International Journal of Creative and Open Research in Engineering and Management
ISSN: 3108-1754 (Online)
Volume 02 Issue 11 November-2026 | Impact Factor: 3.5



A Study of Customer Satisfaction and Buying Behaviour Towards Irrigation Services at Renuka Irrigation Services

Nancy Morris Pandit
MBA, School of Business, Indira University, Pune
On-the-Job Training Period: 25 July 2026 – 25 August 2026

ABSTRACT

How to Cite this Article:

Pandit, N. M. (2026). A Study of Customer Satisfaction and Buying Behaviour Towards Irrigation Services at Renuka Irrigation Services. International Journal of Creative and Open Research in Engineering and Management, 02(11), 1-9. https://doi.org/10.55041/ijcope.v2i11.105

License:

This article is published under the terms of the Creative Commons Attribution 4.0 International License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author(s) and the source are credited.

© The Author(s). Published by International Journal of Creative and Open Research in Engineering and Management.





https://doi.org/10.55041/ijcope.v2i11.105

This paper presents an academic analysis of the marketing and customer-experience research completed during the On-the-Job Training (OJT) at Renuka Irrigation Services. The study focuses on the micro-irrigation and agricultural water-management sector, buying behaviour determinants, product performance, filtration efficiency, installation execution, and post-installation dealer support. The project was conducted using a structured questionnaire completed by 20 irrigation-system users alongside secondary review of company information, industry literature, and government policy documents on micro-irrigation. Descriptive analysis indicates positive customer perceptions regarding pipe and dripper durability (80% rating 4 or 5), perceived crop-growth and yield improvement (80% rating 4 or 5), and installation timeliness (75% agree or strongly agree), while local dealer advice influenced brand choice for 55% of respondents. Conversely, 55% of respondents remained neutral regarding filter performance, 25% expressed dissatisfaction with dealer support for breakdowns and spare parts, and half were neutral about recommending their brand. Furthermore, 50% reported operating systems older than five years, and the project summary records 60% willingness to pay extra for mobile-app control or solar-powered upgrades. Because the sample is small and exploratory, results are not generalized to the wider irrigation market. The analysis highlights the importance of after-sales responsiveness, water-source-specific filtration, spare-parts availability, and dealer training in strengthening customer retention and business development.

Keywords— *Renuka Irrigation Services, customer satisfaction, buying behaviour, micro-irrigation, after-sales service, dealer influence, filtration performance, technology adoption.*

1. INTRODUCTION

Marketing in the agricultural irrigation and water-management sector involves understanding farmer requirements, communicating product durability, designing suitable field layouts, and maintaining reliable post-installation service. Unlike purely transactional consumer goods, irrigation systems represent a product-service bundle comprising pumps, pipes, filters, drippers or sprinklers, technical installation, operational guidance, and ongoing access to spare parts. Customer value is therefore shaped by both physical equipment quality and the responsiveness of the service relationship across crop seasons.

Renuka Irrigation Services operates in the irrigation and water-management sector, providing micro-irrigation solutions and related agricultural services. Micro-irrigation methods such as drip and sprinkler systems are promoted across India to enhance farm-level water-use efficiency. Government initiatives such as the Per Drop More Crop (PDMC) programme—implemented under the Pradhan Mantri Krishi Sinchayee Yojana from 2015–16 to 2021–22 and subsequently under the Rashtriya Krishi Vikas Yojana from 2022–23—provide financial assistance for eligible drip and sprinkler installations [2], [3]. However, policy



incentives alone do not guarantee sustained user satisfaction unless installation quality, filtration suitability, and timely breakdown support meet field needs.

The OJT was undertaken from 25 July 2026 to 25 August 2026. The work combined primary descriptive survey research among 20 irrigation-system users with secondary review of industry and policy sources to evaluate buying behaviour, post-installation satisfaction, and service improvement opportunities for Renuka Irrigation Services [1].

1.1 Research Problem

Regional irrigation providers operate in a competitive market where farmers evaluate total system cost, subsidy availability, dealer trustworthiness, equipment durability, and maintenance speed. A system that performs reliably at installation can still generate dissatisfaction if filters clog under local water conditions or if spare parts are delayed during critical crop stages. This study examines how users evaluate the irrigation product-service bundle at Renuka Irrigation Services and what service gaps affect customer retention and brand advocacy.

2. COMPANY PROFILE AND INDUSTRY BACKGROUND

Renuka Irrigation Services is a regional irrigation and water-management service provider operating from Nashik, Maharashtra, with commercial and field activities across western India. As recorded in the OJT project report, the enterprise supplies and installs micro-irrigation systems—including drip and sprinkler networks, pipes, filtration units, and accessories—while coordinating dealer-level advisory and post-installation support [1]. These organizational details are reproduced from the supplied OJT report and have not been independently audited for this paper.

Particular	Details
Company name	Renuka Irrigation Services
Sector / industry	Agricultural irrigation and water-management services
Headquarters / base	Nashik, Maharashtra, India
Operational footprint	Regional operations across western Maharashtra / western India
Core offerings	Drip and sprinkler irrigation systems, pipes, filters, installation, and dealer support

2.1 Micro-Irrigation Industry Background

Micro-irrigation systems deliver water directly to the crop root zone through controlled emitters, reducing evaporation and runoff losses compared with conventional flood irrigation. Demand in India is influenced by water scarcity, groundwater depletion, cultivation of horticultural and high-value cash crops, energy availability, and central and state subsidy schemes [2], [3], [9]. At the farm level, system performance depends heavily on matching filtration units—such as screen, disc, or hydrocyclone filters—to local water sources (river, canal, open well, tank, or borewell) to prevent emitter clogging. Consequently, irrigation marketers and dealers must combine technical consultation with dependable spare-parts logistics.

2.2 Theoretical Background

Marketing and customer-journey analysis: Marketing in agricultural services requires creating value across pre-purchase consultation, installation execution, and post-purchase maintenance. Evaluating each touchpoint helps identify where customer expectations are met or strained.

Expectation-disconfirmation theory: Developed by Oliver (1980), this framework explains satisfaction as a comparison between pre-purchase expectations and perceived post-purchase performance [6]. In irrigation services, positive confirmation occurs when pipes last and installation is punctual, whereas negative disconfirmation arises when filters clog or breakdown repairs are delayed.

Agricultural adoption determinants: Institutional and behavioural research shows that agricultural technology adoption is shaped by financial capacity, subsidy access, risk perception, technical advice from trusted local dealers, and perceived ease of use [5], [7], [9].

Marketing mix (4Ps): Product, Price, Place, and Promotion provide a structured lens to review equipment quality and



filtration design (Product), initial outlay, subsidy offset, and upgrade pricing (Price), regional dealer distribution and spare-parts availability (Place), and dealer advisory, field demonstrations, and word-of-mouth advocacy (Promotion).

3. REVIEW OF RELATED LITERATURE

Nair and Thomas (2023) review the adoption of micro-irrigation in India and argue that financial subsidies alone are insufficient to drive sustained uptake because farm-level constraints, information gaps, and institutional support mechanisms strongly influence farmer decisions [5]. This supports examining dealer advice alongside subsidy influence in irrigation buying behaviour.

Adla et al. (2024) apply the RANAS socio-psychological framework to agricultural irrigation practices in Maharashtra, demonstrating that household wealth, risk perceptions, perceived self-efficacy, and attitudes shape irrigation adoption and require context-sensitive interventions [7]. Their findings highlight the importance of understanding local farmer conditions in Maharashtra.

Singh, Gandhi, and Laha (2026) examine drivers and challenges of micro-irrigation adoption and intensity across four Indian states, identifying information access, high-value crop cultivation, landholding size, subsidies, irrigation water sources, and physical damage risks as key factors, while noting that initial capital outlay and energy constraints remain barriers [9]. These variables align directly with the present study's focus on water sources, system age, dealer guidance, and willingness to pay for solar or app-based upgrades.

Oliver (1980) establishes the cognitive model of satisfaction decisions, showing how expectation-performance disconfirmation governs post-purchase attitude and future behavioural intention [6]. Furthermore, Muntinga, Moorman, and Smit (2011) introduce the COBRA typology (consumption, contribution, and creation) to explain how users engage with and advocate for brands [4], offering a useful lens for converting satisfied farmers into active peer referrers.

4. OBJECTIVES OF THE STUDY

The objectives of the project, based on the OJT report, are:

- To identify selected factors influencing users' buying behaviour towards irrigation systems and services, including subsidy support, local dealer advice, and interest in modern upgrades.
- To assess user satisfaction across key service-experience dimensions, namely pipe and dripper durability, filtration performance, perceived crop-growth and yield outcomes, installation timeliness, and post-installation dealer support.
- To examine users' willingness to recommend their irrigation brand and pay extra for technology-enabled features such as mobile-app control and solar power.
- To identify operational and service-delivery gaps from the survey and secondary review, and formulate practical recommendations for Renuka Irrigation Services.

4.1 Research Questions

- Which pre-purchase factors appear most influential in users' irrigation buying decisions, particularly dealer advice, government subsidy support, and willingness to pay for modern features?
- How do existing users evaluate physical equipment durability, filter performance, crop outcomes, installation timeliness, and after-sales dealer support?
- To what extent does current user satisfaction translate into brand recommendation and openness to system upgrades?
- What actionable improvements in dealer support, spare-parts management, and filtration advisory can strengthen customer satisfaction and retention?

5. RESEARCH METHODOLOGY

The project follows a descriptive, exploratory, and cross-sectional research design combining a primary structured user survey with secondary review of industry and policy literature. Descriptive analysis was used to summarize user perceptions across pre-purchase, installation, and post-installation stages at a single point in time. No inferential



hypothesis testing or causal econometric modelling is claimed.

Method element	Details
Research design	Descriptive, exploratory, and cross-sectional study
Study organisation	Renuka Irrigation Services (Nashik, Maharashtra)
OJT period	25 July 2026 to 25 August 2026
Primary instrument	Structured 13-item Google Forms questionnaire
Sample size	20 completed responses from irrigation-system users (each respondent = 5%)
Analysis	Frequency and percentage summaries, qualitative review, and service-gap synthesis

5.1 Sources of Information

Primary data were collected through a 13-question structured Google Forms survey documented in the OJT report [1]. The questionnaire covered respondent identification, crop details, Likert-type statements on subsidy influence and dealer advice, willingness to pay for modern upgrades, 5-point satisfaction ratings for pipe/dripper durability, filter performance, and perceived crop outcomes, categorical items on water source and system age, and Likert-type evaluations of installation timeliness, dealer breakdown/spare-parts support, and brand recommendation. Secondary information was drawn from peer-reviewed literature on Indian micro-irrigation adoption [5], [7], [9] and official Government of India publications on the Per Drop More Crop scheme [2], [3].

5.2 Research Process

- Define the research scope around customer satisfaction and buying behaviour for Renuka Irrigation Services during the OJT period.
- Review secondary literature on micro-irrigation adoption, government subsidies, and customer satisfaction frameworks.
- Administer and compile responses from the structured Google Forms survey among 20 irrigation-system users.
- Audit the compiled tabulations for internal consistency, separating the 20-user irrigation dataset from extraneous methodological text in the raw draft.
- Synthesize percentage distributions, identify service-delivery strengths and gaps, and prepare structured recommendations.

5.3 Scope, Data Quality, and Ethical Considerations

The study is limited to the 20 irrigation-system users captured in the internship survey and reflects self-reported perceptions rather than audited agronomic or engineering measurements. During data verification, an inconsistent text fragment in the raw draft referring to a larger non-irrigation sample was excluded so that all findings strictly reflect the 20 irrigation respondents [1]. Additionally, because the raw draft contained a duplicated paragraph under the willingness-to-pay item, the 60% willingness-to-pay figure is reported strictly as an overall project-summary finding. Individual respondent names collected in the form are withheld to preserve confidentiality.

6. TASKS PERFORMED DURING THE INTERNSHIP

Work during the OJT focused on understanding micro-irrigation market dynamics, collecting and organizing user feedback, evaluating service touchpoints, and translating findings into marketing and operational insights for Renuka Irrigation Services.

6.1 Industry and Policy Review

Secondary review was conducted on micro-irrigation practices, regional agricultural water sources, and government subsidy guidelines under the Per Drop More Crop (PDMC) framework [2], [3]. This established the commercial and institutional context within which farmers evaluate irrigation investments.



6.2 Customer Survey Administration and Compilation

Responses from 20 irrigation-system users were collected and organized using a 13-item structured Google Forms instrument [1]. Responses were tabulated into percentage distributions across pre-purchase triggers, technical product ratings, water-source profiles, system age, and after-sales service indicators.

6.3 Service-Gap and Customer-Journey Analysis

Survey indicators were mapped across three stages of the customer lifecycle—pre-purchase decision-making, installation execution, and post-installation maintenance—to isolate areas of high satisfaction from points of operational friction such as filter performance and spare-parts turnaround.

6.4 Marketing and Service Recommendations

Findings were structured into tables, analytical summaries, and managerial recommendations addressing dealer after-sales accountability, spare-parts stocking, water-source-based filtration advisory, retrofit upgrade packages, and referral-driven promotion.

6.5 Skills Applied

The internship applied structured questionnaire design, primary response compilation, data-consistency verification, descriptive percentage analysis, customer-journey mapping, secondary literature synthesis, and professional report writing.

6.6 Overall Task Sequence

Stage	Activity	Output
1	Define study scope and review irrigation context	Project objectives and policy/industry notes
2	Design and administer 13-item user questionnaire	20 completed irrigation-user survey responses
3	Verify, clean, and tabulate survey percentages	Validated descriptive summary tables
4	Analyse buying triggers and service-lifecycle gaps	Customer satisfaction and gap synthesis
5	Formulate managerial recommendations and report	Structured OJT report and research paper

7. RESULTS AND DISCUSSION

7.1 Pre-Purchase Buying Behaviour Factors

In a 20-respondent sample, each respondent represents 5 percentage points. The pre-purchase indicators suggest that trusted local dealer guidance plays a more prominent direct role in brand selection than subsidy support alone, while a substantial share of users expresses interest in modern technology upgrades.

Indicator	Reported result	Interpretation
Subsidy reduced purchase cost	30% positive; 50% neutral; 20% negative	Subsidy assists selected buyers but is not the sole purchase driver.
Local dealer advice influenced brand choice	55% agree/strongly agree; 35% neutral; 10% disagree	Dealer credibility and technical guidance strongly influence brand choice.
Willingness to pay extra for app control / solar power	60% willing (overall project finding)	Notable interest in modern automation/solar upgrades; item split unavailable.
Age of current system	50% > 5 years; 35% 1–3 years; 15% 3–5 years	Half of surveyed users operate ageing systems suited for retrofit/upgrade.



The finding that 55% of respondents relied on local dealer advice compared with 30% citing subsidy reduction aligns with Nair and Thomas (2023), who note that financial assistance must be accompanied by reliable local information and institutional support to drive adoption [5]. Dealers act as key technical advisors shaping farmer expectations before purchase.

7.2 Post-Installation Satisfaction and Service Experience

Post-installation indicators reveal a sharp contrast between strong satisfaction with physical hardware and initial installation versus moderate or mixed ratings for filtration efficiency, breakdown support, and active brand advocacy.

Indicator	Reported result	Interpretation
Pipe and dripper durability	80% rating 4 or 5; 20% rating 3	Physical hardware durability is a primary strength.
Filter performance	55% rating 3; 35% rating 4; 5% rating 2; 5% rating 5	Predominantly neutral/moderate ratings; high satisfaction is limited (5%).
Crop growth and yield improvement	80% rating 4 or 5; 20% rating 3	Strong perceived agronomic benefit (self-reported, not field-measured).
Installation timeliness	75% agree/strongly agree; 20% neutral; 5% disagree	Initial deployment and installation execution are largely punctual.
Dealer support for breakdowns / spares	50% agree/strongly agree; 25% neutral; 25% disagree	Post-installation service responsiveness is a clear operational gap.
Willingness to recommend brand	50% agree/strongly agree; 50% neutral	Positive advocacy exists but half of users remain passive/neutral.

7.3 Water-Source Profile and Filtration Context

Regarding irrigation water sources, 70% of respondents reported using river or canal water, 15% open wells, 10% water tanks or farm ponds, and 5% borewells or tube wells [1]. Because surface water from rivers and canals typically carries higher suspended silt, algae, and organic debris than borewell water, this concentration helps contextualize why 55% of users gave a neutral rating (3 out of 5) for filter performance. While the survey did not include water-quality testing, the pattern underscores the need to match filtration stages and cleaning guidance to local water sources.

7.4 Marketing Perspective: 4Ps

Element	Application to the OJT study
Product	Drip and sprinkler systems show strong perceived pipe/dripper durability (80%) and crop benefit (80%), but filtration performance (55% neutral) and modular solar/app upgrade options require technical refinement.
Price	Government PDMC subsidies reduce upfront cost for 30% of buyers, while 60% reported willingness to pay extra for solar power or mobile-app automation, indicating scope for tiered upgrade pricing.
Place	Regional delivery through Nashik and western Maharashtra dealers supports timely installation (75%), but local spare-parts availability during breakdowns (25% dissatisfaction) needs stronger inventory buffering.
Promotion	Local dealer advice is the primary pre-purchase influencer (55%); converting the 50% neutral user base into active referrers through field demonstrations and structured follow-ups can strengthen word-of-mouth reach.

7.5 Major Findings

- Physical equipment durability (80% rating 4 or 5), perceived crop-yield improvement (80% rating 4 or 5), and installation timeliness (75% positive) represent core strengths of the irrigation offering.
- Local dealer advice (55% positive) exerts a stronger stated influence on brand selection than government subsidy reduction (30% positive).
- Filter performance received predominantly neutral ratings (55% rating 3; only 5% rating 5), coinciding with



70% of surveyed users relying on river or canal water.

- After-sales dealer support for breakdowns and spare parts showed the highest dissatisfaction (25% disagree; 25% neutral), illustrating expectation-disconfirmation risk during critical crop stages [6].
- Brand recommendation is split evenly between positive advocates (50%) and neutral users (50%), indicating untapped potential to convert passive satisfaction into active referrals.
- Half of respondents (50%) operate systems older than five years, and 60% expressed willingness to pay extra for mobile-app control or solar-powered upgrades.

7.6 Opportunities and Challenges

Opportunities identified	Challenges identified
Retrofit and upgrade packages for ageing systems (>5 years old)	After-sales breakdown delays and spare-parts stock-outs (25% dissatisfied)
Solar-powered and mobile-app automation add-ons (60% interest)	Sub-optimal filtration satisfaction under high-sediment river/canal water
Dealer-led technical consultation and referral programmes	Converting passive/neutral customers (50%) into active brand advocates
Customized pre-installation water-source filtration packages	Upfront cost sensitivity and uneven awareness/utilization of PDMC subsidies

8. MANAGERIAL IMPLICATIONS AND RECOMMENDATIONS

- **Strengthen dealer after-sales accountability:** Establish a standardized complaint-logging and escalation workflow with a target 24–48-hour dealer response window during peak irrigation seasons, tracking acknowledgement, site visit, and first-visit resolution.
- **Improve spare-parts availability:** Maintain minimum safety-stock buffers of fast-moving components—such as drippers, grommets, valves, seals, and filter screens—at regional dealer points to eliminate repair delays.
- **Match filtration packages to water conditions:** Implement a pre-installation water-source checklist so that farmers using river or canal water receive multi-stage filtration tailored to sediment load, paired with clear maintenance and backwashing instructions.
- **Develop retrofit and technology-upgrade offers:** Target the 50% segment operating systems older than five years with structured system health audits, component refurbishment, and tiered solar-pump or app-based monitoring upgrades after validating price sensitivity.
- **Convert passive satisfaction into brand advocacy:** Engage satisfied customers in local field demonstrations and structured referral incentives while conducting post-installation check-ins to address concerns among neutral users before dissatisfaction develops.

9. LIMITATIONS OF THE STUDY

The study is based on an exploratory sample of 20 irrigation-system users and cannot be generalized statistically to all farmers or districts. Exact sampling frames, recruitment dates, and respondent-level demographic breakdowns were not fully documented in the underlying project file. All performance and yield metrics represent self-reported user perceptions rather than independently measured agronomic or hydraulic data. Furthermore, the sample is heavily concentrated among river and canal water users (70%), limiting cross-source comparisons, and the cross-sectional design does not track satisfaction across multiple agricultural seasons.

10. FUTURE RESEARCH

Future research should employ a larger, multi-district probability or stratified sample capturing farm size, crop type, irrigation system configuration, installation year, and water-quality parameters. Combining structured user surveys with dealer service-turnaround logs, spare-parts inventory records, and measured farm-level water and yield outcomes would enable rigorous testing of how after-sales service quality and filtration customization influence customer retention and upgrade adoption.



11. CONCLUSION

The OJT study at Renuka Irrigation Services examined customer satisfaction and buying behaviour across the micro-irrigation product-service lifecycle. Findings from the 20-user survey indicate that physical pipe and dripper durability, perceived crop-yield improvement, and timely installation form a strong operational foundation, while trusted local dealer advice serves as a major driver of initial brand selection.

At the same time, neutral evaluations of filter performance—particularly among surface-water users—and dissatisfaction with breakdown and spare-parts support highlight that customer value depends on sustained post-installation care. By strengthening dealer service accountability, maintaining local spare-parts buffers, tailoring filtration to water sources, and piloting retrofit upgrades for ageing systems, Renuka Irrigation Services can convert passive customer satisfaction into durable brand advocacy and repeat business.

ACKNOWLEDGMENT

The author gratefully acknowledges Renuka Irrigation Services for providing the On-the-Job Training opportunity from 25 July 2026 to 25 August 2026 and for supporting the field and customer research activities. The author also expresses sincere thanks to the faculty mentors and the School of Business, Indira University, Pune, for their continuous academic guidance and support throughout the internship project.

REFERENCES

[1] N. M. Pandit, “A Study on Customer Satisfaction and Buying Behaviour Towards Irrigation Services Among Users,” Summer Internship Project Report, School of Business, Indira University, Pune, 2026.

[2] Ministry of Agriculture & Farmers Welfare, “Micro Irrigation,” Press Information Bureau, Government of India, Feb. 6, 2024. [Online]. Available: https://www.pib.gov.in/PressReleaseIframePage.aspx?PRID=2003188

[3] Lok Sabha Secretariat, “Per Drop More Crop (Unstarred Question No. 448),” Government of India, Ministry of Agriculture & Farmers Welfare, July 22, 2025. [Online]. Available: https://sansad.in/getFile/loksabhaquestions/annex/185/AU448_bMl0qu.pdf?source=pqals

[4] D. G. Muntinga, M. Moorman, and E. G. Smit, “Introducing COBRAs: Exploring motivations for brand-related social media use,” International Journal of Advertising, vol. 30, no. 1, pp. 13–46, 2011, doi: 10.2501/IJA-30-1-013-046.

[5] J. Nair and B. K. Thomas, “Why is adoption of micro-irrigation slow in India? A review,” Development in Practice, vol. 33, no. 1, pp. 76–86, 2023, doi: 10.1080/09614524.2022.2059065.

[6] R. L. Oliver, “A cognitive model of the antecedents and consequences of satisfaction decisions,” Journal of Marketing Research, vol. 17, no. 4, pp. 460–469, 1980, doi: 10.1177/002224378001700405.

[7] S. Adla, A. Šaponjić, A. Tyagi, A. Nagi, P. Pastore, and S. Pande, “Steering agricultural interventions towards sustained irrigation adoption by farmers: Socio-psychological analysis of irrigation practices in Maharashtra, India,” Hydrological Sciences Journal, vol. 69, no. 12, pp. 1586–1603, 2024, doi: 10.1080/02626667.2024.2376709.

[8] P. Kotler and K. L. Keller, Marketing Management, 15th ed. Pearson, 2016.

[9] G. Singh, V. P. Gandhi, and A. K. Laha, “Drivers and challenges of micro-irrigation adoption and intensity in India: A study of four states,” Irrigation and Drainage, 2026, doi: 10.1002/ird.70156.