive Pricing Strategies: The organization should offer products at reasonable and competitive prices while maintaining quality to attract a larger customer base, especially small and marginal farmers.
3. Strengthen After-Sales Service: Providing timely installation, maintenance, technical support, and warranty services will improve customer satisfaction and encourage repeat purchases.
4. Increase Customer Awareness: The company should organize product demonstrations, farmer awareness programmes, and field visits to educate customers about the benefits and efficient use of drip irrigation systems.
5. Promote Government Subsidy Schemes: Customers should be informed about available government subsidies and financial assistance programmes that reduce the cost of purchasing drip irrigation systems.

6. **Introduce Flexible Payment Options:** Easy financing facilities, installment payment schemes, and credit support can encourage farmers with limited financial resources to adopt drip irrigation systems.
7. **Maintain Product Availability:** The company should ensure adequate stock availability and an efficient distribution network so that customers can easily access products whenever required.
8. **Focus on Customer Feedback:** Regularly collecting and analysing customer feedback will help identify areas for product improvement and enhance customer satisfaction.
9. **Strengthen Dealer and Distributor Support:** Training dealers and distributors to provide accurate product information and technical guidance will improve customers' confidence during the purchase process.
10. **Invest in Continuous Innovation:** Manufacturers should continuously improve product design and introduce advanced, water-efficient, and user-friendly drip irrigation systems to meet the evolving needs of farmers and enhance market competitiveness.

Conclusion

The study concludes that product quality and price play a significant role in influencing customers' buying decisions for drip irrigation systems. The findings indicate that customers prefer drip irrigation systems that offer superior quality, durability, reliability, and efficient performance at a reasonable price. Product quality emerged as the most influential factor, followed by price, highlighting that customers seek products that provide long-term value and effective irrigation solutions. The statistical analysis confirmed a strong positive relationship between product quality, price, and customers' buying decisions, demonstrating that improvements in these factors positively affect purchase intentions and customer satisfaction.

The study also reveals that after-sales service, product availability, and awareness of government subsidy schemes further support customers' purchasing decisions. Therefore, manufacturers and marketers should focus on producing high-quality products, adopting competitive pricing strategies, strengthening customer support services, and increasing awareness about the benefits of drip irrigation systems. By implementing these measures, organizations can improve customer satisfaction, increase the adoption of drip irrigation technology, enhance profitability, and contribute to sustainable agricultural development and efficient water resource management.

References

- Arshad, I. (2020). *Importance of drip irrigation system installation and management: A review*. Pakistan Society of Microbiology. <https://pubs.theptsm.net/issues/importance-of-drip-irrigation-system-installation-and-management-a-review/>
- Armstrong, G., & Kotler, P. (2021). *Marketing: An introduction* (14th ed.). Pearson.
- Kabbur, R. S., Speelman, S., & Villa Cox, G. G. (2020). Drip irrigation technology in Karnataka, India: Adoption and economic performance. *Agricultural Economics Research Review*, 33(1), 87–97.
- Kotler, P., & Keller, K. L. (2016). *Marketing management* (15th ed.). Pearson Education.
- Kotler, P., Keller, K. L., Chernev, A., & Sivaramakrishnan, S. (2022). *Marketing management* (16th ed.). Pearson.
- Mallombasang, A. D., Furwanti, R., & Aprilius, A. (2020). Analysis of product quality and price on purchase decisions. *Economics and Digital Business Review*, 1(2), 112–119.
- Patel, R., Sharma, P., & Singh, A. (2021). Factors influencing farmers' adoption of micro-irrigation systems in India. *Indian Journal of Agricultural Marketing*, 35(2), 45–58.
- Pérez-Blanco, C. D., Hrast-Essenfelder, A., & Perry, C. (2020). Irrigation technology and water conservation: A review of the theory and evidence. *Review of Environmental Economics and Policy*, 14(2), 216–239. <https://doi.org/10.1093/reep/reaa002>
- Peter, J. P., & Olson, J. C. (2019). *Consumer behavior and marketing strategy* (11th ed.). McGraw-Hill Education.
- Schiffman, L. G., & Wisenblit, J. (2019). *Consumer behavior* (12th ed.). Pearson.
- Solomon, M. R. (2020). *Consumer behavior: Buying, having, and being* (13th ed.). Pearson.
- Stanton, W. J., Etzel, M. J., & Walker, B. J. (2018). *Fundamentals of marketing* (14th ed.). McGraw-Hill Education.
- Zeithaml, V. A., Bitner, M. J., & Gremler, D. D. (2021). *Services marketing: Integrating customer focus across the firm* (8th ed.). McGraw-Hill Education.
- Santana, S., Dallas, S. K., & Morwitz, V. G. (2020). Consumer reactions to drip pricing. *Marketing Science*, 39(1), 188–210. <https://doi.org/10.1287/mksc.2019.1207>
- Indian Council of Agricultural Research. (2022). *Micro-irrigation technologies for sustainable agriculture*. ICAR Publications.
- Ministry of Agriculture & Farmers Welfare. (2023). *Operational guidelines for the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY): Per Drop More Crop*. Government of India. <https://agricoop.gov.in>