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A STUDY ON EMERGING TRENDS AND ADVANCEMENTS IN ARTIFICIAL INTELLIGENCE FOR OPTIMIZING LOGISTICS AND SUPPLY CHAIN MANAGEMENT

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Abstract

This study looks at how and logistics supply chain management (SCM) are affected by artificial intelligence (AI). Predictive analytics, machine learning, and automation are examples of AI technologies that improve operations, increasing productivity and cutting expenses. According to the study, there have been notable advancements in last-mile delivery, inventory control, route planning, and forecasting that have improved consumer satisfaction. Adoption of AI has many advantages, but there are still issues with data security, implementation costs, and technology constraints. Job experience and opinions on AI's ability to lower human mistake rates did not significantly correlate, highlighting the necessity of targeted AI training initiatives. AI adoption levels are influenced by infrastructure, industry type and years of operation. Organizations should invest in cutting-edge AI technologies, develop workforce competencies, and set up robust data management systems in order to fully realize AI's promise.

Key words: Logistics, Artificial Intelligence, Supply chain management, Machine Learning, Automation.

INTRODUCTION

Artificial Intelligence in Logistics

AI is revolutionizing supply chain management and logistics through process automation, increased efficiency, and better decision-making. Demand forecasting, route planning, inventory control, and last-mile delivery are all made more efficient by AI technologies like robots, machine learning, and predictive analytics. Improved customer satisfaction cheaper transportation costs, and less fuel use are all advantageous to businesses. Drones and driverless cars allow for quicker delivery, while AI-powered robots optimize warehouse operations. AI use is anticipated to increase, resulting in more robust and effective supply chains, despite obstacles including high installation costs and data security worries.

Artificial Intelligence in SCM

AI is transforming supply chain management (SCM) through improved accuracy, automation, and decision-making. Through real-time analysis of massive amounts of data, AI-driven systems enhance transportation planning, supplier selection, inventory management, and demand forecasting. While AI-powered robots enhance warehouse operations and minimize mistakes, predictive analytics helps avoid shortages and overproduction. AI in logistics facilitates last-mile delivery using drones and self-driving cars, improves fleet management, and permits real-time tracking. AI use is anticipated to increase, promoting more robust, flexible, and effective supply chains, despite obstacles including high installation costs and data security issues.

REVIEW OF LITERATURE

Xiaofeng Xu & Yangyang He (2024) examined blockchain applications in contemporary logistics, emphasizing transaction efficiency, security, and information sharing. The paper summarized blockchain applications using a two-stage analytical technique based on the latent Dirichlet allocation topic model. Supply chain finance, logistics tracking,

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and process optimization were among the six major logistics domains that were identified. The results highlighted how blockchain may improve transparency, save operating expenses, and prevent fraud. The report made management suggestions to boost the use of blockchain in logistics.

Emmanuel Adeyemi Abaku et al (2024) studied theoretical AI methods for supply chain optimization, with an emphasis on machine learning, network theory, and evolutionary algorithms. The study described the function of AI in risk reduction, forecasting demand, and decision-making. It looked at strategic uses including swarm analysis for cooperative networks and game theory for competitive supply chains. Hybrid AI approaches were highlighted in the report as the way forward for supply chain resilience. The results provide a framework for using Artificial Intelligence (AI) techniques to improve the responsiveness and effectiveness of supply chains.

Olorunyomi Stephen Joel et al. (2024) carried out a comprehensive evaluation of artificial intelligence (AI) applications in supply chain management, concentrating on predictive analytics, real-time tracking, and logistics optimization. The research emphasized how AI may improve resource allocation and mitigate interruptions. Key facilitators of AI-driven supply chains were found to include robotic process automation and machine learning. There was discussion of issues including data privacy and ethical implications. The study came to the conclusion that supply chain ecosystems that are intelligent and robust are fostered by artificial intelligence.

RESEARCH GAP

Although the application of AI in supply chains and logistics has shown significant benefits, there are still unanswered questions regarding the long-term impacts of this technology on supply chain resilience. The use of AI to initiatives with a sustainability focus has not received much attention. Additionally, there are no standardized standards for evaluating AI-driven performance across diverse industries and geographical areas.

IMPORTANCE OF THE STUDY

This study focuses on the expanding significance of Artificial Intelligence (AI) in supply chain and logistics management, particularly its influence on efficiency, cost reduction, and resilience. AI is becoming a key facilitator in simplifying inventory management, demand forecasting, transportation planning, and last-mile delivery as companies worldwide and in India aim for automation and data-driven decision-making. In order to help enterprises, policymakers, and researchers better understand how AI may promote supply chain agility, sustainability, and competitive advantage, this research offers insights into the most recent AI applications, adoption obstacles, and future potential.

STATEMENT OF THE PROBLEM

AI improves decision-making, efficiency, and cost-cutting in SCM and logistics. Nonetheless, problems including exorbitant adoption costs, concerns about data privacy, and technological constraints continue to exist. This research looks at future integration potential, adoption challenges, and the effect of AI on supply chain resilience.

METHODOLOGY

This study makes use of both primary and secondary data. To further understand AI adoption, obstacles, and effects, primary data was gathered from supply chain managers and logistics specialists. Journal articles, case studies, and industry reports are the sources of secondary data. The study uses purposive sampling to collect data from experts who are actively involved in supply chain and logistics decision-making over the course of four months. Diverse viewpoints on the application of AI are ensured by a sample of 50 respondents from 87 businesses. The study uses structural equation modeling (SEM), regression analysis, correlation analysis, chi-square analysis, and descriptive statistics for analysis.

OBJECTIVES OF THE STUDY

- To analyse emerging recent trends in the application of AI in logistics an SCM.

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- To examine the impact of AI technologies on operational efficiency, cost reduction, and Source decision-making in logistics and SCM.
- To identify challenges faced by organizations in implementing AI within their logistics and supply chain processes.
- To evaluate the role of AI in enhancing logistics and supply chain resilience during disruptions or crises.
- To explore future opportunities for integrating advanced AI technologies into logistics and SCM.

LIMITATION

Since the study's timeframe is restricted, the findings may not completely represent long-term trends and technical developments in AI use. Furthermore, the findings might not be generally relevant to any other areas and businesses because the study is limited to logistics and supply chain industries in Coimbatore city

ANALYSIS AND INTERPRETATION

DESCRIPTIVE ANALYSIS

Table 1

TABLE SHOWING INDUSTRY TYPE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below 5years	7	14.0	14.0	14.0
	5 - 10years	12	24.0	24.0	38.0
	10 - 15years	24	48.0	48.0	86.0
	Above 15years	7	14.0	14.0	100.0
	Total	50	100.0	100.0	

Source : Primary Data

INTERPRETATION

It is clear from the above table that, out of 50 respondents taken for the study, 24% of the respondents belong to the Manufacturing Industry, 8% are from the Retail & E-Commerce sector, 56% are engaged in Transportation & Logistics, and 12% are from the Warehouse & Distribution sector.

Table No 2

TABLE SHOWING WORK EXPERIENCE OF THE RESPONDENTS IN THE FIELD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below 5years	7	14.0	14.0	14.0
	5 - 10years	12	24.0	24.0	38.0
	10 - 15years	24	48.0	48.0	86.0
	Above 15years	7	14.0	14.0	100.0
	Total	50	100.0	100.0	

Source : Primary Data

INTERPRETATION

It is clear from the above table that, out of 50 respondents taken for the study, 14% have below 5 years of work experience, 24% have 5-10 years of experience, 48% have 10-15 years of experience, and 14% have above 15 years of experience in the field.

CHI-SQUARE ANALYSIS

Table No 3

TABLE SHOWING THE ASSOCIATION BETWEEN THE INDUSTRY TYPE AND THE LEVEL OF AI ADOPTION

Null Hypothesis (Ho):

There is no significant association between the industry type and the level of AI adoption.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.964[a]	3	.810
Likelihood Ratio	.904	3	.824
Linear-by-Linear Association	.035	1	.852
N of Valid Cases	50		

a. 5 cells (62.5%) have expected count less than 5. The minimum expected count is 1.20.

Source : Primary Data

INTERPRETATION

The analysis of association through chi-square between the industry type and the level of AI adoption is presented in the above table. The P Value obtained is 0.810, which is greater than the significant value of 0.05. Hence, the null hypothesis is accepted, concluding that there is no significant association between the industry type and the level of AI adoption.

TABLE 4

THE WORK EXPERIENCE IN THE FIELD AND AI-DRIVEN AUTOMATION IN REDUCING HUMAN ERRORS

Null Hypothesis (Ho):

There is no significant association between work experience in the field and the perception of AI-driven automation in reducing human errors in logistics operations.

INTERPRETATION

The analysis of association through chi-square is presented in the above table. The P-value obtained is 0.510, which is greater than the significant value of 0.05. Hence, the null hypothesis is accepted, concluding that there is no significant association between work experience in the field and the perception of AI-driven automation in reducing human errors. Additionally, it is noted that 50.0% of cells have an expected count less than 5, which may

	Value	**df**	**Asymp. Sig. (2-sided)**
Pearson Chi-Square	2.313[a]	3	.510
Likelihood Ratio	1.923	3	.589
Linear-by-Linear Association	.690	1	.406
N of Valid Cases	50		

a. 4 cells (50.0%) have expected count less than 5. The minimum expected count is .84.

Source : Primary Data

affect the reliability of the chi-square test results.

TABLE 5

THE INDUSTRY TYPE AND DIFFICULTY INTEGRATING AI WITH EXISTING SYSTEMS

Null Hypothesis (Ho):

There is no significant association between the industry type and the level of difficulty in integrating AI with existing systems.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.540[a]	12	.213
Likelihood Ratio	17.622	12	.128
Linear-by-Linear Association	.539	1	.463
N of Valid Cases	50		

a. 17 cells (85.0%) have expected count less than 5. The minimum expected count is .08.

Source : Primary Data

INTERPRETATION

The analysis of association through chi-square is presented in the above table. The P Value obtained is 0.213, which is greater than the significant value of 0.05. Hence, the null hypothesis is accepted, concluding that there is no significant association between the variables. Additionally, it is noted that 85.0% of cells have an expected count less than 5, which may affect the reliability of the chi-square test results.

TABLE 6

THE INDUSTRY TYPE AND DATA SECURITY AND PRIVACY CONCERNS

Null Hypothesis (Ho):

There is no significant association between the industry type and data security and privacy concerns.

INTERPRETATION

The analysis of association through chi-square is presented in the above table. The P Value obtained is 0.065, which is greater than the significant value of 0.05. Hence, the null hypothesis is accepted, concluding that there is no significant association between the variables. Additionally, it is noted that 85.0% of cells have an expected count less than 5, which may affect the reliability of the chi-square test results.

TABLE 7

THE INDUSTRY TYPE AND THE LIKELIHOOD OF INVESTING IN AI-POWERED RESILIENCE SOLUTIONS

Null Hypothesis (Ho):

There is no significant association between the

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	20.086[a]	12	.065
Likelihood Ratio	13.835	12	.311
Linear-by-Linear Association	1.787	1	.181
N of Valid Cases	50		

a. 17 cells (85.0%) have expected count less than 5. The minimum expected count is .08.

Source : Primary Data

industry type and the likelihood of investing in AI-powered resilience solutions.

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	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.440[a]	12	.338
Likelihood Ratio	13.343	12	.345
Linear-by-Linear Association	.599	1	.439
N of Valid Cases	50		

a. 17 cells (85.0%) have expected count less than 5. The minimum expected count is .16.

Source : Primary Data

INTERPRETATION

The analysis of association through chi-square is presented in the above table. The P Value obtained is 0.338, which is greater than the significant value of 0.05. Hence, the null hypothesis is accepted, concluding that there is no significant association between industry type and data security and privacy concerns. Additionally, it is noted that 85.0% of cells have an expected count less than 5, which may affect the reliability of the chi-square test results.

TABLE 8

THE SUPPORT NEEDED FOR IMPLEMENTATION AND MOST EFFECTIVE AI TECHNOLOGY LOGISTICS AND SUPPLY CHAIN RESILIENCE

Null Hypothesis (Ho):

There is no significant association between the types of support needed for AI implementation and the most effective AI technology for logistics and supply chain resilience.

a. 24 cells (96.0%) have expected count less than 5. The minimum expected count is .16

Source: Primary Data

INTERPRETATION

The analysis of association through chi-square in the table shows a Pearson Chi-Square value of 16.314 with 16 degrees of freedom (df) and a significance value (p-value) of 0.431. Since the p-value is greater than 0.05, the null hypothesis (H_0) is accepted, indicating no significant association between the types of support needed for AI implementation and the most effective AI technology for ensuring logistics and supply chain resilience. Additionally, 96.0% of cells have an expected count of less than 5, which may reduce the reliability of the chi-square test results.

CORRELATION ANALYSIS

TABLE 9

THE IMPACT OF AI ON LOGISTICS AND SCM AND THE MAIN AREA BENEFITING FROM AI

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.314[a]	16	.431
Likelihood Ratio	16.107	16	.446
Linear-by-Linear Association	.175	1	.676
N of Valid Cases	50		

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Spearman's rho	AI's Role in Improving Operational Efficiency	Correlation Coefficient	1.000	.242
		Sig. (2-tailed)	.	.090
		N	50	50
	Most Impactful AI-Driven Solution for Decision-making	Correlation Coefficient	.242	1.000
		Sig. (2-tailed)	.090	.
		N	50	50

INTERPRETATION

The correlation analysis presented in the table examines the relationship between the impact of AI on logistics and supply chain management (SCM) and the main area benefiting from AI. The Pearson correlation coefficient is 0.319 with a p-value of 0.024, indicating a positive and statistically significant correlation at the 0.05 level. This suggests that organizations experiencing a greater impact of AI on logistics and SCM are more likely to identify specific areas benefiting from AI implementation. The sample size for the analysis is 50 respondents.

Main Area Benefiting from AI	Pearson Correlation	.319*	1
	Sig. (2-tailed)	.024	
	N	50	50

*. Correlation is significant at the 0.05 level (2-tailed).

Source :Primary Data

TABLE 10

THE AI'S ROLE IN IMPROVING OPERATIONAL EFFICIENCY AND THE MOST IMPACTFUL AI-DRIVEN SOLUTION FOR DECISION-MAKING

CHALLENGES IN AI IMPLEMENTATION AND REASONS FOR DELAYING AI ADOPTION

	AI's Role in Improving Operational Efficiency	**Most Impactful AI-Driven Solution for Decision-making**

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Source: Primary Data

INTERPRETATION

The Spearman's correlation analysis examines the relationship between AI's role in improving operational efficiency and the most impactful AI-driven solution for decision-making. The correlation coefficient (ρ = 0.242) indicates a weak positive relationship between the two variables. However, the significance value (p = 0.090) is greater than the standard threshold of 0.05, suggesting that the correlation is not statistically significant. With a sample size of 50, it can be concluded that there is no significant association between AI's role in operational efficiency and the most impactful AI-driven solution for decision-making.

TABLE 11

			Biggest Challenge in AI Implementation	**Primary Reason Delaying AI Adoption**
Spearman's rho	Biggest Challenge in AI Implementation	Correlation Coefficient	1.000	.045
		Sig. (2-tailed)	.	.755
		N	50	50
	Primary Reason Delaying AI Adoption	Correlation Coefficient	.045	1.000
		Sig. (2-tailed)	.755	.
		N	50	50

Source: Primary Data

INTERPRETATION

It is clear from the above table shows the results of a Spearman's rho correlation analysis conducted to examine the relationship between the biggest challenges in AI implementation and the primary reasons delaying AI adoption. The correlation coefficient is 0.045, indicating a very weak positive correlation between these variables. The p-value is 0.755, which is greater than the standard significance level of 0.05, suggesting that the relationship is not statistically significant. This implies that the challenges faced in AI implementation do not have a significant impact on the reasons for delaying AI adoption within the sample of 50 respondents.

TABLE 12

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THE FACTORS INFLUENCING FUTURE AI ADOPTION AND PLANS TO INVEST IN ADVANCED AI IN THE NEXT 5 YEAR

INTERPRETATION

			Biggest Challenge in AI Implementation	Primary Reason Delaying AI Adoption
Spearman's rho	Biggest Challenge in AI Implementation	Correlation Coefficient	1.000	.045
		Sig. (2-tailed)	.	.755
		N	50	50
	Primary Reason Delaying AI Adoption	Correlation Coefficient	.045	1.000
		Sig. (2-tailed)	.755	.
		N	50	50

It is clear from the above table shows the results of a Spearman's rho correlation analysis conducted to examine the relationship between the biggest challenges in AI implementation and the primary reasons delaying AI adoption. The correlation coefficient is 0.045, indicating a very weak positive correlation between these variables. The p-value is 0.755, which is greater than the standard significance level of 0.05, suggesting that the relationship is not statistically significant. This implies that the challenges faced in AI implementation do not have a significant impact on the reasons for delaying AI adoption within the sample of 50 respondents.

REGRESSION ANALYSIS

TABLE 13

AI'S IMPACT ON RESILIENCE AND PERCEPTION OF AI'S FUTURE ROLE

Source: Primary Data

INTERPRETATION

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.559	1	1.559	.948	.335[a]
	Residual	78.941	48	1.645		
	Total	80.500	49			

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a. Predictors: (Constant), AI's Impact on Resilience

b. Dependent Variable: Perception of AI's Future Role

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.049	.402		7.588	.000
	AI's Impact on Resilience	-.133	.137	-.139	-.974	.335

a. Dependent Variable: Perception of AI's Future Role

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.139[a]	.019	-.001	1.282	.019	.948	1	48	.335	2.213

a. Predictors: (Constant), AI's Impact on Resilience

b. Dependent Variable: Perception of AI's Future Role

The regression analysis examines the relationship between AI's impact on resilience and the perception of AI's future role. The results indicate a weak negative correlation (R = 0.139) with an R Square value of 0.019, suggesting that only 1.9% of the variance in the perception of AI's future role is explained by AI's impact on resilience. The Adjusted R Square of -0.001 further confirms the model's lack of predictive power. The F-statistic value of 0.948 and a p-value of 0.335 indicate that the model is not statistically significant. Additionally, the B coefficient of -0.133 and a t-value of -0.974 suggest no meaningful effect of AI's impact on resilience. The Durbin-Watson value of 2.213 shows no significant autocorrelation in the residuals. Overall, the findings suggest that AI's impact on resilience does not significantly influence the perception of AI's future role.

SEM MODEL

TABLE 14

THE MODEL FIT SUMMARY FOR AI ADOPTION FACTORS IN LOGISTICS AND SUPPLY CHAIN MANAGEMENT

MODEL FIT SUMMARY

Table No.14.1: CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	13	.004	1	.948	.004
Saturated model	14	.000	0		
Independence model	4	9.449	10	.490	.945

Table No.14.2: Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	1.000	.996	1.118	-17.059	
Saturated model	1.000		1.000		

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Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Independence model	.000	.000	.000	.000	

Table NO.14.3: Parsimony – Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.100	.100	
Saturated model	.000	.000	
Independence model	1.000	.000	

Table No.14.4: NCP

Model	NCP	LO 90	HI 90
Default model	.000	.000	.078
Saturated model	.000	.000	.000
Independence model	.000	.000	10.830

Table No.14.5: FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	.000	.000	.000	.002
Saturated model	.000	.000	.000	.000
Independence model	.189	.000	.000	.217

Table No.14.6: RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.000	.000	.040	.951
Independence model	.000	.000	.147	.591

Table No.14.7: AIC

Model	AIC	BCC	BIC	CAIC
Default model	26.004	28.893		
Saturated model	28.000	31.111		
Independence model	17.449	18.337		

Table N0.14.8: ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	.520	.540	.542	.578
Saturated model	.560	.560	.560	.622
Independence model	.349	.360	.577	.367

Table No.14.9: HOELTER

Model	HOELTER .05	HOELTER .01
Default model	45176	78026
Independence model	97	123

Execution Time Summary

Minimization: .074

Miscellaneous: .284

Bootstrap: .000

Total: .358

Source : Primary Data

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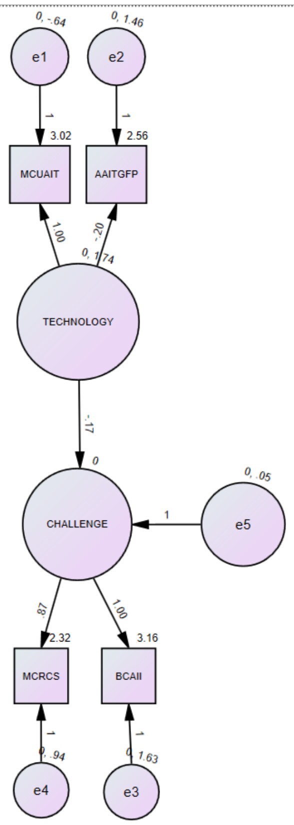

Fig 1: The Structural Equation Model Analysis of AI Adoption Factors in Logistics and Supply Chain Management

INTERPRETATION

The chi-square value (X^2 = 0.004) with 1 degree of freedom (df) is well within the acceptable range, and the p-value of 0.948 indicates no significant discrepancies between the expected and observed covariance structures. Additionally, the CMIN/DF value of 0.004 is far below the threshold of 2.0, confirming an excellent model fit. Consequently, the proposed model is considered a good fit for the data, demonstrating reliable structural relationships. The absence of significant misfit further supports the model's suitability for further analysis and interpretation.

FINDINGS

According to the study's findings, 56.0% of respondents work in the transportation and logistics industry, followed by manufacturing (24.0%), warehouse and distribution (12.0%), and retail and e-commerce (8.0%). In terms of job experience, 48.0% have 10–15 years, 24.0% have 5–10 years, and 14.0% have less than 5 years and more than 15 years. There is no significant link between work experience and AI's ability to reduce human mistakes (p-value = 0.510) or between industry type and AI adoption (p-value = 0.810), according to chi-square analysis. Likewise, there is no discernible correlation between industry type and issues such as data security concerns (p-value = 0.338), AI integration (p-value = 0.213), or the propensity to invest in AI-powered resilience solutions (p-value = 0.065). According to correlation analysis, the areas that benefit from AI and its effect on logistics are positively correlated (correlation coefficient = 0.319, p-value = 0.024). Nevertheless, there is no discernible relationship between AI-driven decision-making solutions and their contribution to operational efficiency (p-value = 0.090). Additionally, the findings of the regression analysis indicate that the view of AI's future role is not significantly impacted by AI's influence on resilience (p-value = 0.335). Overall, the results show that there are few correlations between the adoption of AI and organizational traits, highlighting the necessity of implementing AI strategically to optimize its advantages in supply chain management and logistics.

SUGGESTIONS

Organizations should emphasize the use of AI in logistics and transportation to efficiently reduce costs. Upskilling initiatives can aid in preparing less seasoned staff members for the implementation of AI. Decision-making skills will be improved by raising knowledge of AI's advantages through exhibitions and seminars. Implementation issues may be resolved by offering structured AI integration help, and data security and privacy issues can be reduced by bolstering cybersecurity measures. More progress may be achieved by creating specific Artificial Intelligences solutions for undeveloped industries like e-commerce and manufacturing. AI performance will be continuously monitored and evaluated to guarantee optimization, and exchanging AI ideas and best practices may be facilitated by encouraging cross-industry collaboration.

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CONCLUSION

The study illustrates how AI may improve productivity, save expenses, and facilitate real-time choices in supply chain management and logistics. AI improves last-mile delivery, inventory control, scheduling, and routing while increasing customer happiness. Regardless of its advantages, there are still issues with data security, implementation costs, and technological limitations. AI adoption levels are influenced by facilities sector, and duration of operation. Job experience did not significantly correlate with AI's ability to reduce human mistake, underscoring the need for improved training. Companies should invest in AI solutions, upskill their employees, and improve data management if they want to fully realize AI's promise. Future studies might examine how AI affects logistics and supply chain sustainability over the long run.

REFFERENCE

(1) Xiaofeng Xu and Yangyang He (2024), "Blockchain Application in Modern Logistics Information Sharing: A Review and Case Study Analysis", Volume 35, Issue 7, pp.1-15.

(2) Emmanuel Adeyemi Abaku, Tolulope Esther Edunjobi and Agnes Clare Odimarha (2024), "Theoretical approaches to AI in supply chain optimization: Pathways to efficiency and re silience", International Journal of Science and Technology Research Archive, Volume 06, Issue 01, pp. 092-107.

(3) Olorunyomi Stephen Joel, Adedoyin Tolulope Oyewole, Olusegun Gbenga Odunaiya and Oluwatobi Timothy Soyombo (2024), "Leveraging artificial intelligence for enhanced supply chain optimization: a comprehensive review of current practices and future potentials", International Journal of Management & Entrepreneurship Research, Volume 6, Issue 3.

(4) Pawan Whimg, Arun Velu, Rahul Reddy Nadikattu and Yusuf Jibrin Nadikattu (2024), "Role of AI and IoT in Intelligent Transportation", In book: Artificial Intelligence for future intelligent transportation, pp. 199-220.

(5) Indradevi Ramasamy, Sathya Natjan and Vinod kumar P. Sathyamoorthy (2024), "Does disruptive technology and AI (Artificial Intelligence) influence logistics management?", Multidisciplinary Science Journal

(6) Hicham kalkha, Azeddine Khiat, Ayoub Bahnasse and Ouajji Hassan (2023), "The Rising Trends of Smart E-Commerce Logistics", Volume 11, pp. 33839-33857.

(7) Nurgaliev Ian, Eskander Youssef and Lis Karolina (2023), "The Use of Drones and Autonomous Vehicles in Logistics and Delivery", Volume 57-58, pp. 77-92.

(8) Mohsen Soori, Behrooz Arezoo and Roza Dastres (2023), "Artificial Intelligence, Machine Learning and Deep Learning in Advanced Robotics, A Review", In book: Cognitive Robotics Volume 3, pp. 54-70.

(9) Abderahman Rejeb, Karim Rejeb, Steven J. Simske and Horst Treiblmaier (2023), "Drones for Supply Chain Management and Logistics: A Review and Research Agenda", Internationl Journal of Logistics Research and Applications, Volume 26, No. 6, pp. 708-731.

(10) Himstedt and Meisel (2023), "Parcel Delivery System for City Logistics: A Cost-based Comparison Between Different Transportation Technologies", ISSN: 1865-0368, Volume 16, Issue 1, pp. 1-20.