A Study on the Effectiveness of AI-Powered Customer Service Enhancement at Syena Logistics PVT LTD

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ABSTRACT

In today's logistics sector, customer service is critical to guaranteeing smooth operations, customer happiness, and competitive advantage. Artificial intelligence (AI) has become a game-changing tool in improving customer service due to the growing need for quick, precise, and effective communication. With an emphasis on response time, problem solving, customer happiness, and overall operational efficiency, this study investigates the efficacy of AI-powered customer service solutions at Syena Logistics Pvt Ltd. Key performance metrics like average response time, resolution rate, customer feedback scores, and service efficiency before and after AI adoption are evaluated in this quantitative data analysis study. The study looks at how predictive analytics, automated query processing, and AI-driven chatbots help to streamline customer encounters while resolving typical logistical issues. The study also cites several obstacles to the implementation of AI, such as financial limitations, issues with data accuracy, staff flexibility, and integration challenges with current systems.Notwithstanding these difficulties, there are a lot of chances to improve service quality, lessen operational burden, and reduce human mistake with AI-powered solutions. The study's conclusions give data-driven insights on the viability of enhancing customer service in the logistics industry with AI, along with suggestions for best practices to maximise AI adoption. In order to facilitate more effective and customer-focused service delivery in the dynamic global supply chain, this research attempts to assist logistics companies in comprehending the real- world advantages and difficulties of AI-driven solutions.

Keywords : AI-powered customer service, Logistics, Operational efficiency, Customer satisfaction, Response time, Chatbots, Predictive analytics, Automation, Data accuracy, Integration challenges, AI adoption.

INTRODUCTION

Incorporating Artificial Intelligence (AI) into customer service has had a profound impact on the logistics sector. Conventional customer service procedures, which mostly relied on answering questions by hand, were frequently laborious, inconsistent, and prone to human error. Logistics firms have been able to increase client contacts, boost response accuracy, and improve service efficiency with the advent of AI-powered solutions. The increasing demand for quicker and more dependable query resolution is one of the main factors propelling the use of AI-powered customer service in logistics. Chatbots and virtual assistants powered by AI can offer real-time assistance, cutting down on wait times and raising customer satisfaction. AI can manage several conversations at once, guaranteeing smooth communication, in contrast to manual customer service, where human agents could find it difficult to handle large question volumes. The potential of AI to improve problem solving through data-driven insights is another significant benefit for customer service. Repeated follow-ups are less necessary because to AI algorithms that evaluate consumer inquiries,

anticipate frequent problems, and provide proactive answers. Furthermore, sentiment analysis powered by AI enables businesses to assess client satisfaction levels and adjust their service plans accordingly. AI-powered customer support is also essential for reducing mistakes and increasing productivity. Traditional customer service frequently had problems with delayed responses and misunderstandings, which could have a bad effect on the customer experience. AI-driven solutions ensure more accurate and consistent support by automating repetitive processes, standardising responses, and granting rapid access to pertinent information.

OBJECTIVES

PRIMARY OBJECTIVE:

To study the effectiveness of AI-powered customer service enhancement at Syena Logistics Pvt Ltd.

SECONDARY OBJECTIVE:

• To understand the Existing Customer Service Performance
• To Evaluate Customer Readiness for AI Integration
• To Identify the Most Effective AI Solutions for Syena Logistics
• To Measure the Impact of AI on Customer Experience and Operational Efficiency.

REVIEW OF LITERATURE

Singh and Singh (2024) Explore how AI-powered customer service enhances customer satisfaction and operational efficiency, ultimately driving customer loyalty. Their study highlights AI's transformative impact on customer interactions, particularly its ability to improve response times, personalisation, and service quality. They also emphasize that the effectiveness of AI largely depends on customer perceptions and advocate for the implementation of customer-centric AI solutions to maximise benefits.

Brzozowska et al. (2023) Examine the transformative impact of artificial intelligence on customer service within the logistics sector. They discuss how AI-driven tools, such as chatbots and voice assistants, contribute to enhanced efficiency, service competence, and overall service quality in logistics operations.

Misischia et al. (2022) Investigate the growing role of chatbots in enhancing customer service interactions. The study highlights functional aspects of chatbots, including their ability to provide immediate responses, handle multiple inquiries simultaneously, and deliver consistent information. However, the authors also address key challenges in chatbot implementation, such as understanding complex queries and maintaining human-like interaction quality.

Acharya et al. (2024) Analyze the increasing role of AI and chatbots in modern customer service. Their findings highlight the effectiveness of AI in offering real-time, round-the-clock support and managing high volumes of customer inquiries. The study further emphasizes how AI leverages customer data to personalize recommendations, ultimately enhancing decision-making and building brand loyalty.

Abu Daqar and Smoudy (2019) Explore how AI technologies are transforming customer experiences across various industries, including banking and telecommunications. Their findings demonstrate AI's role in providing personalized services, streamlining operations, and improving

response times. Empirical studies conducted in Palestine show a significant positive correlation between AI implementation and improved customer experience metrics.

RESEARCH METHODOLOGY

Research methodology refers to the systematic process used to conduct research, including data collection, analysis, and interpretation. It provides a structured approach to ensure the study's accuracy, reliability, and validity

RESEARCH DESIGN

This study follows a descriptive research design, as it aims to assess the effectiveness of AI- powered customer service at Syena Logistics Pvt Ltd.

SAMPLE

This study uses a sample size of 112 respondents to analyze the effectiveness of AI-powered customer service at Syena Logistics Pvt Ltd. This ensures sufficient data for assessing customer satisfaction, response time, and service efficiency.

DATA COLLECTION

The data for this study research has been collected from both primary and secondary data.

PRIMARY DATA:

This research utilises quantitative primary data collection through a structured survey questionnaire distributed via Google Forms.

SECONDARY DATA

In this study, secondary data has been gathered from reference articles, research papers, and industry reports to support the analysis and provide additional context.

DATA ANALYSIS AND INTERPRETATION

1. Analyze Existing Customer Service Performance
CROSSTABS
STATISTICAL HYPOTHESIS:

Null Hypothesis (H_0) : There is no association between interaction frequency and customer satisfaction.

Alternative Hypothesis (H₁) : There is a significant association between interaction frequency and customer satisfaction.

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
FREQUENCYOFINTERACTION * SATISFACTIONLEVEL	112	100.0%	0	0.0%	112	100.0%

FREQUENCYOFINTERACTION * SATISFACTIONLEVEL Crosstabulation

Count

		SATISFACTIONLEVEL					Total
		VERY SATISFIED	SATISFIED	NEUTRAL	DISSATISFIED	VERY DISSATISFIED	
FREQUENCYOFINTERACTION	DAILY	5	10	7	0	2	24
	WEEKLY	7	12	6	1	1	27
	MONTHLY	8	9	6	2	1	26
	RARELY	2	10	16	4	3	35
Total		22	41	35	7	7	112

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	14.916[a]	12	.246
Likelihood Ratio	17.115	12	.145
Linear-by-Linear Association	4.801	1	.028
N of Valid Cases	112		

a. 9 cells (45.0%) have expected count less than 5. The minimum expected count is 1.50.

Directional Measures

			Value
Nominal by Interval	Eta	FREQUENCYOFINTERACTION Dependent	.265
		SATISFACTIONLEVEL Dependent	.295

INTERPRETATION:

There is no significant relationship between the frequency of customer interaction and satisfaction level (Pearson Chi-Square = 14.916, p = 0.246), indicating that changes in interaction frequency do not have a strong impact on customer satisfaction. However, the Linear-by-Linear Association value (4.801, p = 0.028) suggests a weak but statistically significant trend, where higher interaction frequency may be linked to increased satisfaction. Since the overall effect is weak, other factors likely play a more dominant role in determining customer satisfaction at Syena Logistics.

INFERENCE:

The Chi-Square test (p = 0.246) shows no significant relationship between interaction frequency and customer satisfaction. However, the Linear-by-Linear Association (p = 0.028) suggests a slight trend—as interaction increases, satisfaction may slightly improve. Still, other factors likely influence satisfaction more strongly.

2. Evaluate Customer Readiness for AI Integration
CORRELATIONS
STATISTICAL HYPOTHESIS:

Null Hypothesis (H₀): There is no significant relationship between a respondent's experience with AI and their comfort in using AI.

Alternative Hypothesis (H₁): There is a significant positive relationship between a respondent's experience with AI and their comfort in using AI.

Descriptive Statistics

	Mean	Std. Deviation	N
EXPERIENCEWITHAI	2.64	1.146	112
COMFORTUSINGAI	1.59	.766	112

Correlations

		EXPERIENCE WITHAI	COMFORTUS INGAI
EXPERIENCEWITHAI	Pearson Correlation	1	.314**
	Sig. (2-tailed)		<.001
	N	112	112
COMFORTUSINGAI	Pearson Correlation	.314**	1
	Sig. (2-tailed)	<.001	
	N	112	112

**. Correlation is significant at the 0.01 level (2-tailed).

Confidence Intervals

	Pearson Correlation	Sig. (2-tailed)	95% Confidence Intervals (2-tailed)[a]	
			Lower	Upper
EXPERIENCEWITHAI - COMFORTUSINGAI	.314	<.001	.136	.472

a. Estimation is based on Fisher's r-to-z transformation.

INTERPRETATION:

There is a moderate positive correlation between experience with AI and comfort in using AI (Pearson correlation = 0.314, p < 0.001), indicating that greater experience with AI is associated with higher comfort in using it. The correlation is statistically significant at the 0.01 level, and the 95% confidence interval (0.136 to 0.472) confirms the reliability of this relationship. However, the effect is moderate, suggesting other factors may also influence comfort in using AI.

INFERENCE:

The Pearson correlation coefficient is 0.314, and the p-value is less than 0.001, which is well below the 0.05 threshold. This indicates a statistically significant moderate positive correlation between AI experience and comfort level. Therefore, the null hypothesis is rejected. This suggests that individuals with more experience in AI tend to feel more comfortable using it.

3. Identify the Most Effective AI Solutions for Syena Logistics ONEWAY
STATISTICAL HYPOTHESIS:

Null Hypothesis (H₀): There is no significant difference in concerns about AI among groups with different views on how helpful AI is in various areas (such as logistics, customer service, etc.).

Alternative Hypothesis (H₁): There is a significant difference in concerns about AI among groups with different opinions on AI's helpfulness.

Descriptives

AREASWHEREAIISMOSTHELPFUL

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	95% Confidence Interval for Mean Upper Bound	Minimum	Maximum
1	36	2.36	1.313	.219	1.92	2.81	1	5
2	28	2.43	1.103	.208	2.00	2.86	1	5
3	27	3.07	1.207	.232	2.60	3.55	1	5
4	21	3.29	1.231	.269	2.73	3.85	1	5
Total	112	2.72	1.268	.120	2.49	2.96	1	5

ANOVA

AREASWHEREAIISMOSTHELPFUL

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	17.119	3	5.706	3.821	.012
Within Groups	161.300	108	1.494		
Total	178.420	111			

Multiple Comparisons

Dependent Variable: AREASWHEREAIISMOSTHELPFUL

LSD

(I) CONCERNABOUTAI	(J) CONCERNABOUTAI	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
1	2	-.067	.308	.827	-.68	.54
	3	-.713*	.311	.024	-1.33	-.10
	4	-.925*	.336	.007	-1.59	-.26
2	1	.067	.308	.827	-.54	.68
	3	-.646	.330	.053	-1.30	.01
	4	-.857*	.353	.017	-1.56	-.16
3	1	.713*	.311	.024	.10	1.33
	2	.646	.330	.053	-.01	1.30
	4	-.212	.356	.553	-.92	.49
4	1	.925*	.336	.007	.26	1.59
	2	.857*	.353	.017	.16	1.56
	3	.212	.356	.553	-.49	.92

*. The mean difference is significant at the 0.05 level.

INTERPRETATION:

The one-way ANOVA shows a significant difference in AI's perceived helpfulness across groups (F = 3.821, p = 0.012). Post-hoc analysis (LSD test) reveals that some group comparisons (e.g., group 2 vs. 3, p = 0.024; group 3 vs. 4, p = 0.017) are statistically significant. This suggests that perceptions of AI's usefulness vary, but the differences are not uniform across all groups.

INFERENCE:

The One-Way ANOVA result shows a significance value (p) of 0.012, which is less than 0.05. This means the differences in concerns among the groups are statistically significant. Therefore, the null hypothesis is rejected. This indicates that people's level of concern about AI varies depending on how helpful they believe AI is in specific operational areas.

4. Measure the Impact of AI on Customer Experience and Operational Efficiency PLUM - ORDINAL REGRESSION
STATISTICAL HYPOTHESIS:

Null Hypothesis (H_0): Perceived impact of AI has no significant influence on the overall customer satisfaction level at Syena Logistics.

Alternative Hypothesis (H_1): Perceived impact of AI has a significant influence on the overall customer satisfaction level at Syena Logistics.

Case Processing Summary

		N	Marginal Percentage
PERCEIVEDAIIMPACTON EXPERIENCE	YES	58	51.8%
	NO	28	25.0%
	MAYBE	26	23.2%
SATISFACTIONLEVEL	VERY SATISFIED	22	19.6%
	SATISFIED	41	36.6%
	NEUTRAL	35	31.3%
	DISSATISFIED	7	6.3%
	VERY DISSATISFIED	7	6.3%
Valid		112	100.0%
Missing		0	
Total		112	

Iteration History[a]

			Threshold		Location			
Iteration	Number of Step-Halvings	-2 Log Likelihood	[PERCEIVED AIIMPACTON EXPERIENCE = 1]	[PERCEIVED AIIMPACTON EXPERIENCE = 2]	[SATISFACTI ONLEVEL=1]	[SATISFACTI ONLEVEL=2]	[SATISFACTI ONLEVEL=3]	[SATISFACTI ONLEVEL=4]
0	0	39.637	.0714590	1.1962508	.0000000	.0000000	.0000000	.0000000
1	0	32.637	-.2684779	.8563139	-.4247122	-.8779647	.0496124	.7901235
2	0	32.384	-.2796276	.9038857	-.4208356	-.9216527	.0569865	.5091981
3	0	32.375	-.2803291	.9052821	-.4211452	-.9230634	.0569191	.5809687
4	0	32.375	-.2803621	.9053308	-.4211599	-.9230927	.0569151	.5651492
5	0	32.375	-.2803637	.9053332	-.4211604	-.9230937	.0569150	.5687049
6	0	32.375	-.2803638	.9053333	-.4211605	-.9230937	.0569150	.5679087
7	0	32.375	-.2803638	.9053333	-.4211605	-.9230937	.0569150	.5680871
8	0	32.375	-.2803638	.9053333	-.4211605	-.9230937	.0569150	.5680472
9	0	32.375	-.2803638	.9053333	-.4211605	-.9230937	.0569150	.5680561
10	0	32.375	-.2803638	.9053333	-.4211605	-.9230937	.0569150	.5680541
11	0	32.375[b]	-.2803638	.9053333	-.4211605	-.9230937	.0569150	.5680546

Redundant parameters are not displayed. Their values are always zero in all iterations.

a. Link function: Logit.

b. The parameter estimates converge. Last absolute change in -2 Log Likelihood is .000, and last maximum absolute change in parameters is 4.4987098E-7.

Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	39.637			
Final	32.375	7.262	4	.123

Link function: Logit.

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	3.176	4	.529
Deviance	2.887	4	.577

Link function: Logit.

Pseudo R-Square

Cox and Snell	.063
Nagelkerke	.072
McFadden	.032

Link function: Logit.

Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[PERCEIVEDAIIMPACTO NEXPERIENCE = 1]	-.280	.705	.158	1	.691	-1.662	1.101
	[PERCEIVEDAIIMPACTO NEXPERIENCE = 2]	.905	.711	1.622	1	.203	-.488	2.299
Location	[SATISFACTIONLEVEL=1]	-.421	.811	.270	1	.603	-2.010	1.168
	[SATISFACTIONLEVEL=2]	-.923	.772	1.430	1	.232	-2.436	.590
	[SATISFACTIONLEVEL=3]	.057	.767	.006	1	.941	-1.446	1.560
	[SATISFACTIONLEVEL=4]	.568	.990	.329	1	.566	-1.372	2.508
	[SATISFACTIONLEVEL=5]	0ª	.	.	0	.	.	.

Link function: Logit.

a. This parameter is set to zero because it is redundant.

INTERPRETATION:

The ordinal regression analysis shows no significant relationship between perceived AI impact on experience and satisfaction level ($p > 0.05$). The model's goodness-of-fit measures indicate a weak explanatory power (Nagelkerke R^2 = 0.072), suggesting that other factors likely influence satisfaction. While there may be some association, the results do not strongly support a direct impact of AI perception on customer satisfaction at Syena Logistics.

INFERENCE:

The model's significance value (p-value) is 0.123, which is greater than 0.05. This means the relationship is not statistically significant. Therefore, the null hypothesis is not rejected. This implies that perceived AI impact does not significantly influence satisfaction levels. Other factors may be more important in determining overall satisfaction.

SUGGESTIONS

• Implementing a mix of AI and human interaction can enhance customer service efficiency while maintaining a personalized approach.

• Educating customers on the advantages and working of AI-powered support can help build trust and encourage smoother adoption.

• Regular updates and improvements in AI algorithms can minimize errors in responses and ensure more accurate assistance.

• Simplifying the AI interface and providing clear navigation can make it easier for all customers to use, especially those unfamiliar with technology.

• Adding multilingual support and an easy option to connect with human agents can improve accessibility and customer satisfaction.

• Training customer service representatives to effectively collaborate with AI tools can enhance the overall service experience.

- Offering customers the flexibility to choose between AI-driven assistance and human support based on their needs can lead to a more efficient and satisfactory service model.

CONCLUSION

This study looked at how well Syena Logistics Pvt Ltd's AI-powered customer service worked, with particular attention to how it affected response times, customer happiness, and overall service efficacy. The results show that although AI-powered assistance has advantages like round-the-clock accessibility and quicker reaction times, there are still some drawbacks, such as a lack of human interaction and accuracy issues. According to the research, customers' experiences with AI differ depending on their level of familiarity; those who have previously used AI-driven services are more at ease implementing it. Furthermore, general queries, order monitoring, and complaint handling were thought to be the areas where AI-powered solutions were most helpful. To resolve client issues and improve overall service quality, a hybrid model that combines AI and human help would be required. Overall, the study shows that Syena Logistics' operational effectiveness and customer experience might be enhanced by AI-powered customer support. However, maximising its effectiveness will require ongoing enhancements, more customer awareness, and a well-rounded strategy that combines AI with human help.

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