40. "Artificial Intelligence in Banking Sector Through Innovative CRM Implementation to Enhance Customer Experience"

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ABSTRACT:

"AI Revolutionising Banking in CRM" describes the way artificial intelligence (AI) has transformed the Customer knowledge management. Artificial Intelligence (AI) is transforming the banking industry by empowering institutions to automate procedures, boost productivity, strengthen their ability to make decisions, and provide clients with more seamless and personalised experiences.

This study focusses on AI integration CRM in banking sector for Enhance Customer Experience. The goal are to examine AI- CRM Component and provide a thorough framework for the banking sector. Data is gathered from papers, assessments of the literature, and expert's comments. The evaluation includes an examination of CRM's customer data management, engagement techniques, analytics, workflow automation, sales and marketing automation, customer care, mobile CRM, segmentation, and feedback systems.

The survey concludes customer Awareness on AI integrated CRM is very essential for the success implementation of innovative technology. This framework strives to fulfil changing consumer and banking sector expectations by focusing on business goals, data collection and processing in real time, Technology awareness and adoptability, personnel training, meticulous management of consumer data, transparent evaluation.

KEYWORDS:

Artificial Intelligence, Banking Sector, CRM Frameworks, Customer Awareness.

Introduction:

AI in Banking activities covers the application of artificial intelligence (AI)-driven technology and solutions to a range of banking activities, including fraud detection, risk management, customer support, and service personalization. AI integration in CRM become increasingly important in the banking sector. The use of AI Technologies, such as Machine Learning, has had a significant impact on CRM and Marketing activities in the banking and financial sector . In the banking industry, AI integration with CRM is becoming more and more crucial. CRM and marketing initiatives in the banking and finance industry have been greatly impacted by the application of AI technologies, such as machine learning. Profitability, service quality, and client retention are all being enhanced by machine learning tools .Banks are now able to improve customer experiences, personalize customer contacts, and increase operational efficiency thanks to the integration of AI into CRM procedures. AI has also been utilized to create specialized CRM systems, such as those for customer development, retention, attraction, and identification.

Review of Literature:

Several Studies have been carried out to evaluate the effectiveness of AI-CRM integration in banking sector. Guru P. et.al (2023) in this paper the researcher focuses on the implementation of artificial intelligences in enhancing customer relationship management in private banking companies. The study aim to investigate the key facets of AI that influence CRM. It plan to conduct a Quantitative analysis using IBM SPSS and produce a comprehensive of the findings. The paper concludes there is a mean difference between improving CRM and using AI to achieve customer engagement, quick query resolution, personalised customer experience, and improved customer value. According to 1Parag Shukla et.al (Jan 2022) a comprehensive model of AI, CRM, and service quality in the Indian banking sector is conceptualized.

Higher earnings, individualized experiences, quick innovation cycles, strategic CRM, and unique Omni-channel experiences are all possible outcomes of using AI technologies in banks. International journal of computer application (Jan 2022) The report offers information on how banks can improve customer satisfaction and overall organisational success by employing CRM methods and machine learning technology. The study's conclusions demonstrated the critical role that customer relationship management, or CRM, plays in the acquisition and retention of clients in the banking industry. Kevin J.A. Thomas (2023).

In this study, to reduce errors in banking Operations, the banks are increasingly adopting AI for personalised customer services. Furthermore, the implementation of AI in banking sector has been very effective in reducing NPA of banks.

Objectives of the Study:

- To examine AI- CRM Component and provide a framework for the banking sector.
- To investigate methods to improve the customer experience through the integration of AI with CRM systems

Data Collection:

AI Components:

Natural Language Processing (NLP) This processing is used to analyse the customer inquiries, complaints and feedback .It helps the management to understand the customer perception about the organisation . Emails, Chatbots or social media are some of the sources of information available for collection of data about the customer.

Machine learning Models: AI is purely based on the Machine learning programming for fraud detection, credit risk assessment, churn prediction, customer segmentation, personalised product recommendations etc.,

Customized Product Suggestions: AI systems examine consumer information, such as past purchases, demographics, and usage behaviours, to provide customized product suggestions. For instance, a CRM system driven by AI may recommend customized financial goods, like loans or investment opportunities, based on the requirements and preferences of each individual client.

Proactive Communication: AI-driven CRM platforms provide proactive customer communication via chatbots, email, SMS, and mobile apps, among other channels. By sending tailored messages, notifications, and reminders about account activity, impending payments, or pertinent financial offers, these systems can increase client happiness and engagement.

Chatbots and Virtual Assistants: When combined with AI-powered CRM systems, chatbots and virtual assistants offer consumers immediate support by addressing their questions, supplying account details, and assisting them with banking procedures. These AI-powered user interfaces provide a smooth.

Speech Recognition: Banks may analyse call centre discussions, collect insightful data, and enhance the quality of their customer service by including speech recognition in addition to text-based interactions.

Image processing: By combining image processing techniques with AI algorithms, fraud detection, KYC (Know Your Customer) procedures, and document verification can all be streamlined and security improved.

AI –CRM Integration:

- APIs and Web Services: CRM systems usually provide APIs for interacting with other systems. AI functionalities can be developed as standalone modules or micro services, and then integrated with the CRM system via web services or application programming interfaces (APIs).
- Middleware: These applications can act as a link between the CRM system and AI components. They offer communication across different applications and systems, synchronization of data, and workflow coordination.

- Custom Development: Depending on the specific requirements and the bank's existing infrastructure, solutions for custom integration may be developed. In order to seamlessly integrate AI capabilities into the CRM system, it is necessary to build and install connections, adapters, or plugins.

Methods to improve the customer experience through the integration of AI with CRM systems:

A number of crucial actions and factors need to be taken into account while implementing an AI-powered Customer Relationship Management (CRM) component in the banking industry. A detailed process framework is provided below:

Business Goal: The first step in improving a customer relationship is to understand the organization's goal.

The organization should effectively plan for AI-CRM integration in order to achieve the institution's goals, which include increasing customer happiness, loyalty, and retention as well as automating customer service-related processes.

Data Collection and Analysis:

Data integration and collection: Gathering information from various sources and using machine learning algorithms allows management to forecast consumer behaviour. It also ensures compliance with data protection laws like the CCPA and GDPR.

AI Model Development:

By Creating machine learning models such as Clustering algorithms, Discard prediction models, Collaborative methods etc., with specialized applications in mind. Use of past data to train the models, and need to apply right criteria to assess how well they performed.

AI Integration with CRM Platform: effortlessly incorporate AI models into the current CRM platform. By offering intuitive user experience the AI driven insights and suggestions may be accessed straight from the CRM.

Real Time Data Processing:

Need to develop real-time data processing tools to facilitate prompt decision-making and customized consumer engagements. For real-time data input and processing, need to use streaming data technologies such as Apache Kafka or Apache Flink.

Customization and Interaction with Customers:

Through Email campaign, mobile apps, Call centres and website interactions AI- driven insights to customization and interaction with customers. To analyse client sentiment and feedback using natural language processing (NLP) techniques helps to provide proactive customer support and issue resolution.

Compliance and Security:

Verify adherence to legal mandates regarding data security and privacy. Need to apply strong security measures in place to guard private client data and stop illegal access.

Training and Change Management:

Need to provide the personnel with complete guidance on how to operate the AI-powered CRM component. Necessary to promote the use of AI-driven tools and procedures and cultivate a culture of data-driven decision-making throughout the company.

Descriptive Statistics:

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-27	78	50.3	50.3	50.3
	28-37	31	20.0	20.0	70.3
	38--47	29	18.7	18.7	89.0
	48-57	11	7.1	7.1	96.1
	58-68	6	3.9	3.9	100.0
	Total	155	100.0	100.0	

Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Higher Studies	11	7.1	7.1	7.1
	UG	84	54.2	54.2	61.3
	PG	38	24.5	24.5	85.8
	Doctrate	4	2.6	2.6	88.4
	Professional	18	11.6	11.6	100.0
	Total	155	100.0	100.0	

Occupation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Student	70	45.2	45.2	45.2
	Entrepreneur	11	7.1	7.1	52.3
	Salaried Person	74	47.7	47.7	100.0
	Total	155	100.0	100.0	

Understanding of AI in Banking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	25	16.1	16.1	16.1
	Very Good	43	27.7	27.7	43.9
	Good	58	37.4	37.4	81.3
	Average	19	12.3	12.3	93.5
	Poor	10	6.5	6.5	100.0
	Total	155	100.0	100.0	

Awareness of AI in Banks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	124	80.0	80.0	80.0
	No	31	20.0	20.0	100.0
	Total	155	100.0	100.0	

Bank Interaction Frequency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Daily	21	13.5	13.5	13.5
	Weekly	32	20.6	20.6	34.2
	Monthly	84	54.2	54.2	88.4
	Annually	18	11.6	11.6	100.0
	Total	155	100.0	100.0	

Most Used Customer Service

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Phone support	45	29.0	29.0	29.0
	Live chat (chatbot)	11	7.1	7.1	36.1
	Email support	13	8.4	8.4	44.5
	Mobile App Support	64	41.3	41.3	85.8
	Social Media	5	3.2	3.2	89.0
	Online Help Centre	7	4.5	4.5	93.5
	Automated phone system	10	6.5	6.5	100.0
	Total	155	100.0	100.0	

Typical Interaction Mode

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	In person	61	39.4	39.4	39.4
	Online banking	30	19.4	19.4	58.7
	Mobile app	53	34.2	34.2	92.9
	Phone calls	11	7.1	7.1	100.0
	Total	155	100.0	100.0	

Perception of AI CRM

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Social media	33	21.3	21.3	21.3
	Bank websites	35	22.6	22.6	43.9
	Mobile app	59	38.1	38.1	81.9
	Messages	15	9.7	9.7	91.6
	Email from Bank	3	1.9	1.9	93.5
	Newspaper	8	5.2	5.2	98.7
	Magazines	2	1.3	1.3	100.0
	Total	155	100.0	100.0	

Improvements with AI

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	111	71.6	71.6	71.6
	No	44	28.4	28.4	100.0
	Total	155	100.0	100.0	

Trust in AI Systems

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	50	32.3	32.3	32.3
	No	28	18.1	18.1	50.3
	Somewhat	77	49.7	49.7	100.0
	Total	155	100.0	100.0	

Preference for Personalized Offers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	105	67.7	67.7	67.7
	No	50	32.3	32.3	100.0
	Total	155	100.0	100.0	

Feelings about AI Analysing Behaviour

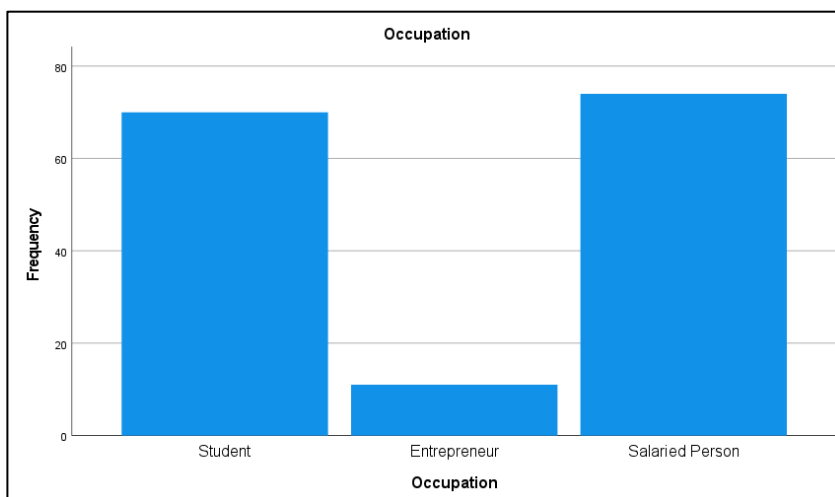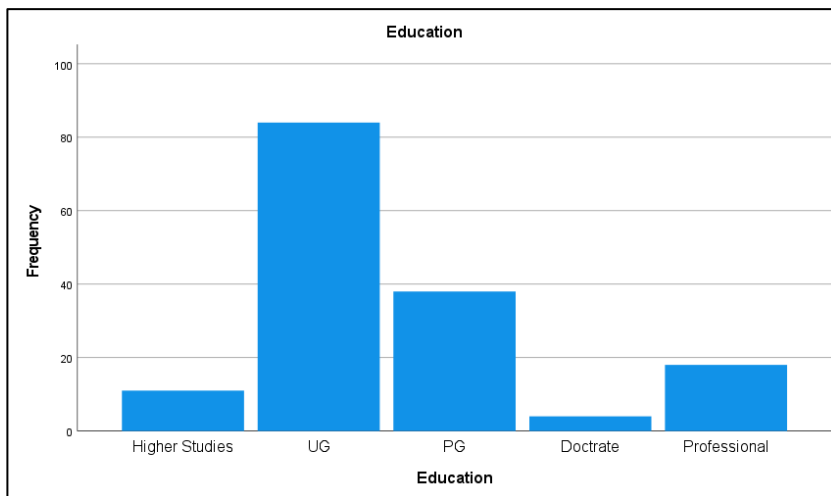|		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Dissatisfied	9	5.8	5.8	5.8
	Dissatisfied	13	8.4	8.4	14.2
	Nutral	65	41.9	41.9	56.1
	Satisfied	49	31.6	31.6	87.7
	Very Satisfied	19	12.3	12.3	100.0
	Total	155	100.0	100.0	

Concerns about Data Privacy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not concerned at all	12	7.7	7.7	7.7
	Slightly concerned	16	10.3	10.3	18.1
	Somewhat concerned	42	27.1	27.1	45.2
	Moderately concerned	41	26.5	26.5	71.6
	Extremely concerned	44	28.4	28.4	100.0
	Total	155	100.0	100.0	

Satisfaction with AI CRM

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Dissatisfied	4	2.6	2.6	2.6
	Dissatisfied	16	10.3	10.3	12.9
	Nutral	72	46.5	46.5	59.4
	Satisfied	52	33.5	33.5	92.9
	Very Satisfied	11	7.1	7.1	100.0
	Total	155	100.0	100.0	

Charts:

Age

Education

Occupation

Understanding of AI in Banking

Awareness of AI in Banks

Bank Interaction Frequency

Most Used Customer Service

Typical Interaction Mode

Perception of AI CRM

Improvements with AI

Trust in AI Systems

Preference for Personalized Offers

Feelings about AI Analyzing Behavior

Concerns about Data Privacy

Satisfaction with AI CRM
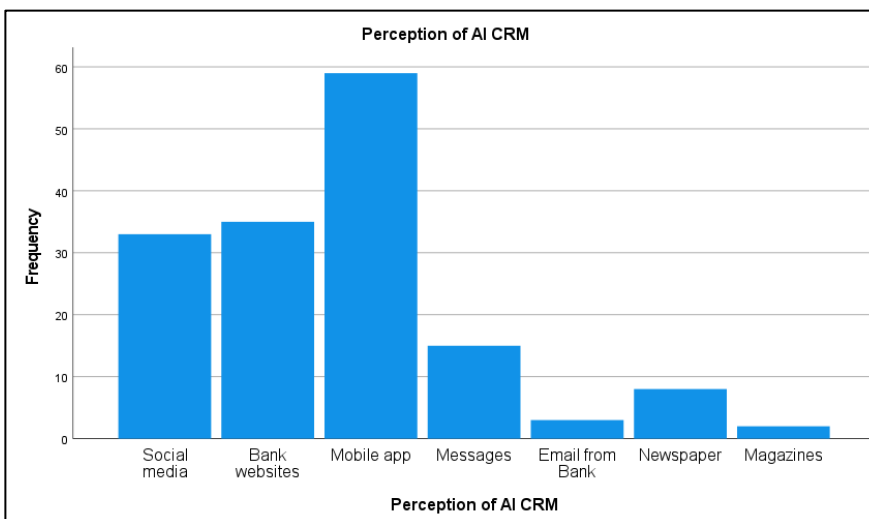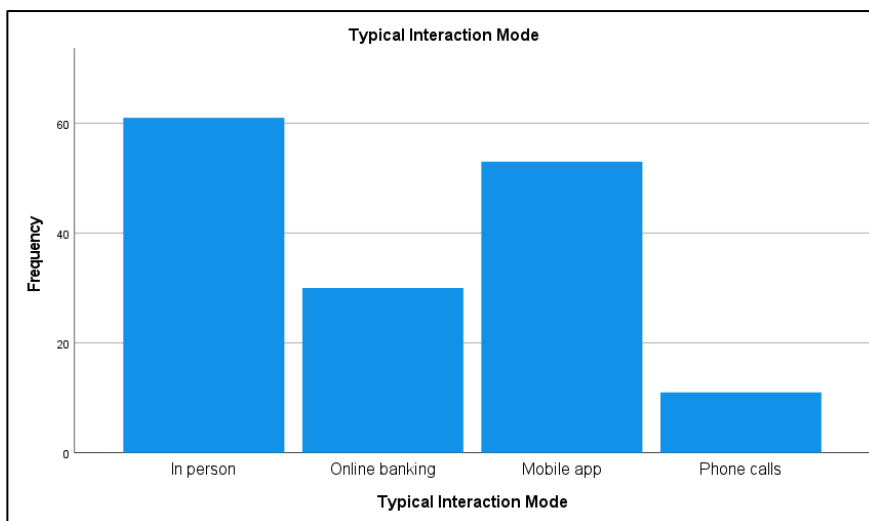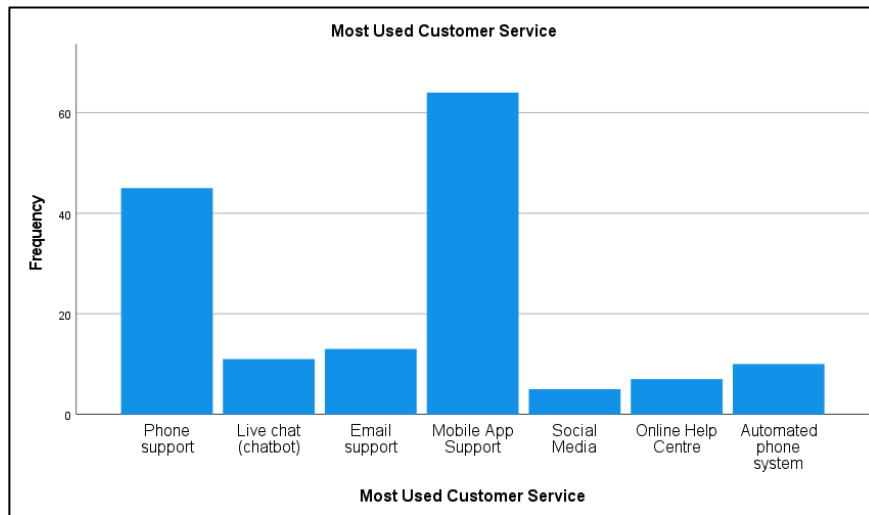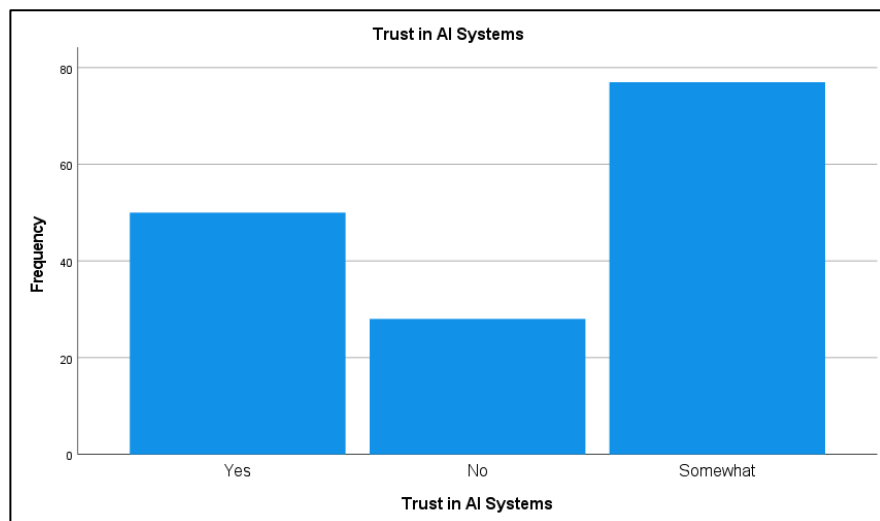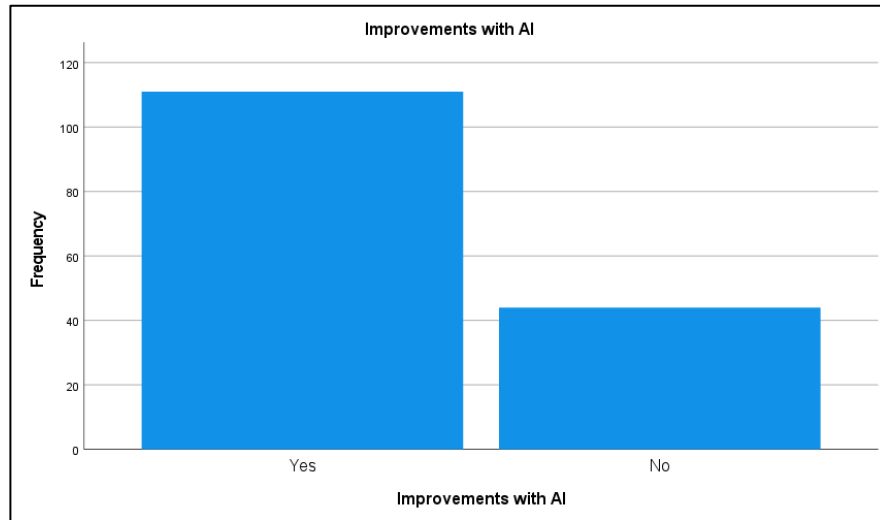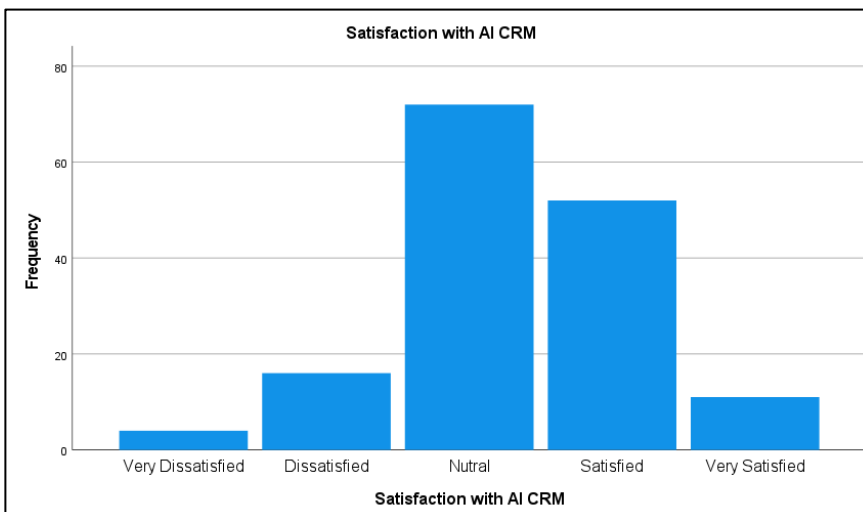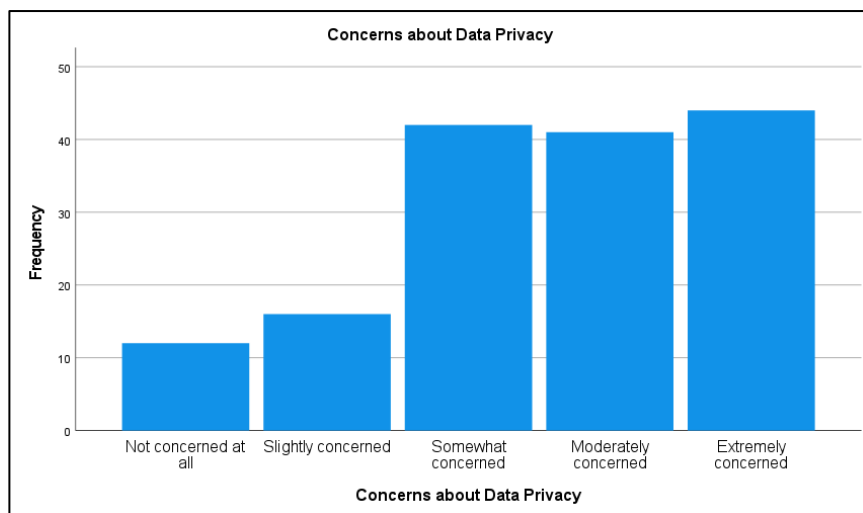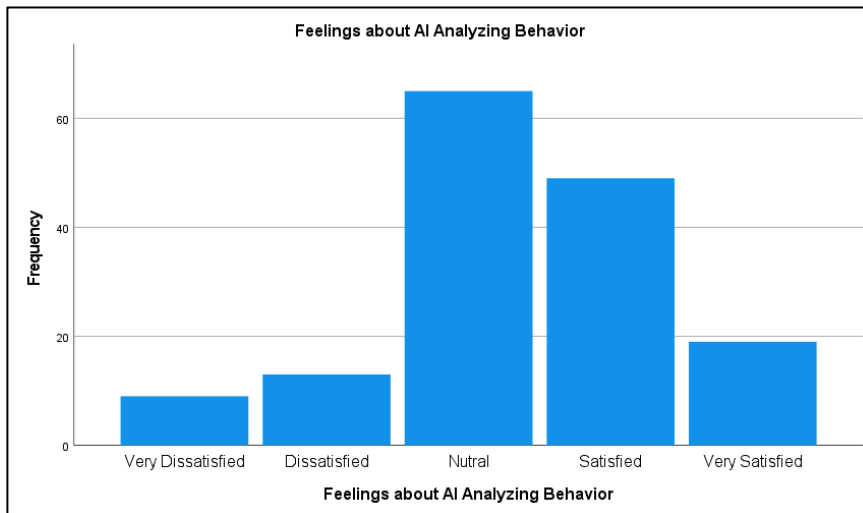
T-TEST:

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Feelings about AI Analyzing Behavior	155	3.36	.999	.080
Concerns about Data Privacy	155	3.57	1.222	.098
Satisfaction with AI CRM	155	3.32	.852	.068

One-Sample Test:

	N	Mean	Std. Deviation	Std. Error Mean
Feeling about AI Analysing Behaviour	155	3.36	.999	.080
Concerns about Data Privacy	155	3.57	1.222	.098
Satisfaction with AI CRM	155	3.32	.852	.068

One-Sample Test						
	Test Value = 3					
	t	**df**	**Sig. (2-tailed)**	**Mean Difference**	**95% Confidence Interval of the Difference**	
					Lower	**Upper**
Feelings about AI Analysing Behaviour	4.501	154	.000	.361	.20	.52
Concerns about Data Privacy	5.851	154	.000	.574	.38	.77
Satisfaction with AI CRM	4.712	154	.000	.323	.19	.46

Descriptives								
		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
Feelings about AI Analysing Behaviour	18-27	78	3.65	.991	.112	3.43	3.88	1	5
	28-37	31	3.10	.790	.142	2.81	3.39	1	4
	38-47	29	3.38	.677	.126	3.12	3.64	2	5
	48-57	11	2.09	1.300	.392	1.22	2.96	1	4
	58-68	6	3.17	.753	.307	2.38	3.96	2	4
	Total	155	3.36	.999	.080	3.20	3.52	1	5

Descriptives		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
Concerns about Data Privacy	18-27	78	3.38	1.209	.137	3.11	3.66	1	5
	28-37	31	4.13	1.088	.195	3.73	4.53	2	5
	38-47	29	3.66	1.203	.223	3.20	4.11	1	5
	48-57	11	3.73	1.421	.428	2.77	4.68	1	5
	58-68	6	2.50	.548	.224	1.93	3.07	2	3
	Total	155	3.57	1.222	0.098	3.38	3.77	1	5
Satisfaction with AI CRM	18-27	78	3.50	.864	.098	3.31	3.69	1	5
	28-37	31	3.32	.702	.126	3.07	3.58	2	4
	38-47	29	3.21	.620	.115	2.97	3.44	2	5
	48-57	11	2.36	1.120	.338	1.61	3.12	1	4
	58-68	6	3.33	.816	.333	2.48	4.19	2	4
	Total	155	3.32	.852	.068	3.19	3.46	1	5

ANOVA:

AGE

ANOVA		Sum of Squares	df	Mean Square	F	Sig.
Feelings about AI Analysing Behaviour	Between Groups	26.834	4	6.709	7.928	.000
	Within Groups	126.934	150	.846		
	Total	153.768	154			
Concerns about Data Privacy	Between Groups	19.718	4	4.929	3.518	.009
	Within Groups	210.179	150	1.401		
	Total	229.897	154			
Satisfaction with AI CRM	Between Groups	12.959	4	3.240	4.913	.001
	Within Groups	98.912	150	.659		
	Total	111.871	154			

Effect of Education:

Descriptive		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Feelings about AI Analysing Behaviour	Higher Studies	11	3.18	1.401	.423	2.24	4.12	1	5
	UG	84	3.35	1.047	.114	3.12	3.57	1	5
	PG	38	3.45	.860	.140	3.16	3.73	1	5
	Doctorate	4	3.75	.500	.250	2.95	4.55	3	4
	Professional	18	3.28	.895	.211	2.83	3.72	2	5
	Total	155	3.36	.999	.080	3.20	3.52	1	5
Concerns about Data Privacy	Higher Studies	11	2.91	1.300	.392	2.04	3.78	1	5
	UG	84	3.36	1.219	.133	3.09	3.62	1	5
	PG	38	4.05	.899	.146	3.76	4.35	3	5
	Doctorate	4	3.00	1.155	.577	1.16	4.84	2	4
	Professional	18	4.11	1.367	.322	3.43	4.79	1	5
	Total	155	3.57	1.222	.098	3.38	3.77	1	5
Satisfaction with AI CRM	Higher Studies	11	3.27	1.421	.428	2.32	4.23	1	5
	UG	84	3.27	.855	.093	3.09	3.46	1	5
	PG	38	3.47	.647	.105	3.26	3.69	2	5
	Doctorate	4	3.25	.500	.250	2.45	4.05	3	4
	Professional	18	3.28	.895	.211	2.83	3.72	2	5
	Total	155	3.32	.852	.068	3.19	3.46	1	5

ANOVA		Sum of Squares	df	Mean Square	F	Sig.
Feelings about AI Analysing Behaviour	Between Groups	1.387	4	.347	.341	.850
	Within Groups	152.380	150	1.016		
	Total	153.768	154			
Concerns about Data Privacy	Between Groups	24.029	4	6.007	4.377	.002
	Within Groups	205.867	150	1.372		
	Total	229.897	154			
Satisfaction with AI CRM	Between Groups	1.152	4	.288	.390	.815
	Within Groups	110.719	150	.738		
	Total	111.871	154			

Effect of Occupation:

Descriptives		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Feelings about AI Analyzing Behavior	Student	70	3.60	.984	.118	3.37	3.83	1	5
	Entrepreneur	11	2.73	.905	.273	2.12	3.33	1	4
	Salaried Person	74	3.23	.973	.113	3.00	3.46	1	5
	Total	155	3.36	.999	.080	3.20	3.52	1	5
Concerns about Data Privacy	Student	70	3.37	1.144	.137	3.10	3.64	1	5
	Entrepreneur	11	3.91	1.300	.392	3.04	4.78	2	5
	Salaried Person	74	3.72	1.266	.147	3.42	4.01	1	5
	Total	155	3.57	1.222	.098	3.38	3.77	1	5
Satisfaction with AI CRM	Student	70	3.44	.862	.103	3.24	3.65	1	5
	Entrepreneur	11	3.27	1.009	.304	2.59	3.95	2	4
	Salaried Person	74	3.22	.815	.095	3.03	3.41	1	5
	Total	155	3.32	.852	.068	3.19	3.46	1	5

ANOVA		Sum of Squares	df	Mean Square	F	Sig.
Feelings about AI Analyzing Behavior	Between Groups	9.691	2	4.846	5.112	.007
	Within Groups	144.076	152	.948		
	Total	153.768	154			
Concerns about Data Privacy	Between Groups	5.604	2	2.802	1.899	.153
	Within Groups	224.292	152	1.476		
	Total	229.897	154			
Satisfaction with AI CRM	Between Groups	1.877	2	.939	1.297	.276
	Within Groups	109.994	152	.724		
	Total	111.871	154			

Conclusion:

Awareness on AI integrated CRM is very essential for the success implementation of innovative technology. The framework prioritizes business goals, data collection and processing in real time, Technology awareness and adoptability ,personnel training,

meticulous management of consumer data, transparent evaluation. By focusing on these elements, bank can not only enhance customer satisfaction and loyalty but also achieve operational excellence in a competitive landscape. This research contributes valuable insights to the AI- CRM integration in banking sector. Information quality, system fit, and organizational fit were found to have a substantial impact on the installation of AI integrated CRM systems for B2C relationship management. The success and failure of these systems' implementation in businesses were also evaluated Cybercriminals are extremely knowledgeable about police and enforcement agency procedures, and their ability to replicate real-looking offices, clone websites of regulatory agencies and courts, and spoof social media handles is enough to scare people these days, especially in light of the frequent reports in the media about how police from one state can arrest someone in another, arrange for transportation, and imprison them in a place where they have no family, support system, or other resources. [1]