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Study on repurchase intention of cotton farmers towards insecticides in Rajkot district of Gujarat

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Abstract

Agriculture in India still depends a lot on agrochemicals to keep productivity high and to meet growing food needs. It is important for both policymakers and agrochemical companies to understand farmers' plans to buy these products again. This understanding reflects trust, satisfaction and the long-term use of products. The current study took place in Rajkot district of Gujarat. In this study, 200 cotton-growing farmers were selected using a multi-stage sampling method. Data was collected through using a structured interview schedule and then analyzed with descriptive statistics and multiple regression analysis. The results showed that local dealers and other farmers were the main sources of information for farmers. The multiple Regression study showed that farmers' intentions to repurchase were significantly impacted by price, quality and trust. On the other hand, perceived value, promotional efforts and brand image had less impact. These findings show that building long-lasting relationships with farmers requires trust and offering high-quality products at fair prices.

Keywords: Repurchase intentions, Rajkot district, cotton farmers, socio-economic profile, insecticides, regression analysis

Introduction

Agrochemicals encompass fertilizers, pesticides (insecticides, herbicides, fungicides), and soil amendments fundamental to enhancing crop yield. Fertilizers, pesticides (such as insects, herbicides and fungicides), plant growth regulators and soil amendments are a few examples of agrochemicals, which are essential for enhancing crop productivity. Effective utilization of them is essential for counter plant diseases, weeds and pests, which cause around 25% of crop losses worldwide. Their use has risen drastically since the middle of the 20th century to meet the rising need for food during the green revolution era (Taylor, 2024) ^[27]. The agrochemical industry witnessed remarkable growth during this period (1950s-1970s), when high-yielding crop varieties were combined with chemical inputs to prevent famine and ensure food security for expanding populations (Tudi *et al.*, 2021) ^[28]. By 2021, the global use of agrochemical had risen considerably, with fertilizer and pesticide consumption showing sharp increase (Elumalai & Gao, 2025) ^[6]. The size of the global agrochemicals market was valued at US\$ 271.42 billion in 2023 and is expected to grow to US\$ 390.17 billion by 2030, registering a CAGR of 5.4% between 2024 and 2030 (Grand View Research, 2024) ^[7].

In India, the agrochemicals sector is projected to grow at a CAGR of 9% from FY25 to FY28, supported by favourable policies, rising production, stronger demand and the launch of new products and the market value is projected to climb from US\$ 10.3 billion to US\$ 14.5 billion (IBEF, 2024) ^[10]. India is expected to export more than ₹ 80,000 crore worth of agrochemicals over the next four years, up from ₹ 43,223 crore in 2022–2023. According to ACFI and EY, sustaining this growth will require government backing, trade agreements, tax reforms and better infrastructure. India is a large producer, even though it still heavily dependent on imports and utilizes less agrochemicals per hectare than many other countries (IBEF, 2024) ^[11]. Between 2019–20 and 2023–24, India's pesticide usage fluctuated, reaching a peak of 83,116 MT in 2021–2022. Despite a growing focus on sustainability, chemical pesticides are still used widely (DPPQ&S, 2024).

Excessive pesticide use has raised concerns about both environmental and health impacts (Cech *et al.*, 2022) ^[3]. Strict regulations and pesticide resistance complicate the situation. Many

smallholder farmers cannot access high-quality products due to financial barriers (Ma *et al.*, 2024) ^[17]. Crop health and farmer well-being are negatively impacted by improper handling, price fluctuations, and counterfeit goods. Providing farmers with better education on safe usage and ensuring access to genuine, quality products are crucial steps for improvement (Pandey & Choudhary, 2024) ^[19]. Looking ahead, the Indian agrochemical sector has strong potential because of its importance for food security. Major factors driving growth include a shift toward environmentally friendly solutions, increasing global demand that boosts exports, rising use of precision farming technologies and large untapped opportunities in rural markets. Together, these create significant chances for Indian companies to strengthen their position in both domestic and international markets (OpenPR, 2025) ^[18].

Repurchase Intentions

Repurchase intention refers to a customer's willingness or likelihood to buy the same product or service again. It is a key indicator of customer loyalty and long-term business success (Hellier *et al.*, 2003) ^[9]. Repurchase intention is significantly influenced by multiple factors. Competitive, reasonable pricing enhances perceived value and satisfaction, leading to repeat purchases. High product quality builds trust and satisfaction, encouraging loyalty and repeat buying (Reggiana and Hermina, 2025) ^[21]. In online and offline contexts alike, trust boosted by value and reliability is a primary driver of repurchase behaviour. When consumers sense they received good value—through quality, fair price, or brand reputation they are more likely to repurchase (Sullivan and Kim, 2018) ^[24]. A positive brand image enhances loyalty and repurchase intentions in multiple product categories (Tarigan and Bernarto, 2024) ^[26]. Effective promotions lift satisfaction and strengthen the link between brand image and repurchase intent.

Objectives of Study

The primary objectives of the study were to study the socio-economic profile of cotton growing farmers, to study the repurchase intentions of cotton growing farmers towards insecticides.

Materials and Methods

For present study, a Descriptive Research design was used to address the research objectives. Descriptive research involves the use of surveys and fact-finding methods to collect data and its primary objective is to accurately describe the current state of affairs or phenomena as they exist. (Kothari, 2004) ^[14] The research was conducted in Rajkot district of Gujarat. In the year 2020-21, cotton was cultivated on 2,38,330 hectares in Rajkot district, with a total production of 32.43 lakh bales (5,51,267 MT). During 2021-22, the area under cotton cultivation significantly increased to 4,38,470 hectares and production rose to 42.15 lakh bales (7,16,627 MT), indicating notable growth in both acreage and yield (NABARD, 2023). For the present study, a multi-stage sampling method was used. In the first stage, 4 talukas were randomly chosen from the 14 talukas of Rajkot district. the second stage, 5 villages were randomly selected from each selected taluka. In the final stage, 10 cotton-growing farmers were purposively selected from each village, resulting in a total sample size of 200 farmers and the primary data was collected through personal interviews

with farmers, using structured interview schedule as data collection tool. Based on available literature the interview schedule was prepared.

Instrument

A structured interview schedule, including demographic and research-related questions, was used to gather primary data. To study repurchase intention, different constructs were identified based on insights from earlier studies. The quality construct included 3 items adopted from Walsh *et al.* (2014) ^[30]. Price was measured using 5 items from Han & Ryu (2009) ^[8] and Walsh *et al.* (2014) ^[30]. Perceived value having 3 items adopted from Ngowi (2003) ^[16]. Promotional effort was measured using 3 items adopted from Tain *et al.* (2022) ^[5] and Zekiri & Hasani (2015) ^[31]. Brand image consisted of 5 items from Jin *et al.* (2012) ^[12] and Tain *et al.* (2022) ^[25]. Trust was captured with 2 items from Tain *et al.* (2022) ^[25]. Finally, repurchase intention was measured with 3 items from Ali & Bhasin (2019) ^[1]. To analyze data, descriptive statistics and multiple regression analysis were used. To perform regression analysis the mean score for each construct was calculated.

Results

The study revealed that all participants in the study were male. Age distribution showed that 54.5% farmers belonged to the 51 to 65 years age group, followed by 30.5% in the 36 to 50 years category. A smaller portion 9.5% fell within the 21 to 35 years group, while only 5.5% were above 65 years. No respondent was reported below the age of 20 years. Regarding educational qualifications, 41.5% of the respondents had completed SSC or its equivalent followed by 33% had education below SSC, 22.5% had attained HSC-level education, and only 3% had completed undergraduate or higher studies. In the present study, it was found that majority of the respondents (63%) depended entirely on farming for their livelihood following by 25.5% were involved in both farming and animal husbandry, while 6% combined farming with business activities. Another 5.5% pursued farming alongside service-related occupations. The landholding size data in the present study revealed that 37.5% of the respondents were small farmers (1–2 hectares), followed by 27.5% semi-medium (2–4 hectares), and 25.5% medium farmers (4–10 hectares). Marginal farmers (less than 1 hectare) accounted for 6%, and large farmers (above 10 hectares) constituted only 3.5%.

Source of Irrigation and Information

Water is very important for farming. In order to investigate source of irrigation, the farmers were asked for sources of irrigation on a multi-response format. It is found that the borewells were emerged as the most frequently utilized source of irrigation, mentioned by 167 respondents. Wells were the second most reported source with 93 mentions, followed by canals with 21 responses and river water with 11 responses Further, the present study reveals that farmers rely on multiple sources for information regarding insecticide purchases, with dealers (167 responses) and fellow farmers (131 responses) being the most frequently cited sources. Company representatives (96), advertisements (74), and farmers' meetings (72) followed in influence. This indicates that interpersonal interactions particularly with dealers and peer farmers play a crucial role in shaping farmers' decisions (Table 1).

Table 1: Sources of Irrigation and Information

n = 200, multiple responses	
Parameters	Frequency
Sources of Irrigation	
River	11
Borewell	167
Well	93
Canal	21
Source of Information	
Fellow Farmers	131
Company Representative	96
Dealer	167
Advertisement	74
Farmers Meeting	72

Regression Analysis

Multiple Regression analysis is a statistical technique used to examine how independent variables influence a dependent variable (Rungtornchai *et al.*, 2019) [22]. To examine how various factors influence satisfaction and repurchase intentions of insecticides for cotton crop,

regression analysis was employed as the statistical tool. In this analysis, satisfaction and repurchase served as the dependent variable, while the influencing factors namely quality, price, perceived value, brand image, promotional efforts and trust were considered as independent variables.

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.805 ^a	.648	.637	.62820	1.839

The table 2 reveals model summary of regression analysis. The R value obtained for present analysis was 0.805, signifying a strong correlation between the independent variables and the dependent variable. The R Square value of 0.648 indicates that the chosen factors such as Brand Image, Perceived Value, Quality, Trust, Price and Promotional Efforts account for about 64.80% of the variance in satisfaction and repurchase intention, while the remaining 35.20% may be attributed to other factors not included in this model. The Durbin-Watson value for the present study found 1.839, indicating no autocorrelation. According to Draper and Smith (1998) [5], values between 1.5 and 2.5 suggest that residuals are independent.

Table 3: ANOVA

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	140.390	6	23.398	59.291	.000 ^b
Residual	76.165	193	.395		
Total	216.555	199			

The table 3 depicts ANOVA test result for regression analysis. ANOVA indicates how well the regression model describes the data. The resulting p-value is less than 0.05, confirming that the model offers a statistically meaningful explanation of the dependent variable.

Table 4: Coefficients

Coefficients ^a								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-2.025	.509		-3.980	.000		
	Price	.501	.095	.259	5.267	.000	.756	1.323
	Quality	.573	.075	.412	7.594	.000	.620	1.614
	Trust	.442	.061	.357	7.307	.000	.764	1.309
	Brand Image	-.037	.082	-.020	-.446	.656	.899	1.112
	Perceived Value	.080	.075	.047	1.060	.291	.912	1.097
	Promotional Efforts	.079	.082	.043	.969	.334	.929	1.076

a. Dependent variable: Satisfaction and Repurchase

b. Predictors: (constant): Quality, Price, Trust, Brand Image,

Perceived Value, Promotional Effort

The table 4 depicts the coefficients table, which provides insight into the individual impact of each independent variable on predicting satisfaction and repurchase intentions. The unstandardized B values indicate both the direction and magnitude of influence that each factor exerts. Price (B = 0.501, $p = 0.000$), Quality (B = 0.573, $p = 0.000$) and Trust (B = 0.442, $p = 0.000$) were statistically significant at the 5% level, indicating a strong and positive influence on satisfaction and repurchase. This means that improvements

in these factors are likely to enhance farmers' satisfaction and their likelihood to repurchase insecticides.

Perceived Value (B = 0.080, $p = 0.291$), Brand Image (B = -0.037, $p = 0.656$) and Promotional Efforts (B = 0.079, $p = 0.334$) were not found significant, indicating that these variables do not have a strong individual impact on the dependent variable in this model. Further, according to Kim (2019) [13], multicollinearity exists if the variance inflation factor (VIF) values exceed 5 to 10. In the present analysis, the VIF values range between 1.076 and 1.614, suggesting no multicollinearity.

Discussion

The study on satisfaction and repurchase intention of cotton farmers was conducted in Rajkot District of Gujarat. The present study shows that farmers obtain product-related information from multiple sources, particularly relying on dealers and peer farmers, for purchasing insecticides. These findings partially align with those of Sharma *et al.* (2020) [23], who observed that 50% of farmers preferred consulting peer groups for agrochemical-related information, followed by advice from dealers, extension agents, and advertisements. While Sharma *et al.* [23] emphasize peer groups as the main source, the current study finds that dealers continue to play a dominant role in farmers' decision-making. This difference may reflect regional variations or changing patterns of agro-input marketing and farmer-dealer relationships.

The regression analysis results are consistent with the findings of Angela and Pasaribu (2022) [2], who found that price, quality and trust significantly and positively affect repurchase intention. Similarly, the present study also demonstrates that price ($B = 0.501$), quality ($B = 0.573$), and trust ($B = 0.442$) have strong and significant positive relationships with satisfaction and repurchase, reinforcing that these three factors are key drivers of farmers' repurchase behavior.

The findings are further supported by Zimbali *et al.* (2024) [33], who noted that high-quality products enhance customer satisfaction and loyalty, encouraging repeat purchases. Quality influences trust and satisfaction simultaneously, which in turn promotes repurchase. Moreover, Upamannu *et al.* (2015) [29] highlighted that customer trust has a direct and positive relationship with repurchase intention, strengthening customer loyalty and long-term purchasing behavior.

Overall, the results of the present study validate the importance of price, quality and trust as major determinants of farmer satisfaction and repurchase decisions, while factors like brand image, perceived value and promotional efforts play relatively lesser roles.

Conclusion

In India, agriculture plays an important role in the economy. Agrochemicals are crucial for maintaining productivity and ensuring food security. This study looked at cotton farmers in the Rajkot district to study about their social and economic profiles and their repurchase intention regarding insecticides. The results showed that most farmers relied on local dealers and other farmers for information and purchases. The regression analysis showed that price, quality, trust and perceived value influence on repurchase intention of insecticide for cotton crop, while brand image, promotions were not influence on repurchase intention of insecticide for cotton crop. These findings suggest that agrochemical companies and policymakers should focus on fair pricing, reliable products and raising farmer awareness. They should also find sustainable solutions.

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