

Evaluating Customer Satisfaction And Loyalty In Steel Constrution Services Of Fabtech Building Systems Pvt Ltd,Kalamassery ,Cochin

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Abstract- *This study evaluates customer satisfaction and loyalty in the steel construction services offered by Fabtech Building Systems Pvt Ltd, a prominent player in the pre-engineered building (PEB) sector based in Kalamassery, Kerala. As the demand for high-quality, durable, and cost-effective steel structures rises, understanding client perceptions has become crucial for maintaining a competitive edge. The research investigates key factors such as service quality, project completion timelines, communication, pricing, and post- construction support, and how these influence customer loyalty and repeat business. Using primary data collected from 60 respondents and applying statistical tools like percentage analysis, ANOVA, chi-square test, and correlation analysis, the study finds a strong relationship between customer satisfaction and loyalty. Recommendations are provided to enhance service delivery and strengthen long-term customer relationships.*

Keywords- Customer Satisfaction, Customer Loyalty, Steel Construction Services, Fabtech Building Systems, Service Quality, After- Sales Support, Project Management, Construction Industry, Client Retention ,Pre-Engineered Buildings (PEB), project Timeliness, Customer Retention, Structural Durability, B2B Services, Competitive Advantage, Customer Relationship Management (CRM)

I. INTRODUCTION

The steel construction industry plays a vital role in infrastructure development by providing efficient, durable, and cost-effective solutions for various sectors including industrial, commercial, and institutional projects. With the rise of urbanization and industrial expansion in India, demand for pre-engineered buildings (PEBs) and steel structures has increased significantly. In such a competitive environment, companies can no longer rely solely on technical competence; instead, delivering superior customer service and building long-term relationships have become critical to sustaining business success. As a result, customer satisfaction and loyalty have emerged as key metrics for evaluating service performance and ensuring repeat business.

Fabtech Building Systems Pvt Ltd, based in Kalamassery, Kerala, has established itself as a reputable provider of steel construction solutions, offering end-to-end services from design to erection. While the company has achieved substantial growth, recent fluctuations in annual turnover suggest the need to evaluate customer perceptions more closely. This study aims to assess the satisfaction levels of Fabtech's clients and identify the factors influencing their loyalty. By analyzing customer feedback and service performance across various dimensions, the research provides insights that can help Fabtech enhance customer retention, improve service quality, and maintain a competitive advantage in the growing steel construction industry.

II. REVIEW OF LITERATURE

Synthesizing Customer Satifaction and Loyalty through Contractors' Service Quality and Brand Image (2024) by C.C.M.T. Win, T.C. Dodanwala, and D.S. Santoso, This study developed an integrated model to evaluate the relationship between service quality, brand image, customer satisfaction, and customer loyalty in Myanmar's construction industry. Data from 210 client organizations indicated that brand image partially mediates the effects of service quality on customer satisfaction and fully mediates its impact on customer loyalty. The study underscores the importance of enhancing service quality and brand image to boost customer satisfaction and loyalty.

Assessing Customer Loyalty in the Construction Materials Market (2022) Natalya B. Izakova and Olga I. Popova ,This study proposed a methodological approach to assess consumer loyalty in the retail construction materials market. Using content analysis, surveys, and models like SERVQUAL and Net Promoter Score (NPS), the research identified key factors

Options	No. of Responses	Percentage (%)
Very Satisfied	20	33.33%

Satisfied	18	30.00%
Neutral	12	20.00%
Dissatisfied	6	10.00%
Very Dissatisfied	4	6.67%
Total	60	100

influencing customer loyalty and provided strategies to enhance it.

The Influence of Service Quality on Customer Satisfaction and Loyalty in the B2B Technology Service Industry" (2019) by Ping-Lung Huang, Bruce

C.Y. Lee, and Ching-Chin Chen. This research explored how service quality and brand awareness influence customer satisfaction and loyalty in the B2B technology service sector. Utilizing the PZB model and data analysis, the study found that service quality positively impacts customer satisfaction, which in turn positively impacts customer loyalty. Additionally, brand awareness was found to positively moderate the relationship between service quality and customer satisfaction

The influence of service quality on customer satisfaction and loyalty in B2B technology service industry" (2017) by Ping-Lung Huang, Bruce C.Y. Lee, and Ching-Chin Chen. This study explores how service quality and brand awareness impact customer satisfaction and loyalty in the business-to-business technology service sector, providing insights applicable to construction services.

III. OBJECTIVE OF THE STUDY

Primary objectives

To evaluate customer satisfaction and loyalty in steel construction services provided by Fabtech Building Systems Pvt Ltd

Secondary objectives

- To identify the key factors influencing customer satisfaction in steel construction services.
- To understand customer expectations and areas where Fabtech can enhance its service offerings.
- To determine the factors that encourage repeat business for Fabtech Building Systems Pvt Ltd.

Research Methodology

The type of research used for this study is descriptive in nature. The study involves questionnaire method. The sample size was of 60 respondents who was chosen on the basis of particular location. The questionnaire was in structure containing close ended question which was designed to obtain the required information from the respondents keeping in mind the objective of the study. This study utilized statistical methods like percentage analysis, chi-square, correlation, ANOVA to interpret findings, and analyzing the relationship between customer satisfaction and loyalty

IV. DATA ANALYSIS

STATISFACTION LEVEL TOWARDS OVERALL QUALITY OF CONSTRUCTION SERVICES

The customer satisfaction survey results indicate that a majority of respondents have a positive perception of Fabtech Building Systems Pvt Ltd's steel construction services. About **63.33%** of customers are either **very satisfied (33.33%)** or **satisfied (30.00%)**, reflecting strong approval. Meanwhile, **20%** of respondents remain neutral, suggesting that while they do not have major complaints, they may not have experienced standout service. However, **16.67%** of customers expressed dissatisfaction (**10% dissatisfied, 6.67% very dissatisfied**), highlighting areas that may need improvement

Test of relationship between customer type and preferences in Fabtech's Steel Construction Services (CHI – SQUARE)

H_0 : There is no significant relationship between customer type and preferences in Fabtech's steel construction services.

- H_1 : There is a significant relationship between customer type and preferences in Fabtech's steel construction services.

OBSERVED FREQUENCY

Customer Type	High-Quality Materials	Timely Completion	After-Sales Support	Safety Measures	Row Total
Public Ltd Company	10	5	3	1	19
Sole Proprietor	6	5	4	2	17

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Private Ltd Company	3	4	3	2	12
Joint Venture	3	4	2	3	12
Column Total	22	18	12	8	60

EXPECTED FREQUENCY

Satisfaction Responses (x)	Recommendation Responses (y)	xy	x ²	y ²
20	22	440	400	484
18	18	324	324	324
12	10	120	144	100
6	6	36	36	36
4	4	16	16	16
Total (Σ)	936		920	960

Customer Type	High-Quality Materials	Timely Completion	After-Sales Support	Safety Measures
Public Ltd Company	6.97	5.70	3.80	2.53
Sole Proprietorship	6.23	5.10	3.40	2.27

Customer Type	High-Quality Materials	Timely Completion	After-Sales Support	Safety Measures
Private Ltd Company	4.40	3.60	2.40	1.60
Joint Venture	4.40	3.60	2.40	1.60

CHI-SQUARE CALCULATION TABLE

Observed Frequency	Expected Frequency	O - E	(O - E) ²	(O - E) ² / E
10	6.97	3.03	9.2011	1.3207
5	5.70	-0.70	0.4900	0.0860
3	3.80	-0.80	0.6400	0.1684
1	2.53	-1.53	2.3511	0.9281
6	6.23	-0.23	0.0544	0.0087
5	5.10	-0.10	0.0100	0.0020
4	3.40	0.60	0.3600	0.1059
2	2.27	-0.27	0.0711	0.0314
3	4.40	-1.40	1.9600	0.4455
4	3.60	0.40	0.1600	0.0444
3	2.40	0.60	0.3600	0.1500
2	1.60	0.40	0.1600	0.1000
3	4.40	-1.40	1.9600	0.4455
4	3.60	0.40	0.1600	0.0444
2	2.40	-0.40	0.1600	0.0667
3	1.60	1.40	1.9600	1.225

Chi-Square Value (χ^2) = 5.1726 Degrees of Freedom = 9
Critical Value at 0.05 significance level \approx 16.919

Conclusion:

Since $5.1726 < 16.919$, we fail to reject the null hypothesis.

Since the calculated Chi-square value (5.1726) is less than the critical value (16.919) and the p-value (0.819) is greater than 0.05, we fail to reject the null hypothesis. There is no statistically significant relationship between the type of customer and the aspect of service they liked most. This indicates that customer preferences are consistent across different customer types and are not influenced by whether the customer is a public limited company, private limited company, joint venture, or sole proprietorship. This result suggests that Fabtech's strengths—such as high-quality materials and timely project completion—are appreciated universally, regardless of the business structure of its clients.

Correlation Analysis between Customer Satisfaction and Likelihood to Recommend Fabtech

(H₀): There is no significant relationship between customer satisfaction and likelihood to recommend Fabtech.

(H₁): There is a significant relationship between customer satisfaction and likelihood to recommend Fabtech

$$r = 0.9859 \text{ df} = n - 2 = 5 - 2 = 3$$

Pearson Correlation Coefficient $r = 0.9859$ indicates a very strong positive correlation between customer satisfaction and likelihood to recommend Fabtech. This suggests that as customer satisfaction increases, the likelihood of recommending Fabtech also increases significantly.

To test relationship between the type of project undertaken and the expertise of engineers and project managers (ANOVA)

H₀: There is no significant relationship between the type of project undertaken and the expertise of engineers and project managers.

H₁: There is a significant relationship between the type of project undertaken and the expertise of engineers and project managers.

Sources of Variation	Sum of Squares	Mean Squares	Degree of Freedom
Row (Project Type)	0	0	$r - 1 = 8$
Column (Satisfaction Level)	2505.33	626.33	$c - 1 = 4$
Error	375.00	18.75	$(r-1)(c-1) = 32$
Total	2880.33		$N - 1 = 59$

ANOVA SUMMARY

$$\text{Calculated } F = \text{MSC} / \text{MSE} = 626.33 / 18.75 = 33.42$$

$$\text{Degrees of Freedom} = (4, 32)$$

$$\text{Critical } F\text{-value at } \alpha = 0.05 \text{ (approx.)} = 2.61$$

Result: $F > F\text{-critical}$ INTERPRETATION

Since the calculated F-value (33.42) is greater than the critical F-value at the 5% significance level, we reject the null hypothesis. There is a significant difference in satisfaction levels across different project types, indicating that project

type influences how satisfied clients are with engineer and project manager performance

ANOVA Analysis of After-Sales Support Across Different Project Types

To test the relationship between After-Sales Support Ratings and Project Type

H₀: There is no significant relationship between project type and after-sales support satisfaction.

H₁: There is a significant relationship between project type and after-sales support satisfaction

HYPOTHESIS

- H₀: There is no significant relationship between project type and after-sales support satisfaction.
- H₁: There is a significant relationship between project type and after-sales support satisfaction.

Sl No	Project Type	Excellent	Good	Average	Needs Improvement	Poor	Total
1	Cold Storage	6	4	1	1	0	12
2	Factory	5	3	1	1	0	10
3	Workshops	4	3	1	1	0	9
4	Residential	2	2	2	1	0	7
5	Commercial Building	2	2	1	0	1	6
6	Warehouse	1	2	1	1	0	5
7	Supermarket	1	2	1	0	1	5
8	Auditorium	1	1	1	1	0	4
9	Showroom	0	1	1	0	0	2
	Total	22	20	10	5	3	60

S l No	Proje ct Type	Excel lent & Exce eds Expe ctatio ns	Suffic ient & Meet Expe ctatio ns	Neu tral / Ade qua te	Needs Impr ovem ent	Not Suf fici ent	T o t al
1	Cold Stora ge	3	4	3	1	1	12
2	Facto ry	3	3	2	1	1	10
3	Work shops	2	3	2	1	1	9
4	Resid ential	2	2	2	1	0	7
5	Com merci al Build ing	1	2	2	1	0	6
6	Ware house	1	2	1	1	0	5
7	Super mark et	1	2	1	1	0	5
8	Audit oriu m	1	1	1	1	0	4
9	Show room	0	1	1	0	0	2
	Total	14	20	15	7	4	60

AFTER-SALES SUPPORT RATINGS AND PROJECT TYPES

ANOVA SUMMARY TABLE

Source of Variat ion	Sum of Squa res	Degre es of Freedom	Mean Squ are	F- Val ue	P- Val ue
Between Group s	19.98	8	2.498	1.269	0.280
Within Group s	100.35	51	1.968		
Total	120.33	59			

F-Value = 1.269, P-Value = 0.280 INTERPRETATION

Since the P-value is greater than 0.05, Therefore accept the null hypothesis the differences in after-sales support ratings across different project types are not statistically significant. That means: customer satisfaction with after- sales service does not vary significantly based on the type of project.

V. SUGGESTIONS

Based on the findings of this study, several key areas of improvement are recommended for Fabtech Building Systems Pvt Ltd to enhance customer satisfaction and loyalty. Firstly, the company should strengthen its post- project support services by establishing a dedicated after- sales team that can proactively address client concerns, offer maintenance guidance, and follow up on project outcomes. Improving communication and client engagement through regular updates, personalized follow-ups, and the use of digital tools like CRM systems or mobile applications would also help in building trust and transparency. Fabtech may consider introducing customer loyalty programs, such as incentives for repeat projects, referral bonuses, or priority servicing for long-term clients, to encourage ongoing business relationships. Furthermore, the company should conduct regular customer feedback surveys to identify service gaps and adapt strategies accordingly. Although safety standards were rated positively, continuous emphasis on safety training and communication can further build customer confidence. Providing more customization options in terms of design flexibility and tailored solutions will help Fabtech cater to the diverse needs of clients across sectors. Transparent and competitive pricing practices, supported by detailed cost breakdowns, can address concerns related to value for money. Additionally, investing in training and development of engineers and project managers will enhance service delivery and technical performance. Finally, improving digital marketing efforts and expanding the company's online presence through SEO, testimonials, and project showcases will attract more clients. By implementing these suggestions, Fabtech can significantly improve customer experiences and build long-term competitive advantage in the steel construction industry.

VI. CONCLUSION

This study has provided valuable insights into the customer satisfaction and loyalty dynamics within the steel construction industry, specifically focusing on Fabtech Building Systems Pvt Ltd. The findings reveal that while the company has built a solid reputation for service quality, engineering expertise, and timely project execution, there

remain areas that require strategic enhancement, particularly in after-sales support and communication responsiveness. The statistical analyses—including ANOVA, correlation, and chi-square tests—confirm that customer satisfaction significantly influences loyalty, but this relationship is not dependent on the type of customer or project. These results highlight the consistency in customer expectations across different segments and reinforce the importance of maintaining uniform service standards. Additionally, the strong correlation between satisfaction and likelihood of recommendation underscores the potential for Fabtech to grow through word-of-mouth referrals and client retention strategies. By adopting the recommended improvements—such as better customer engagement practices, structured support systems, and digital communication tools—Fabtech can further solidify its market position and foster long-term customer relationships. Overall, this research contributes practical guidance for service enhancement in the steel construction sector and offers a replicable model for evaluating customer satisfaction in similar industrial contexts.

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