CUSTOMER PERCEPTION TOWARDS ADOPTING PREDICTIVE AI IN MARKETING FOR AN E-COMMERCE ROBOTIC DELIVERY STARTUP: BREAKING DOWN THE HUMANIZING- DEHUMANIZING SPECTRUM

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ABSTRACT:

In the modern age, Marketing is not just about bringing awareness. It's about satisfying a need, even before it arises, and Predictive AI has revolutionized the process by turning the data into foresight, to predict the customer behavior. In the age of reels, where the span of attention has come down, Predictive AI provides personalized recommendations, saving the time, to catch up with the race for lead. But for the business, a single tactic isn't just enough to get the competitive advantage. It's important to have a Plan B and integrate it with Plan A to get a blast of energy. The Plan B is to bring in Novelty in the form of Robotic Delivery System, where Robots & Drones make the delivery process faster, efficient and sustainable. While coming up with a synergy which is humanized in the form of Predictive AI, providing Personalized experience & Dehumanizing in the form of contactless Robotic Delivery System, it is important to know to the customer perception. So, the main aim of this study is to understand Customer perception towards adopting Predictive AI in marketing for an E-commerce Robotic Delivery Startup, Breaking down the Humanizing - Dehumanizing spectrum. A sample of 153 Respondents was considered for the study. A structured Questionnaire was used to collect the Primary Data. Tools such as Frequency, Weighted Mean, T-Test, ANOVA, Correlation and Multiple Regression were used in the study. The study revealed that there exists an Impact of Predictive AI & Robotic Delivery System on Customer Perception mediated by the integrated effect.

Key Words: Predictive AI, Marketing, Robotic Delivery System, Drones, Delivery Logistics, Integrated Effect, Customer Perception

1.INTRODUCTION:

In the modern world, Marketing is the Game changer. It is a strategic driver which fuels innovation to shape the customer behavior & drives the business growth. In Marketing, Content is the King and Engagement is the queen and Predictive AI harmonizes it perfectly by sending the tailored personalized message to the customer at the right time, serving as a magnet to pull

the customers back to the company, to avoid the customer churn, thereby avoiding the loss of revenue to the company. According to IBM, "Predictive artificial intelligence (AI) involves using statistical analysis and machine learning (ML) to identify patterns, anticipate behaviors and forecast upcoming events. Organizations use predictive AI to predict potential future outcomes, causation, risk exposure and more".

According to a McKinsey report, "about 90% of the organizations are planning to invest in Generative Ai in the next 3 years". According to Parkour3, " B2B companies that deploy Predictive AI see a 79% increase in engagement and 47% increase in conversion rate as compared to one size fits all approach.

But in the modern world, using Predictive AI alone doesn't give you a competitive advantage, as there is Predictive Parity Paradox & competitive convergence. This is because the use of Predictive AI has become so pervasive, it's ability to create an edge over the competitor diminishes. The business have to tactically take a step ahead by using Robotic Delivery system to create some hedonic value among the customers. The Robotic Delivery systems are faster, efficient and sustainable. This involves making the order in the E-commerce website/ app, the order gets accepted and it is immediately delivered through the Robots & Drones. These Robotic system delivers the order within minutes, making it seamless.

Thus, by synergizing the two poles of eyes (marketing) and legs (logistics) of a business, creates a Humanizing - Dehumanizing spectrum by providing personalized experience in the form of Predictive AI (Humanizing) and Dehumanizing through Robotic Delivery system. Before introducing this two-pronged force, it is important to know the Customer Perspective, as they are the heart of any business. So, the main aim of this study is to understand Customer perception towards adopting Predictive AI in marketing for an E-commerce Robotic Delivery Startup, Breaking down the Humanizing - Dehumanizing spectrum.

1.1.OBJECTIVE:

- To examine Predictive AI in marketing, Robotic Delivery system, the Integrated Effect and Customer Perception.
- To analyse if there is significant difference among the demographic factors (Gender & Age group) of respondents with respect to factors affecting Customer Perception.
- To determine the relationship between Predictive AI, Robotic Delivery system, Integrated effect and Customer Perception.
- To analyze the impact of Predictive AI, Robotic Delivery system on Customer Perception mediated by Integrated effect.

2.LITERATURE REVIEW:

2.1.Predictive AI:

The Artificial Intelligence revolutionized the customer behavior analysis, impacting the personality, trust, engagement and decision making process from being reactive to becoming proactive (Jain et al., 2024) ; (Madanchian, 2024). The predictive AI identifies the customer preference by examining the search queries, page views, Purchase history and provides personalized recommendations which plays a vital role in optimising the shopping experience, enhancing the user engagement and boosting the sales revenue by presenting the customers, the products of their interest (Ahmad, et. al., 2024; Bello, et. al., 2022; Olaboye, et. al., 2024 ; Patrick Azuka Okeleke et al., 2024). Predictive AI also helps the organizations to segment the customers through their preference and predict their response to optimize the marketing

campaigns. This helps them to identify opportunities, make data driven decisions, optimize their operation, mitigate the risk, which would provide them an edge over the competitors. (Božić, 2023). However, the adversities also exist in the form of "black-box"system, which limits transparency and trust, in addition to ethical concerns relating to data privacy & bias, which underscores the need for robust legal and regulatory framework. (Nkomo & Mupa, 2024).

2.2.Robotic Delivery System:

The Robotic delivery system has the power to revolutionize the delivery logistics by offering solutions to tackle urban challenges like higher mobility and transportation demand, increased traffic congestion, pollution etc.,(Engesser et al., 2023). These Robotic delivery Systems can move using sensors, cameras, and navigation systems which could detect and respond to their environment, without direct human intervention (Bray, G., & Cebon, D. (2022) ; (López Zavaleta et al., 2023). They enhance the efficiency by providing more flexibility, agility, reducing the cost, accelerating the delivery time and satisfy the customer. They also improve sustainability by reducing CO^2 emission, as they run on battery charged electronically (López Zavaleta et al., 2023). However, they also face challenges like Technological failures, energy consumption, cybersecurity etc., (Ayyıldız & Erdogan, 2024).

Based on the literature review, it was found that there were very few studies conducted in India relating to Predictive AI & Robotic Delivery System. So, this paper differentiates itself from the existing studies based on the following: Firstly, This research paper is written in the Indian Context focusing on Chennai, being the Detroit of Asia. Since the city is a major hub for industrial automation, it is necessary to know the customer's intention towards adopting one such technology in the form of Predictive AI & Robotic Delivery System. Secondly, this article aims to break down the Humanizing – Dehumanizing Spectrum in the form of using Predictive AI to Personalize Customer experience, providing a human touch & dehumanizing in the form of delivering the packages through Robotic Delivery System. Thirdly, It also analyses how the customer perception differ based on demographic factors like Gender & age group. The research paper also provides recommendations for the smooth implementation of the system.
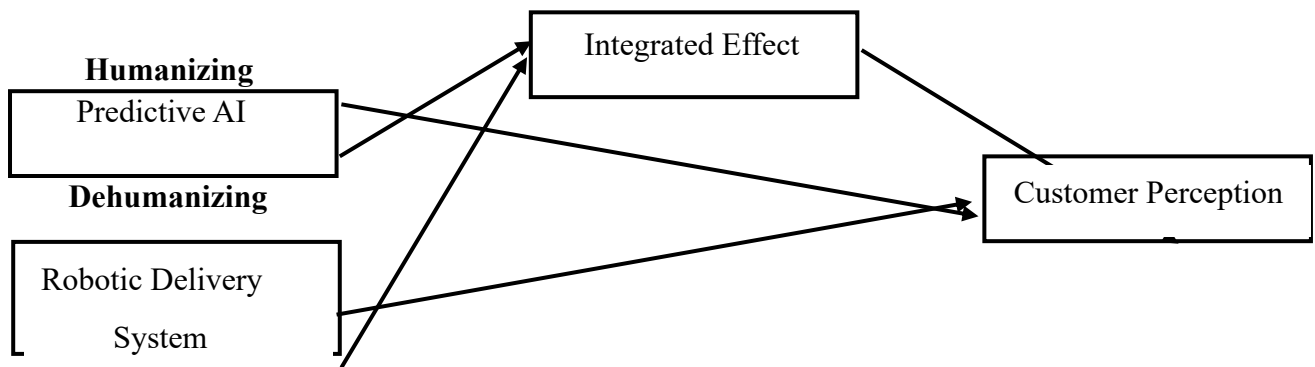
3.CONCEPTUAL MODEL:

Figure 1: Customer Perspective towards Predictive AI in Marketing of an E-Commerce Robotic Delivery Startup

3.1.Predictive AI:

The predictive analytics involves various steps like Collecting data from the customer's past behaviour, usage patterns and preferences, analysing the data, model development, model validation and model deployment, which creates dual impact: Providing Personalized (Humanizing) user interface by providing personalized content, recommendations, thereby saving the time & effort of customers on one hand & on the other hand, helping the marketers segment the market, targeting & positioning the customers by sending relevant marketing content to the right person at the right time (Božić, 2023).

3.2.Robotic Delivery System:

The Robotic Delivery System is a milestone in the history of Delivery Logistics, where a Robot or Drone delivers the packages from essentials like immediate medical aid or day to day necessities to impulsive purchases within minutes, overcoming the inconvenience of Ecommerce businesses in Chennai, which takes on an average 3-5 business days to deliver the product. It is also a way towards contactless (Dehumanizing) - cashless transactions, also a sustainable way to deliver goods to customer, as it runs on battery, charged electronically. The Novelty, efficiency and convenience associated with the Robotic Delivery System creates a high expectations in the minds of customers (Udelv, 2018 ; Lu et al., 2023)

3.3.Integrated Effect:

This factor focuses on integrating Predictive AI (Humanizing element) and Robotic Delivery System (Dehumanizing element). It is concerned with the idea of E-Commerce Startup using Predictive AI to provide personalised content, recommendation & Support thus attracting the customers with a human touch and then creating inquisitiveness in the minds of customers by dehumanizing in the form of Robotic Delivery system,

3.4.Customer Perception:

This is concerned with how the customers perceive the startup which innovates in the form of the above technology. The Positive perception is a chance for the startup to build on the system, which will lead to customer satisfaction and in turn lead to customer loyalty, which can give the startup an edge over its competitors, making them the market leaders.

3.5.HYPOTHESES:

HI: There is significant difference between Male & Female respondents with respect to the factors affecting Customer Perception.

H2: There is significant difference among the age group of respondents with respect to the factors affecting Customer Perception.

H3: There is significant relationship between Predictive AI, Robotic Delivery system, Integrated Experience and Customer Perception.

H4: There is a significant impact of Predictive AI, Robotic Delivery system on Customer Perception mediated by Integrated effect.

4.RESEARCH METHODOLOGY:

An empirical study based on the survey method was conducted to analyse Customer perception towards adopting Predictive AI in marketing for an E-commerce Robotic Delivery Startup. The study used both primary data and secondary methods of data collection. Secondary data was collected from various published articles, journals and websites. Structured questionnaire was used to collect the Primary Data. All these factors were measured on 5-point Likert scale ranging from Strongly agree (5) to Strongly disagree (1). Convenience Sampling technique was used to collect data from 153 respondents. The statistical tools used for the study were Frequency, Weighted Mean, T-Test, ANOVA, Correlation and Multiple Regression. The Reliability of the Questionnaire was tested using Chronbach's alpha with a Reliability score **0.964**, which indicates that there is high reliability among the items in the questionnaire.

5.DATA ANALYSIS AND INTERPRETATION:

5.1.DEMOGRAPHIC PROFILE OF THE RESPONDENTS:

Table no: 1 Demographic Profile of Respondents

S.NO	PARTICULARS	FREQUENCY	PERCENTAGE
1	**GENDER**		
	Male	85	55.6%
	Female	68	44.4%
	Total	153	100%
2	**AGE**		
	Below 20 Years	46	30.1%
	21-30 Years	23	15%
	31-40 Years	30	19.6%
	41-50 Years	38	24.8%
	Above 50 Years	16	10.5%
	Total	153	100%
3	**EDUCATIONAL QUALIFICATION**		
	School Level	21	13.7%
	Under Graduate	80	52.3%
	Post Graduate	35	22.9%
	Professional	17	11.1%
	Total	153	100%
4	**OCCUPATION**		
	Student	52	34%
	Employed – Government / Private	46	30.1%
	Self Employed	44	28.8%
	Unemployed	3	2%

	Retired	8	5.2%
	Total	153	100%
5	**MONTHLY FAMILY INCOME**		
	Below Rs. 20000	41	26.8%
	Rs. 20001-Rs. 40000	39	25.5%
	Rs. 40001-Rs.60000	44	28.8%
	Above Rs. 60000	29	19%
	Total	153	100%

Source: Primary Data

From the Table no:1, it can be inferred that majority of the respondents were Male contributing to 55.6%. The Majority of the respondents were below 20 Years of age (30.1%), followed by the age group 41-50 years of age, contributing 24.8%. When it comes to Educational Qualification, majority of the respondents were graduates (52.3%), followed by Post graduates (22.9%). The Majority of the respondents were students (34%), followed by 30.1% of the respondents, employed in Government / Private Sector. The Monthly Family Income of 28.8% of the respondents were between Rs 40001-Rs 60000, the least being 19% of the respondents with Above Rs.60000 as Monthly Family Income.

5.2.SUMMARY OF THE FACTORS OF STUDY:

The overall weighted mean score of the all the factors is 4.37. This indicates that the respondents have agreed to all the factors given above. The weighted mean score of Predictive AI is 4.32, which indicates that the Personalization provided through Predictive AI enhances customer experience. The weighted mean score of Robotic Delivery System is 4.36, which indicates that customers encourage using Robotic Delivery System, as it saves time. The Integrated Effect has the highest weighted mean score of 4.42, which indicates that respondents believe that the integrated system will enhance the shopping experience and will be the trend in the future. The weighted mean score of Customer Perception is 4.37, which indicates that the Predictive AI & Robotic Delivery System will influence the Customer Perception.

5.3.T-TEST:

HI: There is significant difference between Male & Female respondents with respect to the factors affecting Customer Perception

Table no: 2: Difference between Male & Female with respect to Factors of Customer Perception

Variables	Gender				T Value	P Value
	Male		Female			
	Mean	SD	Mean	SD		
Predictive AI	4.46	0.555	4.14	0.633	3.404	0.001**
Robotic Delivery System	4.52	0.544	4.16	0.633	3.789	<0.001**
Integrated effect	4.63	0.509	4.15	0.602	5.388	<0.001**
Customer Perception	4.56	0.491	4.14	0.624	4.653	<0.001**
Overall	18.17	1.905	16.58	2.259	4.728	<0.001**

Note: ** denotes significant at 1 % level

Source: Primary Data

Since P value is less than 0.01, there is significant Difference between Male & Female respondents with respect to Variables: Predictive AI, Robotic Delivery System, Integrated effect & Customer Perception. The mean score of the male is higher than that of female, denoting the male having better interest towards using Predictive AI for personalised service and adopting to Robotic Delivery System. Thus when integrated, it will provide a superior shopping experience.

5.4.ANOVA:

H2: There is significant difference among the age group of respondents with respect to the factors affecting Customer Perception.

Table no: 3: Difference among the age groups with respect to Factors of Customer Perception

Factors	Age Group in Years					F value	P Value
	Below 20	21-30	31-40	41-50	Above 50		
Predictive AI	3.99[a] (0.593)	4.58[c] (0.471)	4.48[bc] (0.635)	4.47[bc] (0.512)	4.22[ab] (0.649)	6.461	<0.001**
Robotic Delivery System	4.00[a] (0.627)	4.72[c] (0.327)	4.46[bc] (0.588)	4.49[bc] (0.514)	4.35[b] (0.680)	7.799	<0.001**
Integrated effect	4.01[a] (0.560)	4.67[b] (0.426)	4.69[b] (0.502)	4.52[b] (0.552)	4.48[b] (0.655)	10.140	<0.001**
Customer Perception	3.97[a] (0.604)	4.70[b] (0.361)	4.63[b] (0.452)	4.43[b] (0.549)	4.41[b] (0.544)	11.066	<0.001**
Overall	15.97[a] (2.135)	18.67[c] (1.332)	18.27[bc] (2.034)	17.91[bc] (1.914)	17.46[b] (2.298)	10.456	<0.001**

Note:

1. The value within bracket refers to SD

2. ** denotes significant at 1 % level

3. Different alphabet among the Age group in years denotes, significant at 5% level using Duncan Multiple Range Test (DMRT)

Source: Primary Data

Since P value is less than 0.01, there is significant Difference among the age groups with respect to Variables: Predictive AI, Robotic Delivery System, Integrated effect & Customer Perception. Based on Duncan Multiple Range Test, In Predictive AI, The age group of below 20 years significantly differ from the age group 21-30 years. The Age group 31-40 & 41-50 years is not significantly different from 21-30 years or Above 50 years, but it is significantly different from below 20 years. The age group above 50 years is significantly different from 21-30 years. In Robotic delivery System, The age group of below 20 years significantly differ from the age group 21-30 years & Above 50 Years. The Age group 31-40 & 41-50 years is not significantly different from 21-30 years or above 50 years but it is significantly different from below 20 years. In Integrated effect, the age group of below 20 years, is significantly different from the age group 21-30, 31-40, 41-50, Above 50 years. But the age group 21-30, 31-40, 41-50, Above 50 years do not differ from each other. In Customer Perception, the age group of below 20

years, is significantly different from the age group 21-30, 31-40, 41-50, Above 50 years. But the age group 21-30, 31-40, 41-50, Above 50 years do not differ from each other. Overall, The age group of below 20 years significantly differ from the age group 21-30 years & Above 50 Years. The Age group 31-40 & 41-50 years is not significantly different from 21-30 years or Above 50 years, but it is significantly different from below 20 years.

5.5. CORRELATION ANALYSIS:

H3: There is significant relationship between Predictive AI, Robotic Delivery system, Integrated Experience and Customer Perception.

Table no: 4: Relationship between Predictive AI, Robotic Delivery System, Integrated Effect and Customer Perception.

Variables	Predictive AI	Robotic Delivery System	Integrated Effect	Customer Perception
Predictive Ai	1.000	0.832**	0.756**	0.702**
Robotic Delivery System		1.000	0.815**	0.782**
Integrated effect			1.000	0.821**

Note: ** denotes significant at 1 % level
Dependent Variable: Customer Perception
Source: Primary Data

From the Table no.5, it can be inferred that P <0.01 for all the variables, at 1% level of significance. Thus there exists a significant relationship between Predictive AI, Robotic Delivery system, Integrated effect and Customer Perception. Correlation coefficient between Predictive AI & Customer Perception is 0.702, which indicates 49.28% positive relationship between Predictive AI & Customer Perception. Correlation coefficient between Robotic Delivery system & Customer Perception is 0.782, which indicates 61.15% positive relationship between Robotic Delivery system & Customer Perception, while Correlation coefficient between Integrated effect & Customer Perception is 0.821, which indicates 67.4% positive relationship between Robotic Delivery system & Customer Perception. Thus respondents feel that Predictive AI (Humanizing the service) and Robotic Delivery System (Dehumanizing the service), does play a role in influencing customer perception.

5.6. REGRESSION & MEDIATION ANALYSIS USING PROCESS MACRO:

H4: There is a significant impact of Predictive AI, Robotic Delivery system on Customer Perception mediated by Integrated effect.

Table no:5- Regression

	b	SE	t	P	LLCI	ULCI
Constant	0.7467	0.2066	3.6139	0.0004**	0.3384	1.1549
RDS	0.5962	0.0814	7.3208	<0.001**	0.4353	0.7572
PAI	0.2481	0.0813	3.0511	0.0027**	0.0874	0.4087
$R^2 = 0.6841$						
F = 162.3964						
P= <0.001**						

Dependent Variable: Integrated effect						
	b	**SE**	**T value**	**P value**	**LLCI**	**ULCI**
Constant	0.5681	0.2026	2.8036	0.0057**	0.1677	0.9685
RDS	0.3053	0.0893	3.4211	0.0008**	0.1290	0.4817
IE	0.5297	0.0768	6.8966	<0.001**	0.3779	0.6814
PAI	0.0309	0.0788	0.3925	0.6953	-0.1248	0.1867
R^2= 0.7121						
F=122.8347						
P= <0.001**						
Dependent variable: Customer Perception						

Model Relationship with Integrated Effect (Mediator): The model summary shows the R^2 is 0.6841, which indicates that 68.41% of variance in Integrated Effect is explained by Predictive AI & Robotic Delivery System as independent variable and R square value is significant at 1% level. It is also found that both Predictive AI (b=0.2481, t=3.0511, p= 0.0027) & Robotic Delivery System (b=0.5962, t=7.3208, p <0.001) has a significant impact on Integrated Effect.

Model Relationship with Customer Perception (DV): The model summary shows the R square value as 0.7121, which indicates 71.21% of variance in Customer Perception is explained by Robotic Delivery System, Integrated Effect & Predictive AI and the R square value is significant at 1 % level. It is also found that Robotic Delivery System (b=0.3053, t= 3.4211, p= 0.0008) & Integrated Effect (b=0.5297, t=6.8966, p=<0.001) has a significant impact on Customer Perception, While Predictive AI is not statistically significant (p=0.6953), when Robotic Delivery System is added to the model.

Table no:6-Total, Direct and Indirect Effect of Predictive AI on Customer Perception

	Effect	**SE**	**T value**	**P value**	**LLCI**	**ULCI**	**C_CS**
Total effect of PAI on CP	0.1623	0.0875	1.8542	0.0657	-0.0107	0.3353	0.1681
Direct effect of PAI on CP	0.0309	0.0788	0.3925	0.6953	-0.1248	0.1867	0.0320
	Effect	**BootSE**		**BootLLCI**		**BootULCI**	
Indirect effect of PAI on CP	0.1314	0.0716		0.0060		0.2922	

Source: Primary Data

From the table, it can be inferred that the overall impact of Predictive AI on Customer Perception (Total effect= 0.1623, p=0.0657) is not statistically significant at 5% level. On analysing the Direct effect of Predictive AI on Customer Perception, the effect is 0.0309, p=0.6953 which is not significant. But on analysing the Indirect effect of Predictive AI on Customer Perception via Integrated Effect, the effect is 0.1314. The output showed BootLLCI as 0.0060 & BootULCI as 0.2922. Since the 95% confidence interval does not include zero, the indirect effect is statistically significant. Thus it can be concluded that there is a significant impact of Predictive AI on Customer Perception mediated by Integrated Effect.

Table no: 7 -Total, Direct and Indirect Effect of Robotic Delivery System on Customer Perception

	Effect	SE	T value	P value	LLCI	ULCI	C_CS
Total effect of RDS on CP	0.6212	0.0877	7.0829	<0.001**	0.4479	0.7944	0.6421
Direct effect of RDS on CP	0.3053	0.0893	3.4211	0.0008**	0.1290	0.4817	0.3157
** denotes significant at 1% level							
	Effect		BootSE		BootLLCI		BootULCI
Indirect effect of RDS on CP	0.3158		0.0972		0.1446		0.5284

Source: Primary Data

From the table, it can be inferred the overall impact of Robotic Delivery System on Customer Perception (Total effect= 0.6212, P <0.001) is significant. On analysing the direct effect of Robotic Delivery System on Customer Perception, The effect is 0.3053, p=0.0008, which is significant at 1 % level. On analysing the indirect effect of Robotic Delivery System on Customer Perception through Integrated Effect, the effect is 0.3158. The output also showed BootLLCI as 0.1446 and BootULCI is 0.5284. Since the interval doesnot include zero, the indirect effect is statistically significant. Thus, it can be concluded that there is a significant impact of Robotic Delivery System on Customer Perception mediated by Integrated Effect.

6.LIMITATIONS & SCOPE FOR FURTHER STUDY:

1. The study was limited to 153 respondents. Thus, further study can be done with a greater sample size.
2. The present study was limited to the respondents from Chennai. So, the results of the study will be based on this particular demography. Hence, further study can focus on expanding the research to other geographical locations.
3. This study reveals a common perspective on blending Predictive AI in Marketing & The Robotic Delivery System for logistics. Further study can focus on a specific business or Startup and evaluate the pros and Cons.
4. This is a Quantitative study. Further research can focus on Qualitative & Mixed Method to get a deeper perspective.

7. DISCUSSION & RECOMMENDATIONS:

- From the marketers point of view, The marketers should portray themselves as a Tech savvy company in the minds of the customers, coming up with innovative solutions.
- While using Predictive AI, The E-Commerce companies should ensure Transparency and Privacy, so that the information is not misused & shared to the third party.
- There should be a proper tracking system even for Robotic Delivery.
- The price of such services should also be affordable as the traditional system.
- The Government should bring in strict regulations with respect to Predictive AI & the Robotic Delivery system and ensure Privacy and Control.
- Using the Robotic Delivery System is also a way towards cashless transaction.
- The Chatbots can help in solving customer queries instantly. By analyzing these queries, the Predictive AI helps in understanding the Customer Behaviour and in case

of product return, the Robotic delivery system can effectively help in Reverse Logistics, taking the goods back to the Logistic Manager.

8.CONCLUSION:

Predictive AI has taken the driver seat in most organizations. It helps the marketers call the shots effectively. But in the fast moving world, it is necessary to pioneer beyond competition. So, this research paper aims at understanding the Customer Perception towards Humanizing the marketing process by using Predictive AI and integrating it with a novel concept of Robotic Delivery system. The findings show that there is a significant impact of Predictive AI & Robotic Delivery System on Customer Perception mediated by the Integrated Effect. On analyzing the demographic profile of the respondents, it was found that the male show a better interest towards adopting these innovative technologies. There is also significant differences among the age group with respect to the factors. Thus from the study, it is understood that the AI Powered Chatbots answering to the customer queries, Personalized recommendations provided by the Predictive AI & the Personalized emails makes the people feel valued as customers. The Robotic Delivery System not only brings in Novelty, but also speeds up the delivery process, helping in delivering not only day to day essentials but also life saving medical aid in a sustainable way. Thus the combination of Smart AI prediction & efficient Robotic Delivery system makes a superior shopping experience. The businesses should ensure transparency & privacy, so that the data collected is not misused. The Government should also bring in strict regulations in place to ensure Control & Privacy, thus helps in embracing the technological innovation in the most optimum & safest manner.

REFERENCE:

- Ayyildiz, E., & Erdogan, M. (2024). Addressing the challenges of using autonomous robots for last-mile delivery. *Computers & Industrial Engineering, 190*, 110096. https://doi.org/10.1016/j.cie.2024.110096

- Božić, V. (2023). **AI and predictive analytics**. *Journal of Sports Industry & Blockchain Technology, 1*(11), 1-10

- Engesser, V., Rombaut, E., Vanhaverbeke, L., & Lebeau, P. (2023). Autonomous Delivery Solutions for Last-Mile Logistics Operations: A Literature Review and Research Agenda. In *Sustainability (Switzerland)* (Vol. 15, Issue 3). MDPI. https://doi.org/10.3390/su15032774

- López Zavaleta, V. M., Salinas Santiago, J. E., García Gutierrez, W. F., García Charcape, A. P., & Ordoñez Reyes, A. B. (2023). IMPACT OF AUTONOMOUS MACHINES IN THE SUPPLY CHAIN: A SYSTEMATIC REVIEW BY SECTORS AND TYPES. *Gestión de Operaciones Industriales*, *2*(1), 80–99. https://doi.org/10.17268/goi4.0.2023.05

- Lu, M., Huang, C., Wang, R., & Li, H. (2023). Customer's Adoption Intentions toward Autonomous Delivery Vehicle Services: Extending DOI Theory with Social Awkwardness and Use Experience. *Journal of Advanced Transportation*, *2023*. https://doi.org/10.1155/2023/3440691

- Madanchian, M. (2024). Generative AI for Consumer Behavior Prediction: Techniques and Applications. In *Sustainability (Switzerland)* (Vol. 16, Issue 22). Multidisciplinary Digital Publishing Institute (MDPI). https://doi.org/10.3390/su16229963

- Nkomo, N., & Mupa, M. N. (2024). *The Impact of Artificial Intelligence on Predictive Customer Behaviour Analytics in E-commerce: A Comparative Study of Traditional and AI-driven Models*. https://www.researchgate.net/publication/386135078
- Patrick Azuka Okeleke, Daniel Ajiga, Samuel Olaoluwa Folorunsho, & Chinedu Ezeigweneme. (2024). Predictive analytics for market trends using AI: A study in consumer behavior. *International Journal of Engineering Research Updates*, *7*(1), 036–049. https://doi.org/10.53430/ijeru.2024.7.1.0032

Web Resources:
- https://www.ibm.com/think/topics/predictive-ai
- https://www.parkour3.com/en/blog/how-ai-is-transforming-the-roi-of-b2b-marketing-campaigns?hl=enGB#:~:text=Predictive%20AI%20automatically%20adapts%20each, Precise%20multi%2Dpoint%20attribution