IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

The Impact Of Artificial Intelligence On Msme Business Operations In Coimbatore District -An Empirical Study

Mr. M.R CHANDRASEKAR

Assistant Professor (Department of Commerce)

Dr. N.G.P Arts and Science College, Coimbatore, India

Mr. K. SUBASH

Student of B.Com(Department of Commerce)

Dr. N.G.P Arts and Science College, Coimbatore, India.

ABSTRACT : This study explores the impact of Artificial Intelligence (AI) on Micro, small, and Medium Enterprises (MSMEs) in Coimbatore district. It prove AI adoption patterns, benefit, and challenge face up by theseEnterprises . Using a assorted-method acting approach, the research gathers primary data through surveys and junior-grade data from official platter. Key determination highlight financial constraint, lack of technical expertness, and base limit as major roadblock. Despite this, AI putz like chatbots, predictive analytics, and NLP are improve efficiency and customer engagement. The discipline emphasise the penury for targeted insurance policy support and acquisition development. It shoot for to bridge over the digital water parting between large and small enterprises. Overall, it provides insights to promote sustainable AI integration in regional MSMEs

Introduction

The rapid advancement of technology, particularly Artificial Intelligence (AI), has importantly transformed the global business sector landscape painting. AI serves as a key driver of organizational modification, enable efficiency, cost optimization, and foundation across sectors. In a post-pandemic world, digital speedup has become essential for concern resilience. MSMEs, especially in India, take on a life-sustaining economic role by contributing 30. 5% to GDP and 48. 1% to exports. These enterprise span diverse sector and show window adaptability despite resource restriction. Coimbatore's industrial landscape shine both traditional manufacturing and emerging applied science, supported by strong educational and research founding. The city's dense industrial bunch and collaborative web foster excogitation and noesis communion. Its legacy of entrepreneurship and proficient science makes Coimbatore an ideal pillowcase for consider AI desegregation. The district's industrial diversity rank from material to precision applied science. This unique environment allow for insights into how AI can metamorphose MSME operations.

Statement of the problem

The implementation of AI in MSMEs front several significant challenges. Financial constraints, such as in high spirits initial investment costs, limited access to financial backing, and uncertain ROI, hinder borrowing. To Boot, ongoing sustentation and raise costs further burden these initiative. Technical limitations, let in inconsistent magnate supply, poor internet connectivity, and discrepant legacy system, make consolidation hard. A lack of equal data storage and calculate base hamper in effect AI training. Moreover, there follow a shortage of skilled AI professionals, and live education course of study are deficient. At Last, the absence of tailor-make AI result and exchangeable frameworks makes it tough for MSMEs to follow and integrate AI confidently.

Objectives of the study

1.To identify the current adoption patterns of AI technologies among MSMEs in Coimbatore district
2.To analyse the challenges and barrier face by MSMEs in carry out AI solutions
3.To judge the performance betterment achieve through AI carrying out in various business functions
4.To appraise the toll-welfare relationship of AI integrating for different scales of MSMEs

Scope of the study

The compass of this field is focused on exploring the integration of Artificial Intelligence (AI) in the procedure of Micro, Lowly, and Medium Enterprises (MSMEs) within Coimbatore District, Tamil Nadu. It will cover various sphere, include manufacture, engineering, and textiles, to empathise how AI engineering are being adopted to amend functional efficiency, productivity, and competitiveness. The cogitation will try out the types of AI tools being go through, such as automation, predictive analytics, and machine acquisition, and value their wallop on business processes. It will also assess the challenges face by MSMEs in dramatize AI, including monetary value, technical expertise, and infrastructure limitations.

RESEARCH METHODOLOGY

The master goal of this research is to research the impingement of unreal intelligence (AI)on business organisation operations within MSMEs (Micro, Minor, and Medium Enterprises) in the Coimbatore district. To achieve this, the subject will employ a mixed-methods approach, integrating both quantitative and qualitative inquiry method. This approach path see a comprehensive understanding of the multifaceted influence of AI on MSMEs, admit usable efficiency, productivity, and decision-making processes.

PERIOD OF THE STUDY

The study is conducted in Coimbatore district. the Period of the study Three months.

LIMITATIONS OF THE STUDY

1. Some of the respondents of the survey may be unwilling to share information,

2. There might be a possible tendency of respondents to give inaccurate or untruthful answers for various reasons

3. The study is confined to Coimbatore only

REVIEW OF LITERATURE

Nallusamy et al. (2022)[1] comport a comprehensive study on digital transformation among make up MSMEs in Tamil Nadu, let in a significant sample from Coimbatore. Their determination uncover that alone 35% of MSMEs had implemented some grade of AI or advanced analytics in their mathematical process. All The Same, those that did reported a 22% melioration in functional efficiency and a 17% reduction in production costs.The source mentions that the acceptance of AI technology, while still at an early stage among Coimbatore MSMEs, is showing positive returns on investment for early adopters.

Kumar and Venkatesh (2023)[2] investigated the barriers to AI acceptance amongst MSMEs in South India.Their inquiry key that MSMEs in Coimbatore faced unique challenge including "modified cognizance of AI practical application relevant to their business context, insufficient technical expertise, and concerns about execution monetary value. The work highlighted that despite these challenges, there was growing interest among MSME proprietor in leverage AI for competitive reward, especially in the engineering and textile sectors that dominate the Coimbatore industrial landscape.

Subramanian and Ramanathan (2022)[3] examined the digital maturity levels of 150 MSMEs in Coimbatore, establishing a five-stage model from "digitally nascent" to "AI-incorporate. " Their research found that only 8% of surveyed go-ahead had gain the gamey stage of integration, while 43% stay on at basic digitization grade. The authors reason out that the digital divide among Coimbatore's MSMEs creates significant private-enterprise disparities, with other AI adopters realise substantial market advantages.

Jayaraman et al. (2021)[4] investigate the role of digital substructure in enabling AI adoption among Coimbatore's rural and peri-urban MSMEs. Their cogitation foreground meaning disparities in connectivity and computing imagination, noting that while Coimbatore's industrial zones benefit from robust digital infrastructure, MSMEs in outlying areas confront substantial roadblock to AI implementation due to connectivity limitations and undependable big businessman supply.

Senthilkumar and Gopalakrishnan (2021)[5] demonstrate specific AI use in textile manufacturing MSMEs in Coimbatore. Their case studies showed AI-enabled quality control systems have reduced defect rates by 28% in participating house. The authors note that "basic machine vision systems for fabric inspection have shown particularly beneficial in Coimbatore's textile units, permitting in-line quality control without increasing labor." The study likewise take down that predictive maintenance applications had reduced machinery downtime by 41% among early adopters.

ANOVA

The table shows the age of the respondents

S .NO	Variable		Sum of Squares	df	Mean Square	F	Sig.
1	level of satisfication	Between Groups	1.108	3	.369	.777	.509
		Within Groups	56.113	118	.476		
		Total	57.221	121			
2	level of satisfication	Between Groups	.072	3	.024	.050	.985
		Total	57.305	118	.486		
3	level of satisfication	Between Groups	57.377	121			
		Within Groups	5.511	3	1.837	1.927	.129
		Total	112.456	118	.953		
			117.967	121			

INTERPRETATION

The ANOVA results show no significant differences in satisfaction levels between the groups. In all three tables, the p-values (0.509, 0.985, and 0.129) are greater than 0.05, indicating that the variation between the groups is not statistically significant. Therefore, we fail to reject the null hypothesis in each case, concluding that the satisfaction levels across the groups are similar.

CHI-SQUARE TEST

This table shows age of the respondents

S .NO	Variable	Value	df	Asymp. Sig. (2-sided)
1	Pearson Chi-Square	6.378[a]	4	.173
2	Likelihood Ratio	6.791	4	.147
3	Linear-by-Linear Association	3.911	1	.048
4	N of Valid Cases	122		

a. 6 cells (60.0%) have expected count less than 5. The minimum expected count is .36.
b. Pearson Chi-Square Value : 6.378
c. Degrees of Freedom (df) : 4
d. Significance (p-value) : .173

INTERPRETATION

The Pearson Chi-Square value tests the independence between gender and the other variable. The p-value (Asymp. Sig.) of 0.173 is greater than 0.05, indicating that there is no significant association between gender and the other variable. In other words, the data suggests that gender does not significantly influence the outcome of the variable you're testing.

Findings

1. The ANOVA test termination across all variable quantity register no statistically substantial difference in satisfaction levels among different old age grouping, as all P-values (0. 509, 0. 985, and 0. 129) are smashing than 0. 05.
2. This indicates that respondents, irrespective of age, incline to have interchangeable levels of satisfaction, intimate uniform service or operational experiences.
3. The Chi-Square test analyze the relationship between gender and the other variable also unveil no pregnant association (p = 0. 173), implying that sex does not influence the outcome variable quantity in this context.
4. The Linear-by-Linear Association P-economic value (0. 048) is marginally below 0. 05, argue a possible decrepit trend, though not strong plenty to interpolate the overall interpretation.
5. A large serving of the Chi-Square test's expect counts are below 5, which reduces the reliability of this test's outcome.

Suggestions:

To enhance succeeding analysis and decision-fashioning, it's suggested that MSMEs research more than qualitative feedback to understand insidious satisfaction factors not get statistically. Since eld and gender do not significantly affect expiation, efforts should sharpen on universal improvements in service quality and AI integration, kind of than demographic targeting. Training and awareness programs cut to all employee could assist strengthen applied science acceptation. Additionally, increase the sample distribution size and check better electric cell distribution in future Chi-Square trial will better dependability. MSMEs can besides conduct segmented analysis establish on line role, experience, or section for deeper insights.

Conclusion

This study highlights the significant role that Artificial Intelligence (AI) is poised to play in the future of MSMEs, particularly in terms of improving efficiency, reducing costs, and optimizing various business operations. While many businesses have adopted AI solutions, challenges remain, especially regarding data privacy concerns, lack of expertise, and finding AI tools that meet specific business needs. Despite these challenges, the overall sentiment toward AI is positive, with many businesses recognizing its potential to improve business outcomes.

Reference

1. Nallusamy, S. , Senthilkumar, V. , & Rajagopal, K. (2022). Digital transformation in fabricate MSMEs: Analytic Thinking of effectuation patterns in Tamil Nadu. International Journal of Production Research, 60(5), 1532-1549.
2. Kumar, S. , & Venkatesh, R. (2023). Barriers to stilted tidings adoption among South Indian MSMEs. Small Enterprise Research, 29(1), 56-74.
3. Senthilkumar, M. , & Gopalakrishnan, T. (2021). Unreal intelligence applications in material manufacture: Guinea Pig study from Coimbatore. Journal of Textile and Apparel Technology and Management, 12(3), 1-15.
4. 14. Subramanian, N. , & Ramanathan, R. (2022). Digital maturity judgement theoretical account for manufacturing MSMEs: Application in Coimbatore industrial zone. International Journal of Information Management, 62, 102437.
5. 15. Jayaraman, V. , Chellappa, S. , & Ramanathan, U. (2021). Digital substructure as enabler for AI acceptation in rural and peri-urban MSMEs: A subject area from Coimbatore region. Telecommunications Policy, 45(7), 102144.