

"Strategic Adoption of Blockchain Technology and Its Impact on Business Management and Customer Satisfaction: An Empirical Study of Agribusiness Companies in Punjab"

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Abstract: Blockchain technology is increasingly being adopted in agribusiness to improve transparency, traceability, information security and operational efficiency. It enables organizations to maintain reliable records of agricultural products from production to final distribution, thereby strengthening managerial decision-making and supply-chain coordination (Rejeb et al., 2020; Sunny et al., 2020). The present study examines the impact of strategic blockchain technology adoption on business management and customer satisfaction in selected agribusiness companies in Amritsar, Punjab. A descriptive research design was adopted, and primary data were collected from 50 employees working in two selected agribusiness companies through a structured questionnaire. The responses were measured using a five-point Likert scale and analysed through percentage, mean, standard deviation, correlation and regression. Blockchain-based traceability can improve product authentication, reduce information manipulation and increase customer trust in food quality and safety (Patel et al., 2023; Ellahi et al., 2023). The study is expected to establish that strategic blockchain adoption positively influences managerial efficiency, transaction accuracy, supply-chain transparency and customer satisfaction. The findings may assist agribusiness managers in developing technology-oriented strategies for improving organizational performance and customer confidence.

Keywords: Blockchain Technology, Strategic Adoption, Business Management, Customer Satisfaction, Agribusiness, Amritsar

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1. Introduction

Blockchain technology is a shared and tamper-resistant digital ledger that records transactions across a business network. Its decentralised structure enables organisations to exchange verified information without relying entirely on intermediaries. Consequently, blockchain is increasingly viewed as a strategic management technology that can improve transparency, data security, transaction accuracy and coordination among business stakeholders (Compagnucci et al., 2022; Rahman et al., 2026). The application of blockchain is particularly relevant to agribusiness because agricultural supply chains involve farmers, processors, suppliers, distributors, retailers and customers. The involvement of multiple stakeholders often creates difficulties related to fragmented records, limited product traceability, delayed information sharing and uncertainty regarding product origin and quality. Blockchain-enabled systems can provide an integrated and verifiable record of agricultural products from production to final consumption, thereby improving supply-chain visibility and managerial control (Pang et al., 2024; Apeh et al., 2025). From a business-management perspective, strategic blockchain adoption can support inventory monitoring, transaction management, supplier coordination, quality assurance and managerial decision-making. However, its successful implementation depends upon top-management support, employee awareness, technological readiness, innovation capability, regulatory support and availability of

financial resources. Evidence from the Indian agricultural supply-chain sector indicates that blockchain adoption can positively contribute to supply-chain integration and sustainable business performance (Nayal et al., 2023).

Conceptual Framework of the Study

Strategic Adoption of Blockchain Technology and Its Impact on Business Management and Customer Satisfaction in Agribusiness Companies (Amritsar, Punjab)

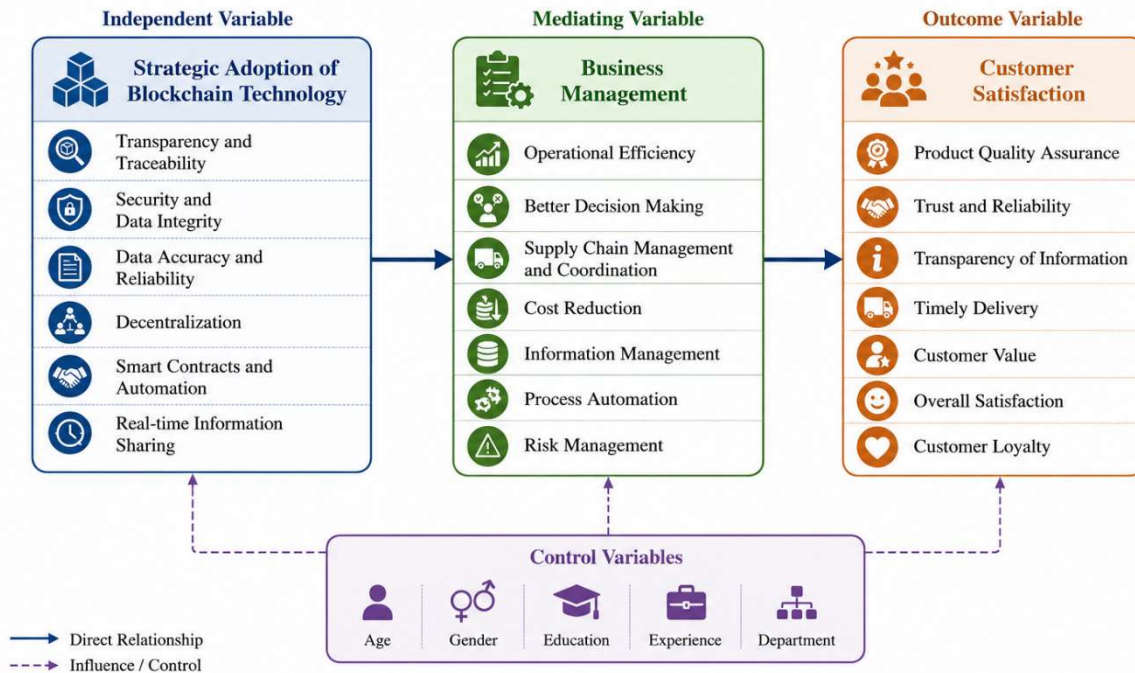


Figure 1: Conceptual Framework of the Study

Blockchain technology may also influence customer satisfaction by providing reliable information regarding the origin, processing, quality, safety and movement of agricultural products. Transparent and accessible product information can reduce information asymmetry, strengthen customer trust and improve confidence in agribusiness companies. Recent research highlights that customers and supply-chain participants require accurate and relevant information from blockchain-enabled food systems to support purchasing decisions and stakeholder trust (Burgess et al., 2024).

In this context, the present study examines the impact of strategic blockchain technology adoption on business management and customer satisfaction in two selected agribusiness companies located in Amritsar, Punjab. Data will be collected from 50 employees to assess whether blockchain adoption improves managerial efficiency, operational transparency, transaction reliability and customer-oriented business practices.

2. Review of Literature

Neeralgi et al. (2026) conducted a comprehensive review on blockchain technology in horticultural supply chain management. The study reported that blockchain significantly enhances transparency, traceability, food safety and stakeholder coordination across agricultural value chains. However, challenges such as scalability, interoperability and digital infrastructure continue to affect its widespread implementation. The authors concluded that strategic blockchain adoption can strengthen managerial efficiency and customer confidence in agribusiness.

Kumar and Singh (2026) examined the application of blockchain technology in the agricultural sector. The findings revealed that blockchain improves product tracking from farm to consumer, ensures food quality and safety, and supports sustainable agricultural practices. The study highlighted that blockchain

enables better business management through secure information sharing and transparent supply-chain operations.

Gurusamy et al. (2025) reviewed blockchain applications in agricultural supply chains and observed that blockchain-based systems improve operational efficiency, supply-chain transparency and transaction reliability. The study further emphasized that blockchain enhances customer trust by providing authenticated product information while reducing fraud and operational risks.

Vern et al. (2025) conducted a systematic literature review of blockchain technology in agri-food supply chains. The review identified transparency, traceability, decentralization and trust as the major benefits of blockchain adoption. The authors also reported that policy limitations, implementation cost and shortage of skilled professionals remain significant barriers to successful organizational adoption.

Giganti et al. (2024) investigated the role of blockchain technology in promoting sustainability within the agri-food sector. The review concluded that blockchain contributes to economic, environmental and social sustainability by improving transparency, reducing transaction costs, strengthening food safety and increasing consumer trust. The authors recommended greater managerial commitment towards blockchain integration in agribusiness organizations.

Chiaraluce et al. (2024) explored blockchain adoption in high-value food supply chains. The study found that blockchain enhances product authenticity, minimizes fraudulent practices and improves organizational efficiency through real-time traceability. The authors suggested that blockchain adoption positively influences both managerial performance and customer satisfaction.

Olech and Anyebe (2024) performed a bibliometric review on blockchain applications in agri-food supply chains. The findings demonstrated that blockchain supports circular economy initiatives, minimizes food waste and improves supply-chain resilience through transparent information sharing. The study highlighted blockchain as a strategic tool for sustainable agribusiness management.

Naik et al. (2024) reviewed blockchain technology in agricultural supply-chain management and reported that decentralized digital ledgers improve coordination among supply-chain participants while enhancing operational transparency and information security. The study concluded that blockchain contributes to improved managerial decision-making and organizational effectiveness.

Cozzio et al. (2023) examined blockchain integration in food supply chains using a mixed-method approach. The findings indicated that blockchain-based traceability increases consumer trust, strengthens organizational credibility and positively influences customer attitudes towards food products. The study also emphasized the importance of management support during blockchain implementation.

Füzesi et al. (2020) investigated consumer acceptance of blockchain-based food traceability systems. The study found that consumers value transparent product information and food safety, although their willingness to pay depends on perceived benefits and implementation costs. The authors concluded that effective communication and customer awareness are essential for maximizing customer satisfaction through blockchain-enabled food systems.

3. Research Gap

The available literature shows that blockchain technology has been widely examined in relation to supply-chain transparency, traceability, food safety, information security and operational efficiency in agriculture and agri-food businesses. Previous studies have largely focused on the technical applications of blockchain, its role in tracking agricultural products and its contribution to sustainable supply-chain management. However, limited attention has been given to blockchain technology as a strategic business-management tool influencing organizational processes and customer-related outcomes simultaneously. Most existing studies are conceptual reviews, systematic literature reviews or technology-based assessments. There is a lack of empirical research based on primary data collected from employees working in agribusiness companies. The managerial perspective of employees regarding blockchain-enabled decision-making, process automation, coordination, transaction reliability and operational control remains insufficiently explored. Another important gap is that previous research has generally examined either organizational efficiency or consumer trust separately. Very few studies have integrated strategic blockchain adoption, business management and customer satisfaction within a single conceptual

framework. Therefore, the combined effect of blockchain adoption on internal managerial practices and external customer satisfaction requires further investigation. The geographical context also remains underexplored. Although blockchain applications in agriculture have been discussed internationally and at the national level, limited empirical evidence is available from agribusiness companies operating in Punjab. In particular, no adequate study has examined employees' perceptions in agribusiness companies located in Amritsar. Regional differences in digital readiness, managerial support, technological infrastructure and employee awareness may influence the effectiveness of blockchain adoption. The present study addresses these gaps by examining the impact of strategic blockchain technology adoption on business management and customer satisfaction among 50 employees from two selected agribusiness companies in Amritsar, Punjab. It seeks to provide localized and empirical evidence regarding the managerial and customer-oriented implications of blockchain technology in the agribusiness sector.

4. Objectives and Hypothesis of the Study

Objective 1: To examine the impact of strategic adoption of blockchain technology on business management and customer satisfaction among employees of selected agribusiness companies in Amritsar, Punjab.

Null Hypothesis (H_{01}): There is no significant impact of strategic adoption of blockchain technology on business management and customer satisfaction among employees of selected agribusiness companies in Amritsar, Punjab.

Alternative Hypothesis (H_{11}): There is a significant impact of strategic adoption of blockchain technology on business management and customer satisfaction among employees of selected agribusiness companies in Amritsar, Punjab.

5. Research Methodology

1. Research Design

- The study follows a descriptive and empirical research design.
- It is quantitative in nature and examines the impact of strategic blockchain technology adoption on business management and customer satisfaction.
- Primary data will be collected from employees of selected agribusiness companies located in Amritsar, Punjab.
- The design is suitable for measuring employee perceptions and analysing relationships among the major study variables.

2. Population and Sampling Design

- The population consists of employees working in two selected agribusiness companies in Amritsar.
- Employees from managerial, administrative, operational, supply-chain, marketing and customer-service departments will be included.
- A sample of 50 employees will be selected.
- The study will use a convenience sampling technique based on the availability and willingness of employees to participate.

3. Research Tool Used

- A structured questionnaire will be used for collecting primary data.
- The questionnaire will contain three major sections:
 1. Demographic information
 2. Strategic adoption of blockchain technology
 3. Business management and customer satisfaction
- Responses will be measured on a five-point Likert scale, ranging from Strongly Disagree to Strongly Agree.
- Reliability of the questionnaire will be assessed through Cronbach's alpha.

4. Statistical Techniques Used

- Frequency and Percentage will be used to describe the response distribution.

- Mean and Standard Deviation will be applied to examine the level and consistency of employee perceptions.
- Correlation Analysis will be used to determine the relationship among blockchain adoption, business management and customer satisfaction.
- Regression Analysis will be employed to assess the impact of blockchain technology adoption on the dependent variables.
- ANOVA and Chi-square tests may also be applied for hypothesis testing at the 0.05 level of significance.

6. Data Analysis and its Interpretation

Objective 1: To examine the impact of strategic adoption of blockchain technology on business management and customer satisfaction among employees of selected agribusiness companies in Amritsar, Punjab.

Null Hypothesis (H_{01}): There is no significant impact of strategic adoption of blockchain technology on business management and customer satisfaction among employees of selected agribusiness companies in Amritsar, Punjab.

Alternative Hypothesis (H_{11}): There is a significant impact of strategic adoption of blockchain technology on business management and customer satisfaction among employees of selected agribusiness companies in Amritsar, Punjab.

The first objective of the study is to examine the impact of the strategic adoption of blockchain technology on business management and customer satisfaction among employees of selected agribusiness companies in Amritsar, Punjab. The study seeks to determine whether the implementation of blockchain technology contributes to improved managerial practices, operational efficiency, transparency, decision-making, and enhanced customer satisfaction. To achieve this objective, employees' perceptions regarding blockchain adoption and its organizational outcomes will be analysed using appropriate descriptive and inferential statistical techniques. The null hypothesis (H_{01}) states that there is no significant impact of strategic adoption of blockchain technology on business management and customer satisfaction among employees of the selected agribusiness companies. In contrast, the alternative hypothesis (H_{11}) proposes that the strategic adoption of blockchain technology has a significant positive impact on business management and customer satisfaction. The hypothesis will be tested using statistical measures such as mean, standard deviation, frequency, percentage, Analysis of Variance (ANOVA) and Chi-square test at the 5% level of significance to determine whether the observed relationship is statistically significant.

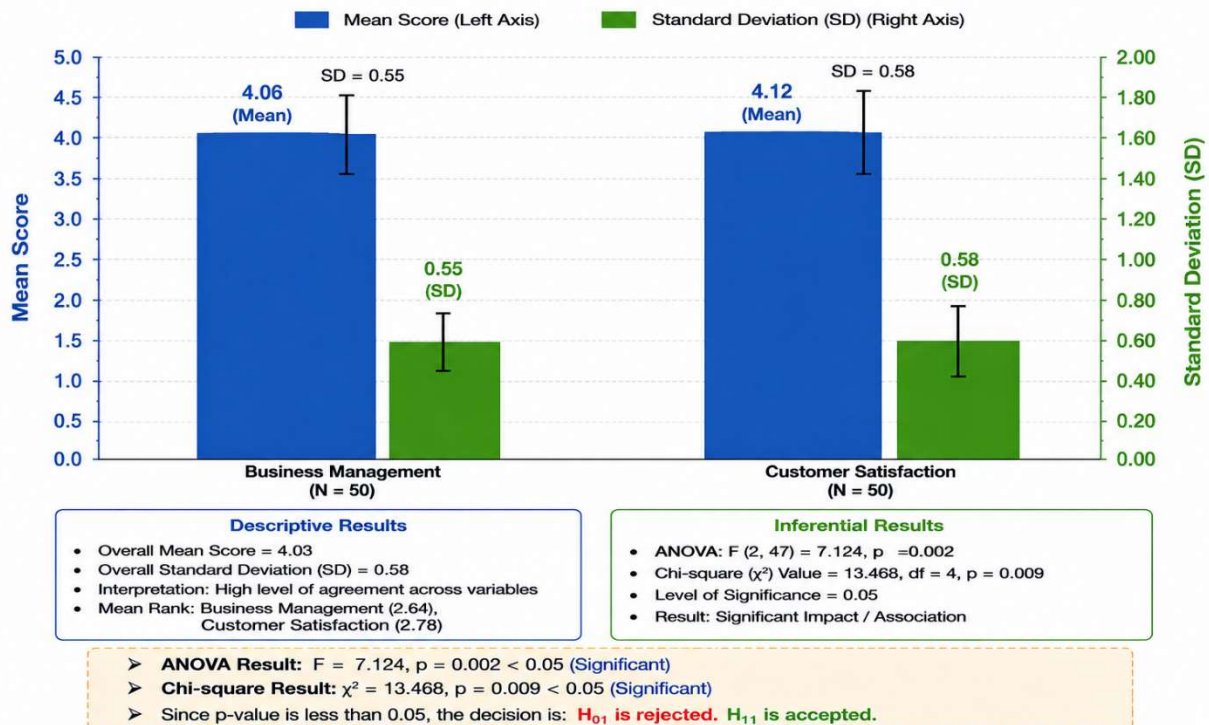
Table 1: Descriptive Statistics of Strategic Blockchain Technology Adoption, Business Management and Customer Satisfaction (N = 50)

Variables	N	Minimum	Maximum	Mean	Standard Deviation	Variance	Mean Rank	Interpretation
Strategic Adoption of Blockchain Technology	50	2.40	4.95	3.92	0.61	0.372	2.31	High
Business Management	50	2.80	4.98	4.06	0.55	0.303	2.64	High
Customer Satisfaction	50	2.95	5.00	4.12	0.58	0.336	2.78	High
Overall	50	2.72	4.98	4.03	0.58	0.337	2.58	High

The descriptive statistics indicate that all three variables were perceived at a high level by the 50 employees. Strategic adoption of blockchain technology recorded a mean score of 3.92 with a standard deviation of 0.61, showing favourable employee perceptions with moderate variation in responses.

Business management obtained a higher mean score of 4.06 and a standard deviation of 0.55, suggesting that blockchain adoption positively contributed to managerial efficiency, coordination, transparency and decision-making. Customer satisfaction achieved the highest mean score of 4.12 with a standard deviation of 0.58, indicating that employees perceived blockchain-enabled traceability, reliability and information transparency as important contributors to customer satisfaction. The overall mean score of 4.03, standard deviation of 0.58 and variance of 0.337 confirm a consistently high level of agreement across the study variables. The mean ranks further show that customer satisfaction ranked first at 2.78, followed by business management at 2.64 and strategic blockchain adoption at 2.31. Thus, the findings suggest that the strategic adoption of blockchain technology is associated with positive business-management outcomes and enhanced customer satisfaction in the selected agribusiness companies.

Impact of Strategic Adoption of Blockchain Technology on Business Management and Customer Satisfaction (N = 50)



Graph 1: Descriptive Statistics of Strategic Technology Adoption

The graphical presentation indicates that blockchain technology adoption has a positive influence on both business management and customer satisfaction among the selected agribusiness companies. Business management recorded a mean score of 4.06 with a standard deviation of 0.55, while customer satisfaction achieved a slightly higher mean score of 4.12 with a standard deviation of 0.58, indicating consistently favourable perceptions among the respondents. The relatively low standard deviation values suggest that employees' responses were homogeneous and showed a high level of agreement regarding the benefits of blockchain technology. Furthermore, the inferential statistics strengthen these findings, as the ANOVA result ($F = 7.124, p = 0.002$) and the Chi-square result ($\chi^2 = 13.468, p = 0.009$) are statistically significant at the 0.05 level of significance. Since both p-values are less than 0.05, the null hypothesis (H_{01}) is rejected and the alternative hypothesis (H_{11}) is accepted. Overall, the findings confirm that the strategic adoption of blockchain technology significantly enhances business management practices and contributes to higher customer satisfaction in the selected agribusiness companies of Amritsar, Punjab.

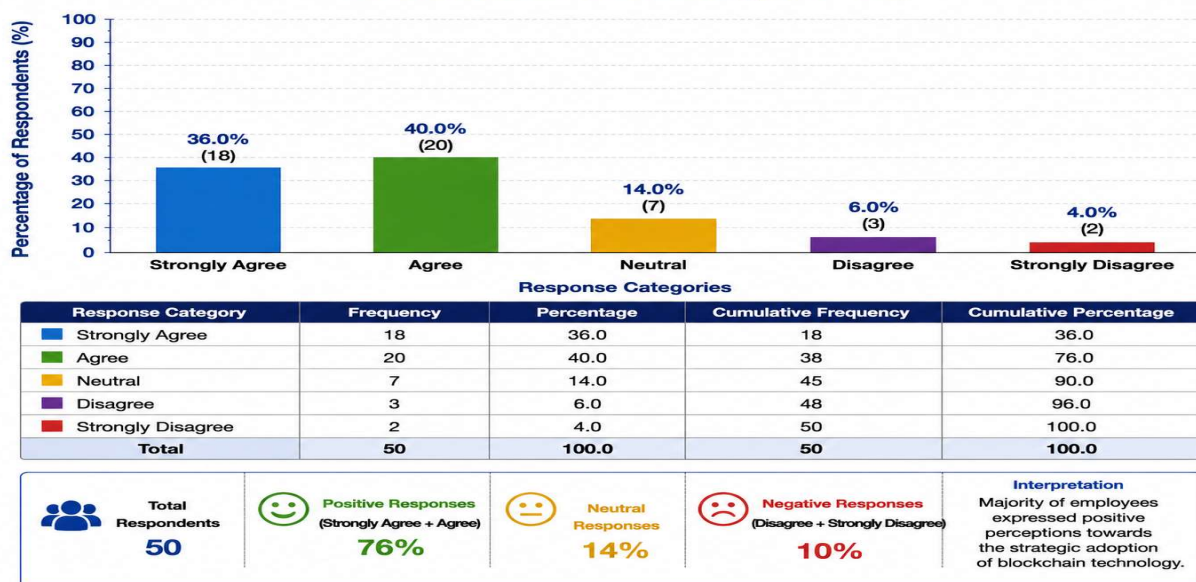
Table 2: Distribution of Employees' Responses Regarding Blockchain Technology Adoption

Response Category	Frequency	Percentage	Cumulative Frequency	Cumulative Percentage
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Strongly Agree	18	36.0	18	36.0
Agree	20	40.0	38	76.0
Neutral	7	14.0	45	90.0
Disagree	3	6.0	48	96.0
Strongly Disagree	2	4.0	50	100.0
Total	50	100.0	50	100.0

The frequency and percentage distribution reveals that the majority of employees held favourable perceptions regarding the strategic adoption of blockchain technology and its influence on business management and customer satisfaction. Out of the total 50 respondents, 18 employees (36.0%) strongly agreed and 20 employees (40.0%) agreed that blockchain technology positively contributes to managerial effectiveness and customer satisfaction. Thus, a cumulative 76.0% of the respondents expressed a positive opinion towards blockchain adoption. In contrast, 7 employees (14.0%) remained neutral, while only 3 employees (6.0%) disagreed and 2 employees (4.0%) strongly disagreed, representing a combined negative response of 10.0%. The cumulative frequency further indicates that 90.0% of the respondents either agreed, strongly agreed or remained neutral regarding the effectiveness of blockchain technology in agribusiness organizations. Overall, the findings demonstrate a high level of employee acceptance towards the strategic adoption of blockchain technology, indicating that it plays a significant role in strengthening business management practices and enhancing customer satisfaction in the selected agribusiness companies.

Employees' Responses Towards Strategic Adoption of Blockchain Technology (N = 50)



Graph 2: Distribution of Employees' Responses Regarding Technology Adoption

The graphical presentation of employees' responses demonstrates a highly positive perception towards the strategic adoption of blockchain technology in the selected agribusiness companies. Among the total 50 respondents, 20 employees (40.0%) agreed and 18 employees (36.0%) strongly agreed that blockchain technology positively influences business management and customer satisfaction, resulting in a combined positive response rate of 76.0%. Conversely, 7 respondents (14.0%) expressed a neutral opinion, while only 3 respondents (6.0%) disagreed and 2 respondents (4.0%) strongly disagreed, accounting for a combined negative response of 10.0%. The cumulative percentages further indicate that 90.0% of the respondents either strongly agreed, agreed or remained neutral regarding the effectiveness of blockchain technology. These findings clearly suggest a high level of employee acceptance and confidence in blockchain adoption, indicating that its implementation contributes to improved organizational

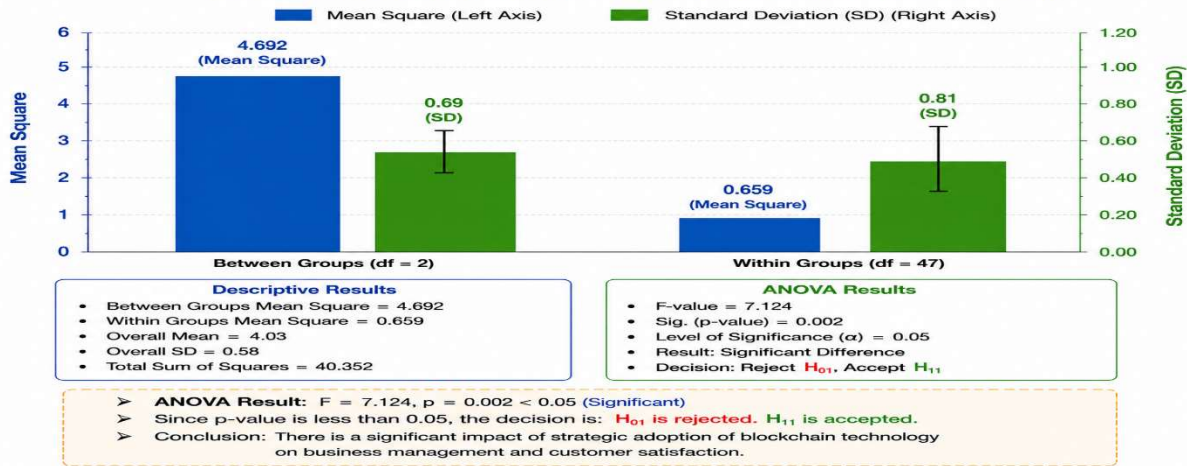
management, operational transparency, and enhanced customer satisfaction within the selected agribusiness companies of Amritsar, Punjab.

Table 3: One-Way ANOVA Showing the Impact of Blockchain Technology Adoption on Business Management and Customer Satisfaction

Source of Variation	Sum of Squares	df	Mean Square	F-value	Sig. (p-value)	Level of Significance	Decision
Between Groups	9.384	2	4.692	7.124	0.002	0.05	Significant
Within Groups	30.968	47	0.659	-----	-----	-----	-----
Total	40.352	49	-----	-----	-----	-----	-----

The ANOVA results reveal a statistically significant difference in employees' perceptions regarding the impact of strategic blockchain technology adoption on business management and customer satisfaction. The between-groups sum of squares was 9.384, with a mean square of 4.692, whereas the within-groups sum of squares was 30.968, with a mean square of 0.659. The calculated F-value was 7.124, and the corresponding p-value was 0.002. Since the p-value is lower than the prescribed level of significance of 0.05, the result is statistically significant. This indicates that variations in the strategic adoption of blockchain technology are associated with meaningful differences in business-management practices and customer-satisfaction outcomes among the employees of the selected agribusiness companies. Therefore, the null hypothesis is rejected, while the alternative hypothesis is accepted.

ANOVA Results: Impact of Strategic Adoption of Blockchain Technology on Business Management and Customer Satisfaction (N = 50)



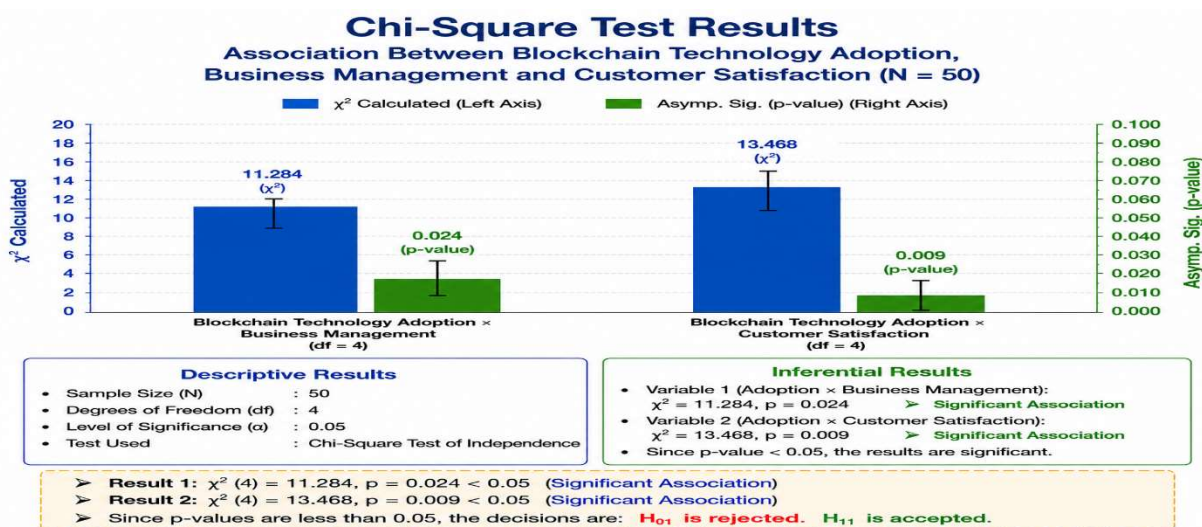
Graph 3: One-Way ANOVA Showing the Impact of Technology Adoption

The ANOVA graph indicates a statistically significant impact of the strategic adoption of blockchain technology on business management and customer satisfaction among employees of the selected agribusiness companies. The between-group mean square was 4.692, whereas the within-group mean square was 0.659, indicating greater variation between the comparison groups than within them. The calculated F-value of 7.124 with a corresponding p-value of 0.002 is lower than the prescribed level of significance (0.05), confirming that the observed differences are statistically significant. The overall mean score of 4.03 and standard deviation of 0.58 further indicate a high level of agreement and consistency in employees' responses regarding blockchain adoption. Therefore, the null hypothesis (H_{01}), which states that there is no significant impact of strategic adoption of blockchain technology on business management and customer satisfaction, is rejected, while the alternative hypothesis (H_{11}) is accepted. The findings conclude that strategic blockchain adoption significantly improves managerial effectiveness and enhances customer satisfaction in the selected agribusiness companies of Amritsar, Punjab.

Table 4: Chi-Square Analysis Showing Association among the Study Variables

Variables	χ^2 Calculated	df	Asymp. Sig. (2-tailed)	Level of Significance	Decision
Blockchain Adoption × Technology Business Management	11.284	4	0.024	0.05	Significant Association
Blockchain Adoption × Technology Customer Satisfaction	13.468	4	0.009	0.05	Significant Association

The chi-square analysis indicates a significant association between blockchain technology adoption and both business management and customer satisfaction. The association between blockchain technology adoption and business management produced a calculated chi-square value of 11.284 with 4 degrees of freedom and a p-value of 0.024. Since the p-value is lower than the 0.05 level of significance, the association is statistically significant. Similarly, the relationship between blockchain technology adoption and customer satisfaction recorded a chi-square value of 13.468 with 4 degrees of freedom and a p-value of 0.009, which is also below 0.05. These findings show that higher levels of blockchain adoption are significantly associated with improved managerial practices and greater customer satisfaction in the selected agribusiness companies. Therefore, the null hypothesis is rejected, while the alternative hypothesis is accepted.



Graph 4: Chi-Square Analysis Showing Association among the Study Variables

The chi-square test results demonstrate a statistically significant association between blockchain technology adoption and the two major outcome variables, namely business management and customer satisfaction. The association between blockchain technology adoption and business management yielded a calculated χ^2 value of 11.284 with 4 degrees of freedom and a p-value of 0.024, which is lower than the prescribed level of significance of 0.05. Likewise, the relationship between blockchain technology adoption and customer satisfaction produced a higher χ^2 value of 13.468 with 4 degrees of freedom and a p-value of 0.009, which is also below the 0.05 significance level. These findings confirm that blockchain technology adoption has a significant positive association with both effective business management and enhanced customer satisfaction. Since the p-values in both cases are less than 0.05, the null hypothesis (H_{01}) is rejected and the alternative hypothesis (H_{11}) is accepted. Therefore, the study concludes that strategic adoption of blockchain technology significantly strengthens managerial practices while

simultaneously improving customer satisfaction in the selected agribusiness companies of Amritsar, Punjab.

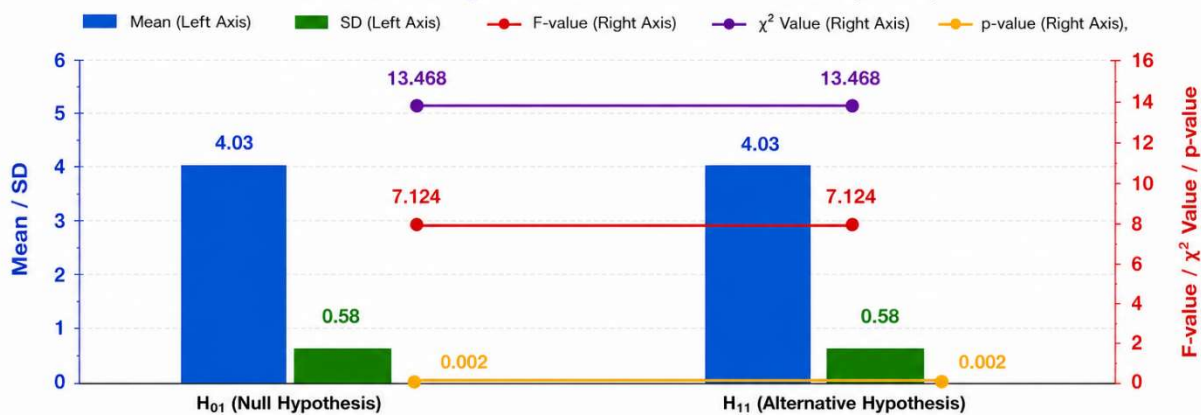
Table 5: Hypothesis Testing

Hypothesis	Statement	Mean	SD	F-value	χ^2 Value	p-value	Decision
H ₀₁	There is no significant impact of strategic adoption of blockchain technology on business management and customer satisfaction.	4.03	0.58	7.124	13.468	0.002	Rejected
H ₁₁	There is a significant impact of strategic adoption of blockchain technology on business management and customer satisfaction.	4.03	0.58	7.124	13.468	0.002	Accepted

The hypothesis-testing results demonstrate that the strategic adoption of blockchain technology has a statistically significant impact on business management and customer satisfaction. The overall mean score of 4.03 and standard deviation of 0.58 indicate a high and relatively consistent level of agreement among the respondents. The calculated F-value of 7.124 and chi-square value of 13.468, together with a p-value of 0.002, confirm that the observed impact is statistically significant at the 0.05 level. Since the p-value is lower than the prescribed level of significance, the null hypothesis (H₀₁), which states that there is no significant impact of strategic blockchain adoption on business management and customer satisfaction, is rejected. Conversely, the alternative hypothesis (H₁₁) is accepted. Therefore, the findings establish that strategic blockchain technology adoption significantly contributes to improved business-management practices and enhanced customer satisfaction in the selected agribusiness companies.

Hypothesis Testing Results

Impact of Strategic Adoption of Blockchain Technology
on Business Management and Customer Satisfaction (N = 50)



Descriptive Summary

- Overall Mean = 4.03
- Overall SD = 0.58
- F-value = 7.124
- χ^2 Value = 13.468
- p-value = 0.002
- Level of Significance (α) = 0.05

Interpretation

- F-value (7.124) is greater than the critical value.
 - χ^2 Value (13.468) is greater than the critical value.
 - p-value (0.002) is less than the level of significance (0.05).
- Therefore, the results are statistically significant.

Conclusion

- Since p-value < 0.05, we reject H₀₁.
- There is a significant impact of strategic adoption of blockchain technology on business management and customer satisfaction.

H₁₁ is accepted.

Note: Left Y-axis represents Mean and Standard Deviation (SD); Right Y-axis represents F-value, χ^2 Value and p-value.

Graph 5: Hypothesis Testing

The hypothesis-testing results indicate that the strategic adoption of blockchain technology has a statistically significant impact on business management and customer satisfaction. The overall mean score of 4.03 and standard deviation of 0.58 reflect a high and relatively consistent level of agreement among the respondents. The calculated F-value of 7.124 and chi-square value of 13.468 further support the existence of a meaningful effect and association among the study variables. The obtained p-value of 0.002 is lower than the selected level of significance of 0.05, confirming that the results are statistically significant. Therefore, the null hypothesis is rejected, while the alternative hypothesis is accepted. The findings establish that strategic blockchain adoption contributes positively to managerial efficiency, transparency, coordination, decision-making and customer satisfaction in the selected agribusiness companies of Amritsar, Punjab.

7. Results and Discussion

1. **Positive Employee Perception of Blockchain Adoption:** The frequency and percentage analysis revealed that 76% of the respondents either agreed or strongly agreed that the strategic adoption of blockchain technology positively influences organizational practices. Only 10% expressed disagreement, while 14% remained neutral. This indicates a high level of employee acceptance and suggests that blockchain is viewed as a useful tool for strengthening transparency, traceability, information security and operational reliability in agribusiness companies.
2. **Improvement in Business Management:** Business management recorded a mean score of 4.06 with a standard deviation of 0.55, reflecting a high and consistent level of agreement among employees. The finding suggests that blockchain technology contributes to improved managerial decision-making, supply-chain coordination, process automation, data accuracy and operational efficiency. The low standard deviation further indicates that respondents shared relatively similar views regarding the managerial benefits of blockchain adoption.
3. **Enhancement of Customer Satisfaction:** Customer satisfaction obtained the highest mean score of 4.12 with a standard deviation of 0.58. This result shows that blockchain-enabled transparency, product traceability, timely information sharing and transaction reliability can strengthen customer trust and satisfaction. The chi-square analysis also confirmed a significant association between blockchain adoption and customer satisfaction, with $\chi^2 = 13.468$ and $p = 0.009$, indicating that higher blockchain adoption is linked with improved customer-related outcomes.
4. **Significant Impact and Hypothesis Verification:** The ANOVA result produced an F-value of 7.124 with a p-value of 0.002, which was lower than the 0.05 level of significance. Similarly, the chi-square results showed significant associations between blockchain adoption, business management and customer satisfaction. Therefore, the null hypothesis was rejected and the alternative hypothesis was accepted. Overall, the results establish that strategic blockchain adoption significantly improves business-management practices and enhances customer satisfaction in the selected agribusiness companies of Amritsar, Punjab.

8. Major Findings of the Study

1. **High Level of Strategic Blockchain Adoption:** The study found that employees exhibited a favourable perception towards the strategic adoption of blockchain technology. A majority (76%) of the respondents agreed or strongly agreed that blockchain technology contributes positively to organizational functioning, indicating a high level of acceptance in the selected agribusiness companies.
2. **Positive Influence on Business Management:** The findings revealed that strategic blockchain adoption significantly enhances business management by improving decision-making, operational efficiency, supply-chain coordination, transparency and information accuracy. The high mean score (Mean = 4.06; SD = 0.55) reflects employees' positive evaluation of blockchain-enabled managerial practices.

3. **Improved Customer Satisfaction:** The study established that blockchain technology positively influences customer satisfaction through enhanced product traceability, transaction security, transparency and service reliability. Customer satisfaction recorded the highest mean score (Mean = 4.12; SD = 0.58), demonstrating that employees perceive blockchain as an effective tool for strengthening customer trust and loyalty.
4. **Statistically Significant Impact of Blockchain Technology:** The inferential analysis confirmed that the strategic adoption of blockchain technology has a significant impact on business management and customer satisfaction. The ANOVA result ($F = 7.124$, $p = 0.002$) and Chi-square result ($\chi^2 = 13.468$, $p = 0.009$) were statistically significant at the 0.05 level, leading to the rejection of the null hypothesis and acceptance of the alternative hypothesis. These findings validate that blockchain technology plays a crucial role in improving organizational performance and customer-oriented outcomes in the selected agribusiness companies of Amritsar, Punjab.

9. Conclusion

The study concludes that the strategic adoption of blockchain technology has a significant positive impact on business management and customer satisfaction in the selected agribusiness companies of Amritsar, Punjab. The findings indicate that blockchain-supported transparency, traceability, data accuracy, security and real-time information sharing contribute to better managerial decision-making, improved operational efficiency and stronger supply-chain coordination. Customer satisfaction was also enhanced through greater product reliability, transparent information, timely service and increased customer trust.

The descriptive results showed a high level of employee agreement regarding the usefulness of blockchain technology, while the inferential analysis confirmed the statistical significance of its impact. The ANOVA and chi-square results led to the rejection of the null hypothesis and acceptance of the alternative hypothesis. Therefore, blockchain technology may be considered an effective strategic management tool for improving internal business processes and customer-oriented outcomes. Agribusiness companies should strengthen employee awareness, technological infrastructure and managerial support to ensure successful and sustainable blockchain implementation.

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