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The Capabilities of Organizations in Implementing Artificial Intelligence: In Light of Data Incomprehensibility and Dependency

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Abstract
The study aims to assess organizational problem-solving capacity, optimize AI implementation, and analyze data incomprehensibility and dependency. It provides recommendations for organizations, academics, and policymakers on overcoming challenges in deploying AI in large data volumes. As AI's influence grows, it's crucial for systems to be reliable and trustworthy. The research also explores how companies can use AI to solve problems, understand challenges, protect data, and ensure ethical use of AI technologies for society
Keywords: Artificial Intelligence, AI, Capabilities

1. Introduction

Artificial Intelligence (AI) is transforming the modern technological age, offering benefits like error-free processing, round-the-clock availability, fast decision-making, and industry problem-solving. AI systems, developed using data predictive models or machine learning algorithms, address industrial gaps in affordability, efficiency, and customer experiences. However, implementing AI in organizations faces challenges like data availability and quality, requiring robust, efficient handling of large data sets.

1.1. Problem Statement & Objectives of the study

The thesis explores the challenges organizations face when implementing AI systems with incomprehensible and dependent data, outlines strategies to overcome these issues, and evaluates the impact of organizational capabilities on successful AI implementation.
This study answers the following questions

- What are the main aspects of data reliance and incomprehensibility that need to be taken into account while implementing AI?
- How can data reliance and incomprehensibility impact the accuracy, performance, resilience, and accuracy of artificial intelligence systems inside an organization?
- What organizational skills are essential for managing and reducing data-related issues in the application of AI?
- Regarding AI initiatives, what are the tactics and procedures that companies should implement to improve the quality and dependability of their data while reducing their reliance on certain sources?

1.2. Description of Variables

Two types of variables will be used o conduct the study. Independent variables include

- Technological Infrastructure for Complex Data Handling
- Data Management and Analytics for Unstructured Data
- Adaptive and Agile Data Systems:
- Data Quality and Integration Strategies
- Ethical and Regulatory Considerations in Complex Data Handling

The dependent variable measures the organization's AI implementation efficiency in handling incomprehensible and dependent data, evaluating its ability to analyze, understand, and utilize intricate data sets effectively.

1.3. How Significant This Study Is?

This research provides insights into data incompressibility and dependency issues in deploying artificial intelligence in large data volumes, highlighting the growing importance of dependable and trustworthy systems in various industries.
Put another way, our research aims to support companies use artificial intelligence while managing a large volume of complex data. It offers them advice on how to handle independent and complicated data. The importance of AI in many facets of our lives makes it imperative that we understand how to handle complex data.

1.4. Limitations of the study

This thesis examines AI implementation in organizations, focusing on data incomprehensibility and dependency. It offers solutions and strategies, but acknowledges limitations like data availability and should be considered in different contexts due to industry, technological evolution, and cultural factors.

2. Methodology

The research design will primarily involve a survey-based quantitative approach to collect data on AI implementation.The study explores the organization's use of artificial intelligence, focusing on data dependency and complexity, using both qualitative and quantitative research methods to understand obstacles and strategies.

2.1. Techniques for Gathering Data

The methods listed below were employed to gather information relevant to our research goal. The relevant industrial population in the field of artificial intelligence was sent the questionnaire. The primary data source was a questionnaire distributed to pertinent industry participants in the AI field.

- Case Studies
- Surveys
- Expert Interviews

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- Techniques for Sampling
- Information Analysis:

2.2. Hypothesis Evaluation

Hypothesis 1:

- **Null Hypothesis (H0):** The effectiveness of AI adoption in managing complex data within organizations is not significantly influenced by the quality of the technology infrastructure.
- **Alternative Hypothesis (H1):** Implementing AI effectively in organizations improves efficiency by enhancing the quality of technological infrastructure for processing complex data.

Hypothesis 2:

- **Null hypothesis (H0):** The efficiency of AI deployment in handling reliant and incomprehensible data within organizations is not significantly correlated with the efficacy of data management and analytics for unstructured data.
- **Alternative Hypothesis (H1):** The efficiency of implementing AI in handling unstructured and dependent data within organizations is positively connected with the effectiveness of data management and analytics.

Hypothesis 3:

- **Hypothesis Null (H0):** The efficiency of AI deployment in managing reliant and unintelligible data within organizations is not significantly correlated with the adaptability of data systems.
- **Alternative Hypothesis (H1):** Greater AI implementation efficiency in managing reliant and incomprehensible data within organizations is strongly connected with data systems' increased adaptability.

Hypothesis 4:

- **Null Hypothesis (H0):** The success of data quality and integration methods and the effectiveness of AI implementation in managing reliant and incomprehensible data within organizations do not significantly correlate.
- **Alternative Hypothesis (H1):** A favorable correlation has been shown between enhanced data quality and integration techniques and increased AI implementation efficiency in managing complex and reliant data in organizational settings.

Hypothesis 5:

- **Null Hypothesis (H0):** Ethical and regulatory concerns about handling complex data do not significantly affect the effectiveness of AI adoption when handling reliant and unintelligible data in organizations.
- **Alternative Hypothesis (H1):** The efficiency of AI deployment in handling reliant and unintelligible data within organizations is positively connected with stronger ethical and regulatory considerations in complex data management.

3. Results and Discussions

The research study's findings, gathered from a questionnaire distributed among selected samples, include information on gender, age, education, industrial experience, AI involvement, data analysis, and data cleaning techniques.

Gender: The gender variable revealed that males accounted for 84% of the total population, while females represented 16%. All relevant statistics are shown in Table 1 and Figure 1.

Table 1

Gender		Frequency	Percent	Valid Percentage	Cumulative Percent
Valid	Male	84	84.0	84.0	84.0
	Female	16	16.0	16.0	100.0
	Total	100	100.0	100.0	

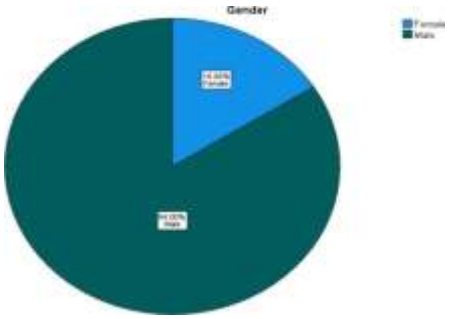


Figure: 1

Age: The age distribution for the respondents in the graphical form is shown below in Table: 2 and Figure: 2

Table 2

Age (Years)		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	Less Than 25years	11	11.0	11.0	11.0
	Between 25-40 Years	61	61.0	61.0	72.0
	Greater Than 40 Years	28	28.0	28.0	100.0
	Total	100	100.0	100.0	

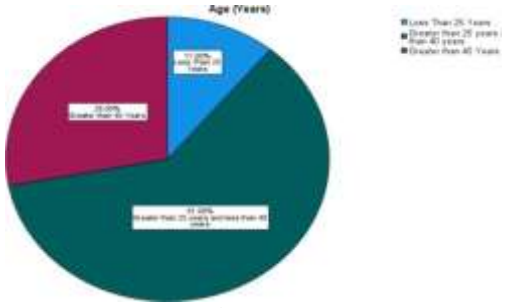


Figure: 2

Educational Qualifications: The educational qualifications distribution for the respondents in the graphical form is shown below in Table: 3 and Figure: 3.

Table 3

		Educational Qualifications			
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	Bachelor Degree	48	48.0	48.0	48.0
	Master Degree	49	49.0	49.0	97.0
	M. Phil	1	1.0	1.0	98.0
	PhD	2	2.0	2.0	100.0
	Total	100	100.0	100.0	

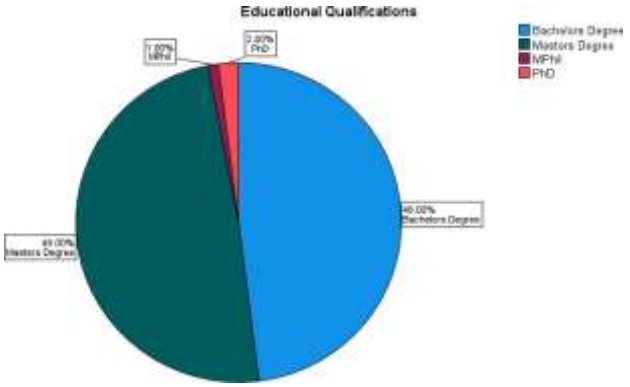


Figure: 3

Enter Your Years of Experience: The experience in industry distribution for the respondents in the graphical form is shown below in Table: 4 and Figure: 4.

Table 4

Enter Your Years of Experience					
		Frequency	Percent	ValidPercentage	Cumulative Percentage
Valid	Between 0-10 years	54	54.0	54.0	54.0
	Greater than 10 years	46	46.0	46.0	100.0
	Total	100	100.0	100.0	

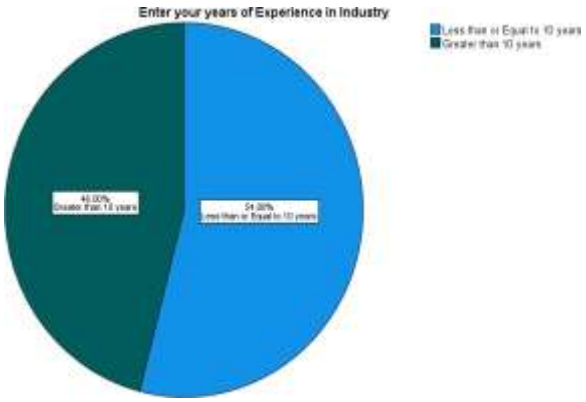


Figure: 4

How long your organization been actively involved in AI implementation? The survey revealed following statistic shown in Table: 5 and Figure: 5. in graphical form.

Table: 5

How long your organization been actively involved in AI implementation					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	Less than 1 Year	31	31.0	31.0	31.0
	1-2 Years	20	20.0	20.0	51.0
	2-5 years	17	17.0	17.0	68.0
	More than 5 years	32	32.0	32.0	100.0
	Total	100	100.0	100.0	

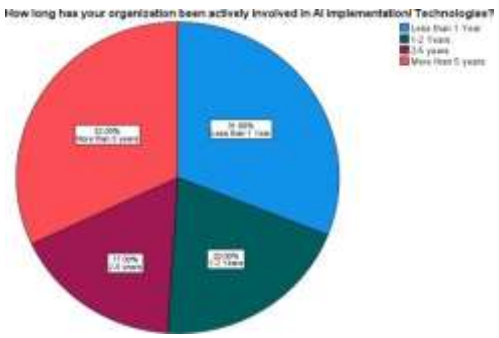


Figure: 5

How Would You Rate Your Organization's Experience With AI Implementation? The survey revealed following statistic shown in Table: 6.1 and Figure: 6 in graphical form.

Table 6

How Would You Rate Your Organization's Experience With AI Implementation					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	No Experience	20	20.0	20.0	20.0
	Limited Experience	14	14.0	14.0	34.0
	Moderate Experience	21	21.0	21.0	55.0
	Experienced	31	31.0	31.0	86.0
	Highly Experienced	14	14.0	14.0	100.0
	Total	100	100.0	100.0	

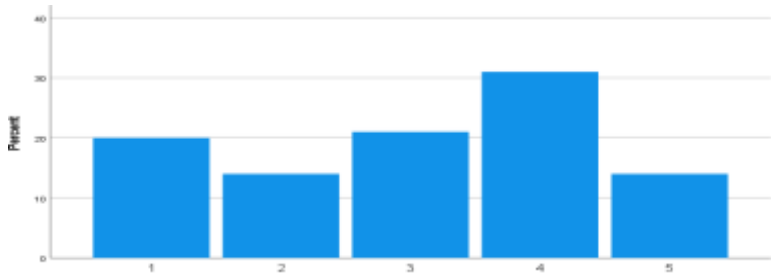


Figure: 6

The data shown in Table: 6.2 a mean value of 3.05, a median of 3.00, and a mode value of "Experienced", indicating an organization's perceived experience with AI implementation, with a negative skewness value of -0.243.

Table 6.2

Statistics		
N	Valid	100
	Missing	0
Mean		3.05
Median		3.00
Mode		4
Std. Deviation		1.351
Range		4
Minimum		1
Maximum		5

Does your organization have a clear AI strategy that aligns with its overall business object? : The survey revealed following statistic shown in Table: 7 and Figure: 7 in graphical form.

Does Your Organization Actively Invest In AI Talent Development, Such As Hiring Data Scientists And Machine Learning Engineers Or Providing Training To Existing Employees? : Answers to above question are tabulated in Table: 8 and graphically represented in Figure: 8 below

Table 7

Does your organization have a clear AI strategy that aligns with its overall business object?

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	Yes, a well-definedstrategy	43	43.0	43.0	43.0
	Yes, but not well-defined	34	34.0	34.0	77.0
	No, but planning to develop one	18	18.0	18.0	95.0
	No, no plans toDevelop one	5	5.0	5.0	100.0
	Total	100	100.0	100.0	

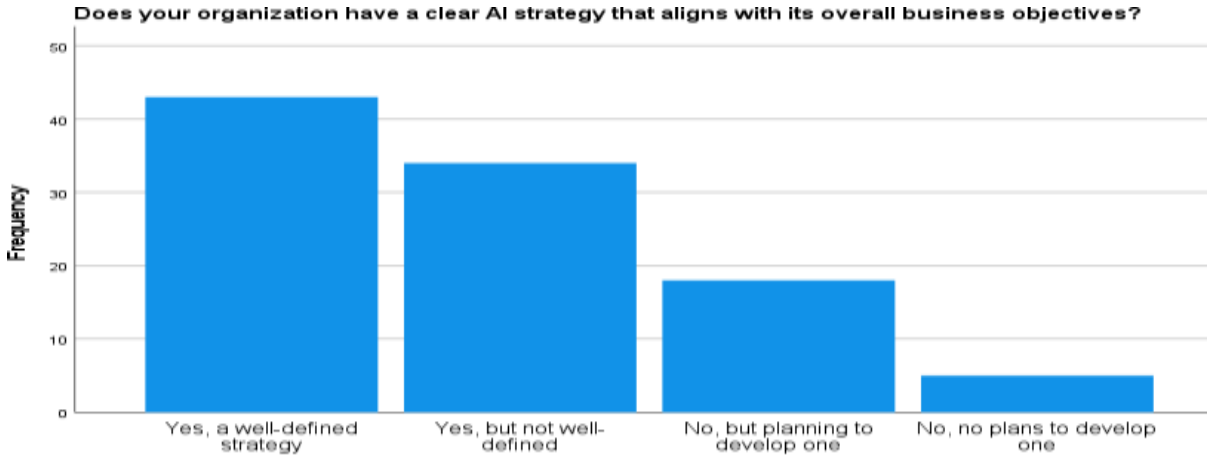


Figure: 7

Table 8

Does Your Organization Actively Invest In AI Talent Development, Such As Hiring Data Scientists And Machine Learning Engineers Or Providing Training To Existing Employees?

		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	No, but planning to do so	26	26.0	26.0	26.0
	Yes, extensively	24	24.0	24.0	50.0
	Yes, moderately	50	50.0	50.0	100.0
	Total	100	100.0	100.0	

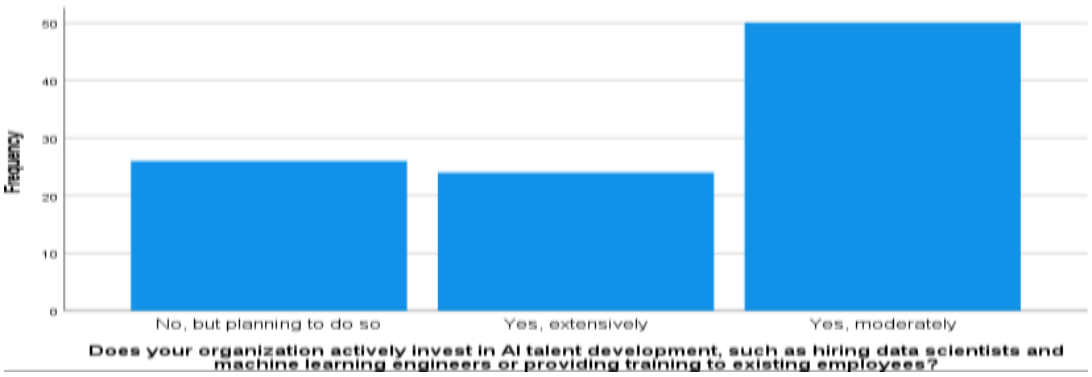


Figure: 8

In your experience, how would you rate the quality of the data used in your organization's AI initiatives? The tabular representation of the respondents' distribution is displayed below in Table: 9 and graphically in Figure: 9.

Table: 9.1

In your experience, how would you rate the quality of the data used in your organization's AI initiatives?

		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	Poor	7	7.0	7.0	7.0
	Fair	19	19.0	19.0	26.0
	Average	27	27.0	27.0	53.0
	Good	30	30.0	30.0	83.0
	Excellent	17	17.0	17.0	100.0
	Total	100	100.0	100.0	

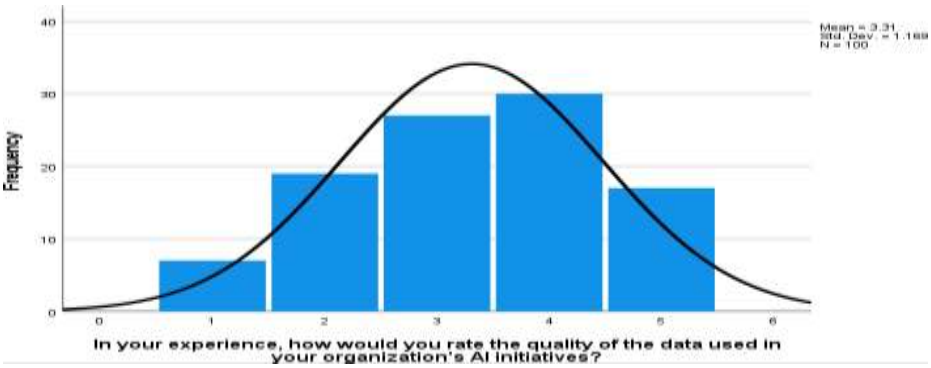


Figure: 9.1

The data distribution is slightly above the median, with a median value of 3.00. The median value 4 (Good) indicates the responder believes their organization uses good quality data for AI activities, with a negative skewness value of -0.244.

Table: 9.2

Statistics		
N	Valid	100
	Missing	0
Mean		3.31
Median		3.00
Mode		4
Std. Deviation		1.169
Range		4
Minimum		1
Maximum		5

How would you rate your organization's data governance practices, including data ownership, quality standards, and access policies? The tabular and graphical representation of the respondents' distribution is displayed below in Table:10.1 and Figure: 10.

Table: 10.1

How would you rate your organization's data governance practices, including data ownership, quality standards, and access policies?

		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	1-Poor	7	7.0	7.0	7.0
	2-Fair	11	11.0	11.0	18.0
	3- Average	30	30.0	30.0	48.0
	4-Good	33	33.0	33.0	81.0
	5- Excellent	19	19.0	19.0	100.0
	Total	100	100.0	100.0	

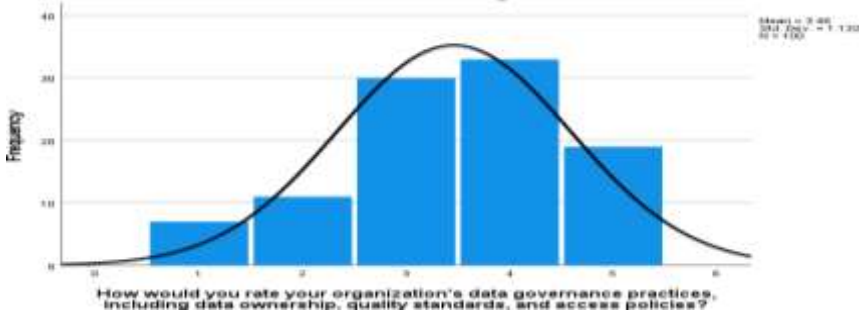


Figure: 10

Table: 10.2

Statistics		
N	Valid	100
	Missing	0
Mean		3.46
Median		4.00
Mode		4
Std. Deviation		1.132
Range		4
Minimum		1
Maximum		5

The table shows an average data point of 3.46, with a median value of 4.00, indicating a positive perception of their

organization's governance processes, such as data ownership, quality standards, and access policies, with a negative skewness of -0.474.

Does your organization have a dedicated team or responsible person for managing data quality and compliance? : The graphical representation of the respondents' distribution is displayed below in Table: 11 and Figure: 11.

Table: 11

Does your organization have a dedicated team or responsible person for managing data quality and compliance?					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	No	14	14.0	14.0	14.0
	Yes	86	86.0	86.0	100.0
	Total	100	100.0	100.0	

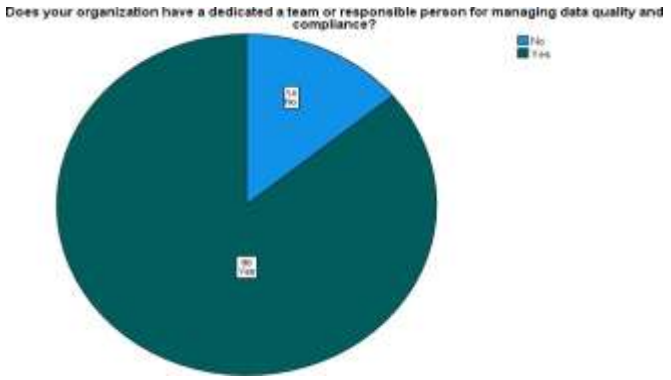


Figure: 11

To what extent does your organization have a culture that values data-driven decision-making and innovation? : The graphical and tabular representation of the respondents' distribution is displayed below in Table: 12.1 and Figure: 12.

Table: 12.1

To what extent does your organization have a culture that values data-driven decision-making and innovation?					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	Strongly Disagree	11	11.0	11.0	11.0
	Disagree	8	8.0	8.0	19.0
	Neutral	30	30.0	30.0	49.0
	Agree	36	36.0	36.0	85.0
	Strongly Agree	15	15.0	15.0	100.0
	Total	100	100.0	100.0	

Figure: 12

Table: 12.2

Statistics		
N	Valid	100
	Missing	0
Mean		3.36
Median		4.00
Mode		4
Std. Deviation		1.168
Range		4
Minimum		1
Maximum		5

The mean value of 3.36 is below the median, with a data distribution around 4.00. The modal value of 4 indicates an organization that fosters creativity and data-driven decision-making, while the skewness value is -0.586.

Have you encountered challenges related to data incomprehensibility or dependency in your AI projects? The graphical and tabular representation of the respondents' distribution is displayed below in Table: 13 and Figure: 13.

Table: 13

Have you encountered challenges related to data incomprehensibility or dependency in your AI projects?

		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	No	25	25.0	25.0	25.0
	Yes	75	75.0	75.0	100.0
	Total	100	100.0	100.0	

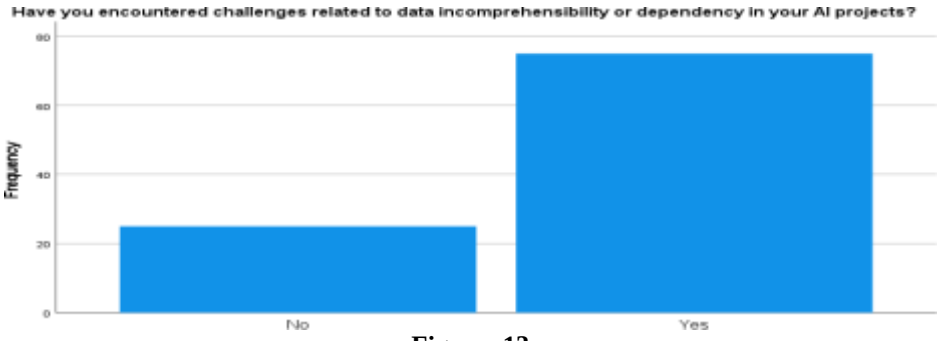


Figure: 13

How often does your organization encounter data that is difficult to understand? The graphical and tabular representation of the respondents' distribution is displayed below in Table: 14.1 and Figure: 14.

Table: 14.1

How often does your organization encounter data that is difficult to understand?

		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	1-Never	11	11.0	11.0	11.0
	2- Rarely	17	17.0	17.0	28.0
	3- Occasionally	35	35.0	35.0	63.0
	4-Often	29	29.0	29.0	92.0
	5- Frequently	8	8.0	8.0	100.0
	Total	100	100.0	100.0	

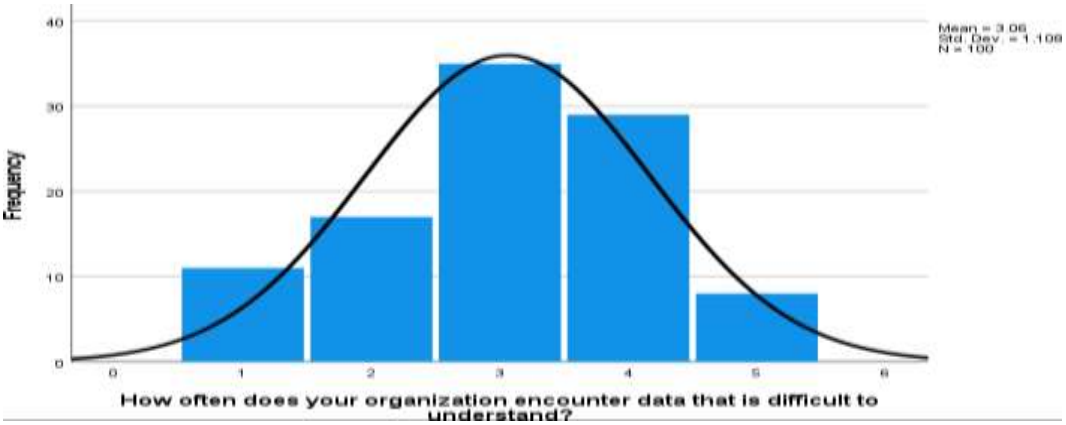


Figure: 14.

Table: 14.2

Statistics		
N	Valid	100
	Missing	0
Mean		3.06
Median		3.00
Mode		3
Std. Deviation		1.108
Range		4
Minimum		1
Maximum		5

The data's average is slightly above the median, with a distribution around 3.00. The mode value of 3 indicates data difficulty is encountered "Occasionally" by the respondent's organization. The mean and median are similar, indicating minimal negative skewness due to leftward shifts.

How does data incomprehensibility affect the accuracy of AI models within your organization? The graphical representation of the respondents' distribution is provided below in Table: 15 and Figure:15

Table: 15

How does data incomprehensibility affect the accuracy of AI models within your organization?

		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	It does not affect the accuracy	20	20.0	20.0	20.0
	It has minimal impaction accuracy	17	17.0	17.0	37.0
	It moderately reduces the accuracy	42	42.0	42.0	79.0
	It significantly reduces the accuracy	21	21.0	21.0	100.0
	Total	100	100.0	100.0	

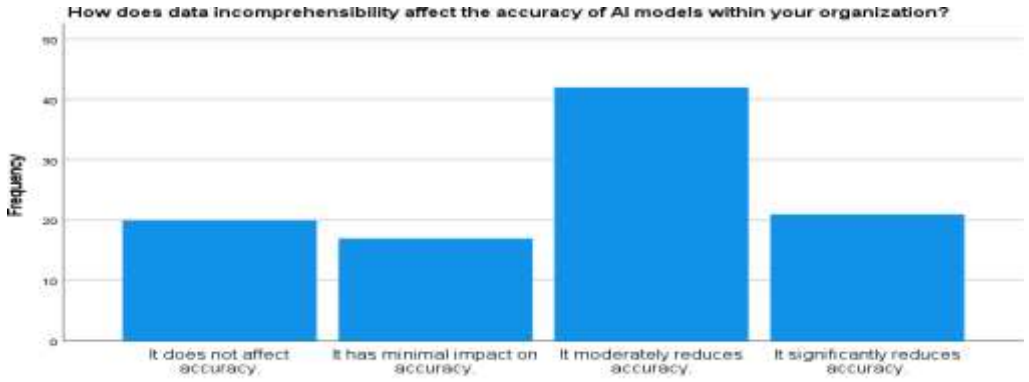


Figure: 15

To What Extent Does Your Organization Depend On Specific Data Sources Or Eco Systems For AI Initiatives? The graphical form of the respondents' distribution is displayed below in Table: 16.1 and figure:16

Table: 16.1

To What Extent Does Your Organization Depend On Specific Data Sources Or Eco Systems For AI Initiatives?

		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	1-Not Independent	13	13.0	13.0	13.0
	2-Slightly Dependent	17	17.0	17.0	30.0
	3-Moderately Dependent	34	34.0	34.0	64.0
	4-Mostly Dependent	27	27.0	27.0	91.0
	5-Highly Dependent	9	9.0	9.0	100.0
	Total	100	100.0	100.0	

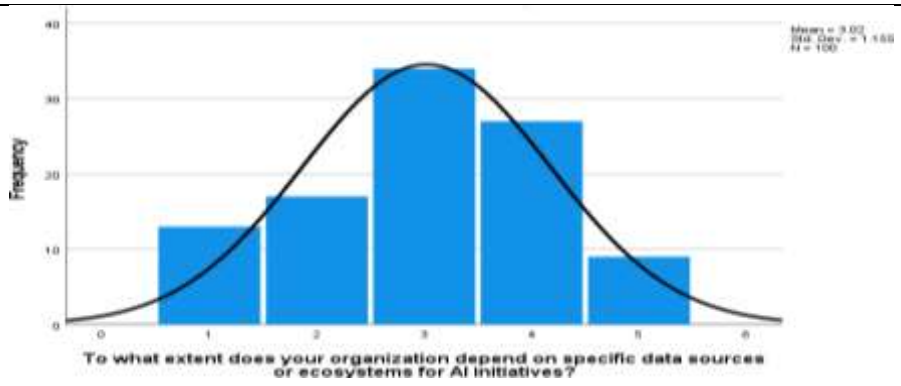


Figure: 16.1

Table: 16.2

Statistics		
N	Valid	100
	Missing	0
Mean		3.02
Median		3.00
Mode		3
Std. Deviation		1.155
Range		4
Minimum		1
Maximum		5

The data distribution is moderately dependent on specific data sources or ecosystems for AI activities, with a median value of 3.00, and the mean, mode, and median values are close to one another, with a skewness value of -0.200.

Have data dependencies ever caused disruptions or limitations in your organization's AI projects? The tabular and graphical representation of the respondents' distribution is displayed below in Table: 17 and Figure: 17 respectively.

Table: 17

Have data dependencies ever caused disruptions or limitations in your organization's AI projects?					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	No, never	8	8.0	8.0	8.0
	No, rarely	27	27.0	27.0	35.0
	Yes, frequently	17	17.0	17.0	52.0
	Yes, occasionally	48	48.0	48.0	100.0
	Total	100	100.0	100.0	

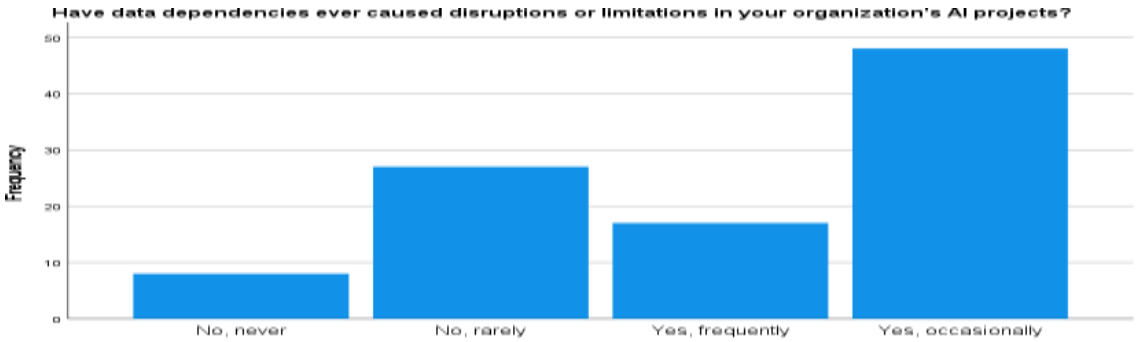


Figure: 17

Does your organization actively seek to diversify data sources to reduce data dependency in AI initiatives? The tabular and graphical representation of the respondents' distribution is displayed below in Table: 18 and Figure: 18 respectively.

Table: 18

Does your organization actively seek to diversify data sources to reduce data dependency in AI initiatives?					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	No, but planning to do so	21	21.0	21.0	21.0
	No, no plans to do so	7	7.0	7.0	28.0
	Yes, extensively	16	16.0	16.0	44.0
	Yes, moderately	56	56.0	56.0	100.0
	Total	100	100.0	100.0	

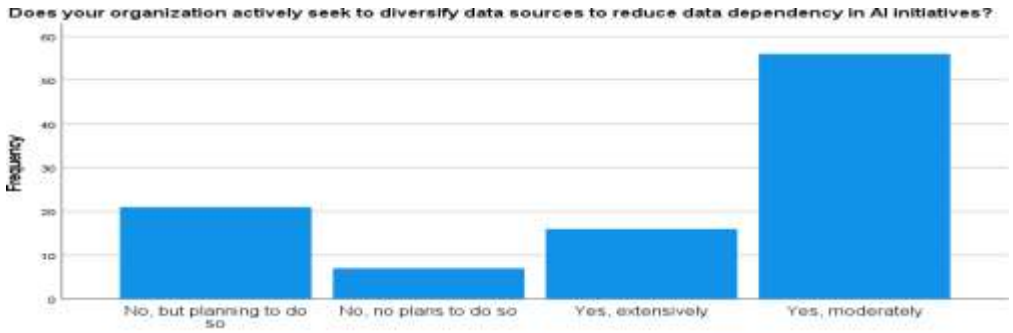


Figure: 18

How does data dependency impact the scalability of AI projects in your organization? : The tabular and graphical representation of the respondents' distribution is displayed below in Table: 19 and Figure: 19 respectively.

Table: 19

How does data dependency impact the scalability of AI projects in your organization?					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	It enhances scalability.	11	11.0	11.0	11.0
	It has minimal impact onScalability.	21	21.0	21.0	32.0
	It moderately limits scalability.	52	52.0	52.0	84.0
	It significantly limits scalability.	16	16.0	16.0	100.0
	Total	100	100.0	100.0	

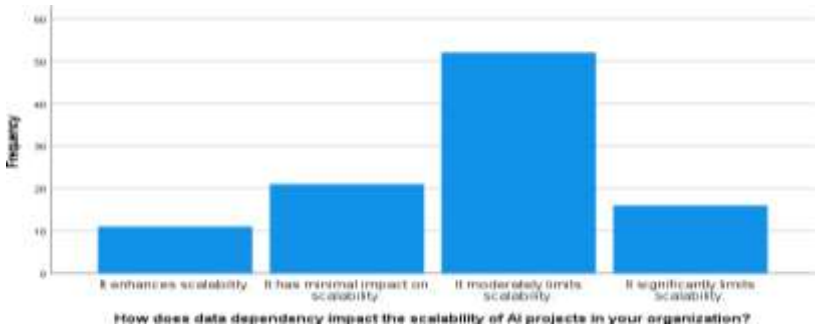


Figure: 19

Does your organization have dedicated data scientists or machine learning experts? The tabular and graphical representation of the respondents' distribution is displayed below in Table: 20 and Figure: 20 respectively.

Table: 20

Does your organization have dedicated data scientists or machine learning experts?					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	No	45.0	45.0	45.0	45.0
	Yes	55.0	55.0	55.0	100.0
	Total	100	100.0	100.0	

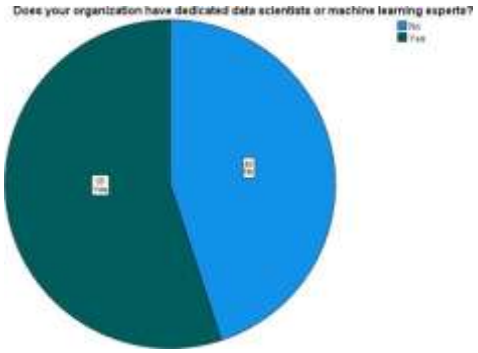


Figure: 20

How effective have strategies and practices been in mitigating the impact of data incomprehensibility in AI implementation?. The tabular and graphical representation of the respondents' distribution is displayed below in Table: 21.1 and Figure: 21 respectively.

Table: 21.1

How effective have strategies and practices been in mitigating the impact of data incomprehensibility in AI implementation?					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	Highly Ineffective	11	11.0	11.0	11.0
	Ineffective	13	13.0	13.0	24.0
	Moderately Effective	39	39.0	39.0	63.0
	Effective	33	33.0	33.0	96.0
	Highly Effective	4	4.0	4.0	100.0
	Total	100	100.0	100.0	

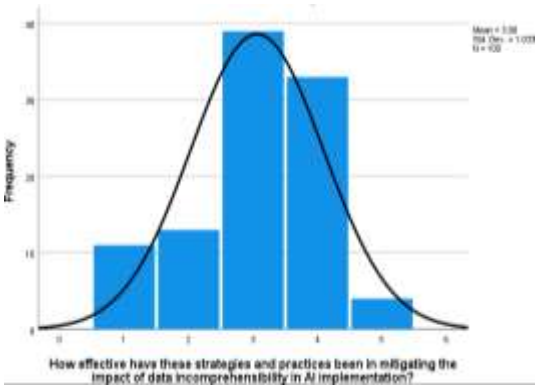


Figure: 21

Table: 21.2

Statistics		
N	Valid	100
	Missing	0
Mean		3.06
Median		3.00
Mode		3
Std. Deviation		1.033
Range		4
Minimum		1
Maximum		5

How effective have strategies and practices been in mitigating data dependency in AI implementation? The tabular and graphical representation of the respondents' distribution is displayed below in Table: 22.1 and Figure: 22 respectively.

Table: 22.1

How effective have strategies and practices been in mitigating data dependency in AI implementation?

		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	Highly Ineffective	11	11.0	11.0	11.0
	Ineffective	10	10.0	10.0	21.0
	Moderately Effective	41	41.0	41.0	62.0
	Effective	32	32.0	32.0	94.0
	Highly Effective	6	6.0	6.0	100.0
	Total	100	100.0	100.0	

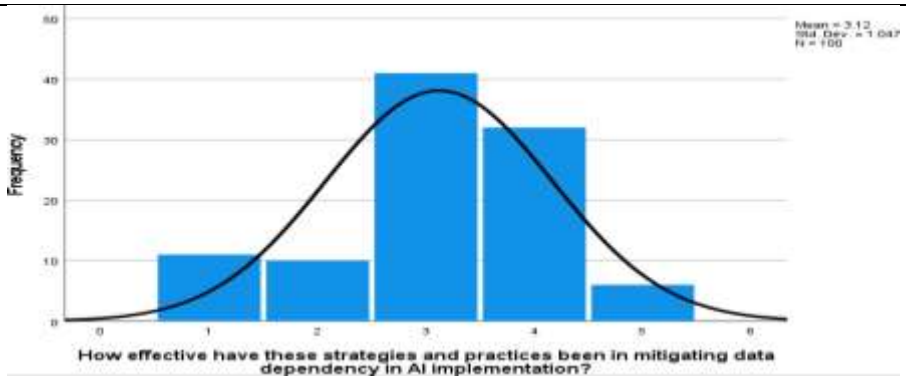


Figure: 22

Table: 22.2

Statistics		
N	Valid	100
	Missing	0
Mean		3.12
Median		3.00
Mode		3
Std. Deviation		1.047
Range		4
Minimum		1
Maximum		5

The table shows an average value of 3.12, slightly above the median of 3.00. The responder believes their practices and tactics are "Moderately Effective" in reducing data dependency in AI implementation, with a skewness of "-0.514" or negatively skewed.

Does your organization have a clear AI strategy that addresses data dependency and diversification? : The tabular and graphical representation of the respondents' distribution is displayed below in Table: 23 and Figure: 23 respectively.

Table: 23

Does your organization have a clear AI strategy that addresses data dependency and diversification?

		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	No, but planning to develop one	15	15.0	15.0	15.0
	No, no plans to develop one	5	5.0	5.0	20.0
	Yes, a well-defined strategy	34	34.0	34.0	54.0
	Yes, but not well-defined	46	46.0	46.0	100.0
	Total	100	100.0	100.0	

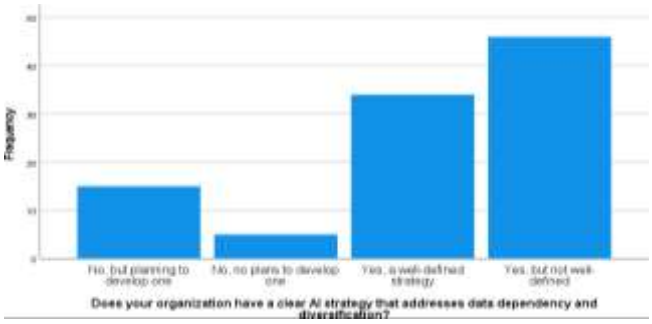


Figure: 23

Does your organization have structured change management practices for AI adoption? The tabular and graphical representation of the respondents' distribution is displayed below in Table: 24 and Figure: 24 respectively.

Table: 24

Does your organization have structured change management practices for AI adoption?					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	No	39	39.0	39.0	39.0
	Yes	61	61.0	61.0	100.0
	Total	100	100.0	100.0	

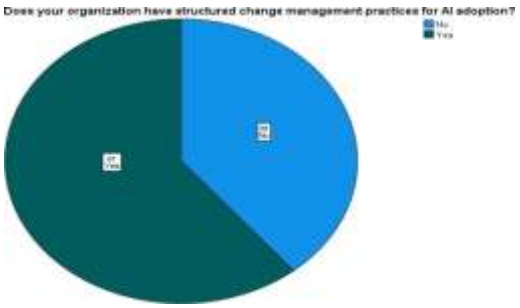


Figure: 24

How would you rate your organization's ability to adapt to changes in data sources and ecosystems for AI projects? : . The tabular and graphical representation of the respondents' distribution is displayed below in Table: 25.1 and Figure: 25 respectively.

Table: 25.1

How would you rate your organization's ability to adapt to changes in data sources and ecosystems for AI projects?					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	Poor	12	12.0	12.0	12.0
	Fair	15	15.0	15.0	27.0
	Average	29	29.0	29.0	56.0
	Good	34	34.0	34.0	90.0
	Excellent	10	10.0	10.0	100.0
	Total	100	100.0	100.0	

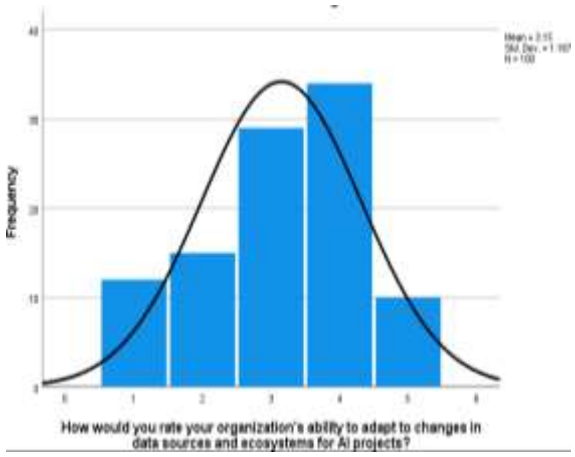


Figure: 25

Table: 25.2

Statistics		
N	Valid	100
	Missing	0
Mean		3.15
Median		3.00
Mode		4
Std. Deviation		1.167
Range		4
Minimum		1
Maximum		5

The table shows an average data distribution of 3.00, suggesting the respondent's organization is "Good" in adapting to AI project changes. The modal value of 4 indicates its frequency, and the data is negatively skewed when larger than the mean.

To what extent are AI initiatives aligned with your organization's strategic goals? The tabular and graphical representation of the respondents' distribution is displayed below in Table: 26.1 and Figure: 26 respectively.

Table: 26.1

To what extent are AI initiatives aligned with your organization's strategic goals?

		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	Not Aligned	12	12.0	12.0	12.0
	Partially Aligned	18	18.0	18.0	30.0
	Neutral	27	27.0	27.0	57.0
	Aligned	35	35.0	35.0	92.0
	Highly Aligned	8	8.0	8.0	100.0
	Total	100	100.0	100.0	

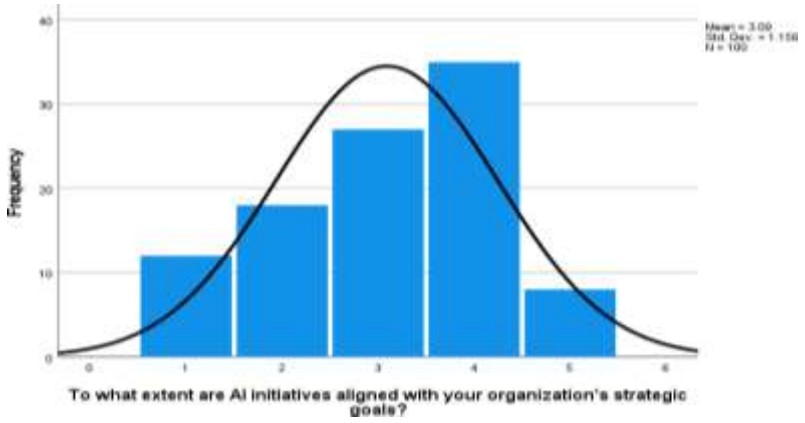


Figure: 26

The table shows a mean value of 3.09, slightly above 3, suggesting alignment between the responder's organization's AI projects and its strategic goals. The data distribution is negative and skews with a "-0.339" skewness rating.

Does your organization employ data preprocessing and cleansing techniques for data quality improvement? The tabular and graphical representation of the respondents' distribution is displayed below in Table: 27 and Figure: 27 respectively.

Table: 26.2

Statistics		
N	Valid	100
	Missing	0
Mean		3.09
Median		3.00
Mode		4
Std. Deviation		1.156
Range		4
Minimum		1
Maximum		5

Table: 27

Does your organization employ data preprocessing and cleansing techniques for data quality improvement?

		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	No	25	25.0	25.0	25.0
	Yes	75	75.0	75.0	100.0
	Total	100	100.0	100.0	

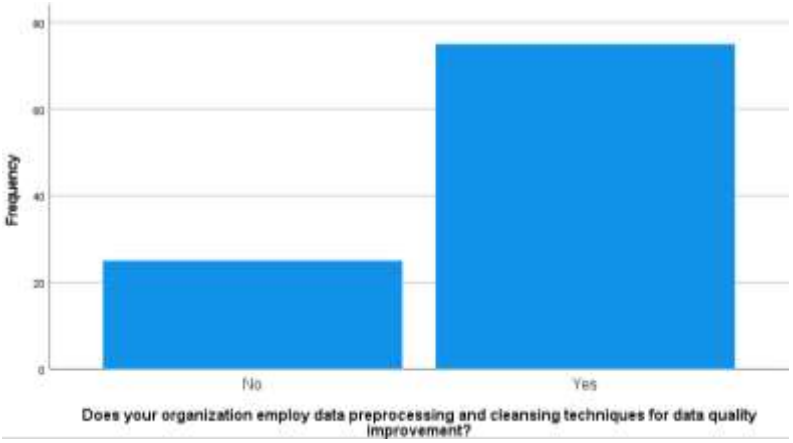


Figure: 27

Does your organization use advanced analytics techniques (e.g., feature engineering, model explain-ability) in AI projects? The tabular and graphical representation of the respondents' distribution is displayed below in Table: 28 and Figure: 28 respectively.

Table: 28

Does your organization use advanced analytics techniques (e.g., feature engineering, model explain-ability) in AI projects?					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	No	30	30.0	30.0	30.0
	Yes	70	70.0	70.0	100.0
	Total	100	100.0	100.0	

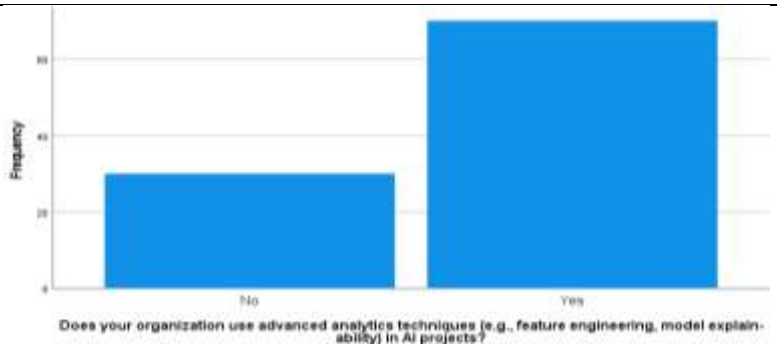


Figure: 28

Does your organization collaborate with external partners or suppliers to access additional data for AI projects? The tabular and graphical representation of the respondents' distribution is displayed below in Table: 29 and Figure: 29 respectively.

Table: 29

Does your organization collaborate with external partners or suppliers to access additional data for AI projects?					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	No	30	30.0	30.0	30.0
	Yes	70	70.0	70.0	100.0
	Total	100	100.0	100.0	

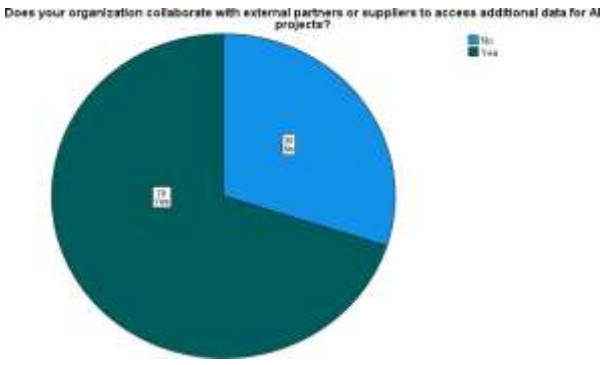


Figure: 29

Does your organization have specific practices in place to ensure data privacy and regulatory compliance in AI projects? The tabular and graphical representation of the respondents' distribution is displayed below in Table: 30 and Figure: 30 respectively.

Table: 30

Does your organization have specific practices in place to ensure data privacy and regulatory compliance in AI projects?

		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	No	22	22.0	22.0	22.0
	Yes	78	78.0	78.0	100.0
	Total	100	100.0	100.0	

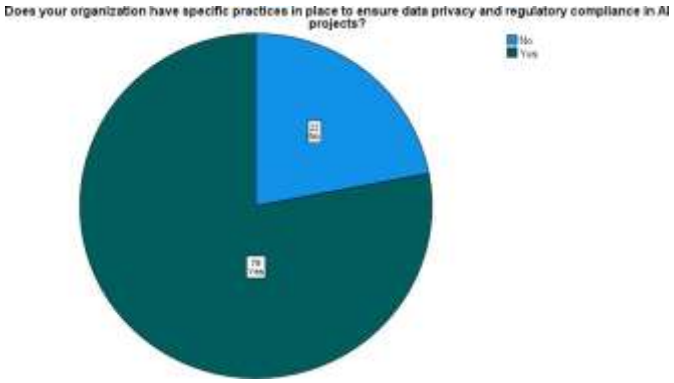


Figure: 30

How would you rate your organization's capabilities in handling incomprehensible data for AI implementation? (Scale of 1 to 5, with 1 being low and 5 being high) The tabular and graphical representation of the respondents' distribution is displayed below in Table: 31.1 and Figure: 31 respectively.

Table: 31.1

How would you rate your organization's capabilities in handling incomprehensible data for AI implementation? (Scale of 1 to 5, with 1 being low and 5 being high)
Data Preprocessing And cleaning

		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	Low	20	20.0	20.0	20.0
	Below Average	29	29.0	29.0	49.0
	Average	22	22.0	22.0	71.0
	Above Average	15	15.0	15.0	86.0
	High	14	14.0	14.0	100.0
	Total	100	100.0	100.0	

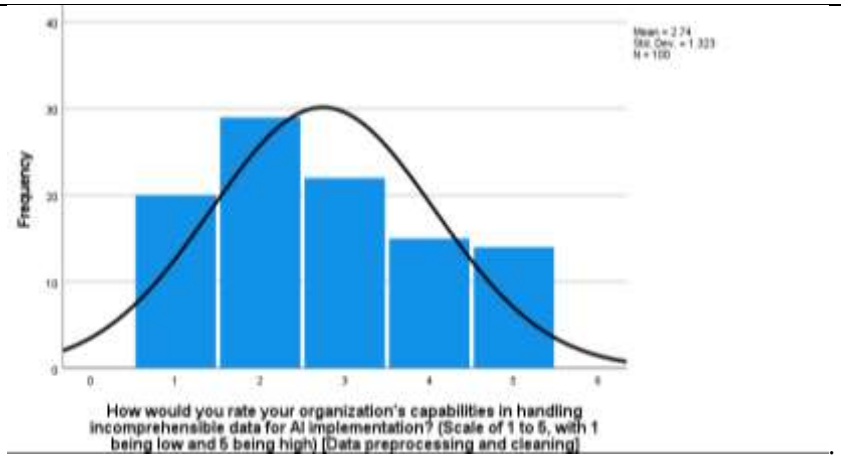


Figure: 31

Table: 31.2

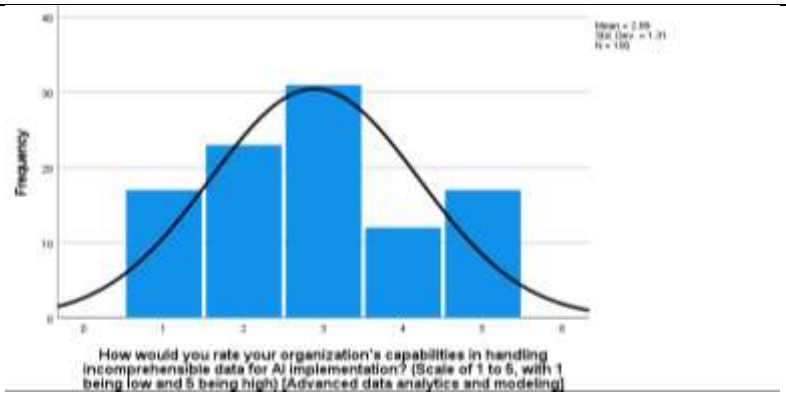
Statistics		
N	Valid	100
	Missing	0
Mean		2.74
Median		3.00
Mode		2
Std. Deviation		1.323
Range		4
Minimum		1
Maximum		5

The data has an average value of 2.74, slightly below 3.00, with a median value of 3.00. The median value 2, or "Below Average," indicates that the respondent believes their organization's data preparation and cleaning capabilities are "Below Average." The data is positive skewened with a 0.313 skewness value.

Advanced data analytics and modeling: The tabular and graphical representation of statistics analysed is displayed below in Table: 32.1 and Figure: 32 respectively.

Table: 32.1

Advanced data analytics and modeling					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	Low	17	17.0	17.0	17.0
	Below Average	23	23.0	23.0	40.0
	Average	31	31.0	31.0	71.0
	Above Average	12	12.0	12.0	83.0
	High	17	17.0	17.0	100.0
	Total	100	100.0	100.0	



The table shows an average data point of 2.89, slightly below 3.00, with a median value of 3.00. The respondent believes their organization's capabilities in advanced data analytics and modeling are "Average," with a mode value of 3 and a skewness number of 0.207.

Domain expertise and industry knowledge: The tabular and graphical representation of statistics analyzed is displayed below in Table: 33.1 and Figure: 33 respectively.

Figure: 32

Statistics		
N	Valid	100
	Missing	0
Mean		2.89
Median		3.00
Mode		3
Std. Deviation		1.310
Range		4
Minimum		1
Maximum		5

Table: 33.1

Domain expertise and industry knowledge					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	Low	21	21.0	21.0	21.0
	Below Average	26	26.0	26.0	47.0
	Average	23	23.0	23.0	70.0
	Above Average	18	18.0	18.0	88.0
	High	12	12.0	12.0	100.0
	Total	100	100.0	100.0	

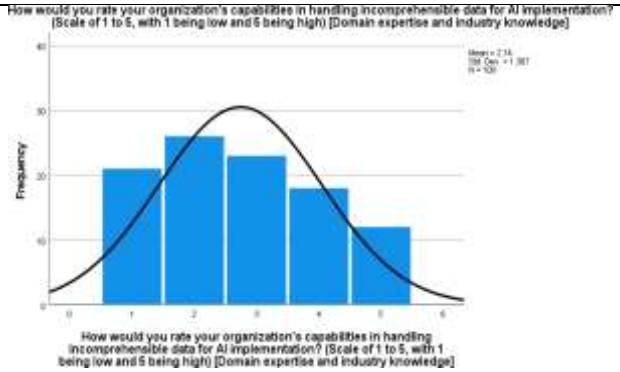


Figure: 33

Table: 33.2

Statistics		
N	100 0	100 0
Mean		2.74
Median		3.00
Mode		2
Std. Deviation		1.307
Range		4
Minimum		1
Maximum		5

The data shows a mean of 2.74, slightly below 3.00, with a median of 3.00. The respondent believes their organization's capabilities are "Below Average" in handling unintelligible data for AI deployment, with a positive skewness score of 0.248.

Inter disciplinary collaboration: The tabular and graphical representation of statistics analyzed is displayed below in Table: 34.1 and Figure: 34 respectively.

Table: 34.1

Inter disciplinary collaboration					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	Low	14	14.0	14.0	14.0
	Below Average	29	29.0	29.0	43.0
	Average	32	32.0	32.0	75.0
	Above Average	12	12.0	12.0	87.0
	High	13	13.0	13.0	100.0
	Total	100	100.0	100.0	

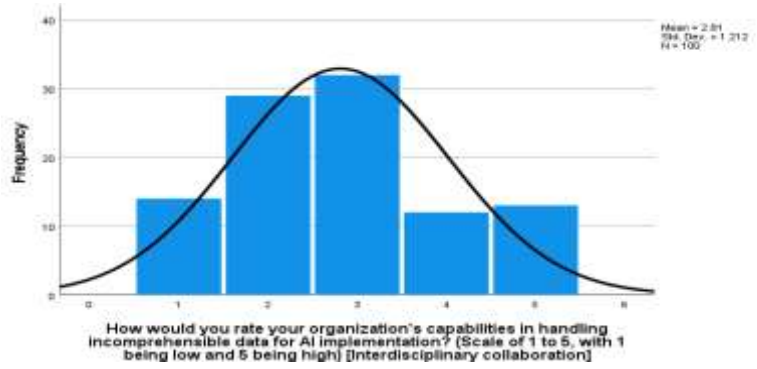


Figure: 34

Statistics		
N	100 0	100 0
Mean		2.81
Median		3.00
Mode		3
Std. Deviation		1.212
Range		4
Minimum		1
Maximum		5

The table shows an average data value of 2.81, slightly below 3.00, with a median value of 3.00. The responder believes their organization's capabilities are "Average" in interdisciplinary collaboration for AI data processing.

Data governance and compliance: The tabular and graphical representation of statistics analyzed is displayed below in Table: 35.1 and Figure: 35 respectively.

Table: 35.1

Data governance and compliance					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	1-Low	19	19.0	19.0	19.0
	2-BelowAverage	21	21.0	21.0	40.0
	3- Average	26	26.0	26.0	66.0
	4-AboveAverage	19	19.0	19.0	85.0
	5-High	15	15.0	15.0	100.0
	Total	100	100.0	100.0	

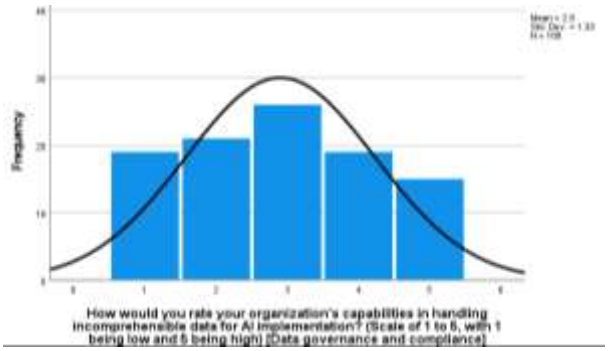


Figure: 35

Table: 35.2

Statistics		
N	100	100
	0	0
Mean		2.90
Median		3.00
Mode		3
Std.Deviation		1.330
Range		4
Minimum		1
Maximum		5

The table shows an average data point of 2.90, slightly below 3.00, indicating an average organization's capabilities in data governance and compliance for AI adoption. The mode value is "Average," and the skewness value is around 0.077, indicating a small right skewness and negligible divergence from the symmetric distribution.

Explain ability and interpretability tools: The tabular and graphical representation of statistics analyzed is displayed below in Table: 36.1 and Figure: 36 respectively.

Table: 36.1

Explain ability and interpretability tools					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	Low	15	15.0	15.0	15.0
	Below Average	26	26.0	26.0	41.0
	Average	26	26.0	26.0	67.0
	Above Average	21	21.0	21.0	88.0
	High	12	12.0	12.0	100.0
	Total	100	100.0	100.0	

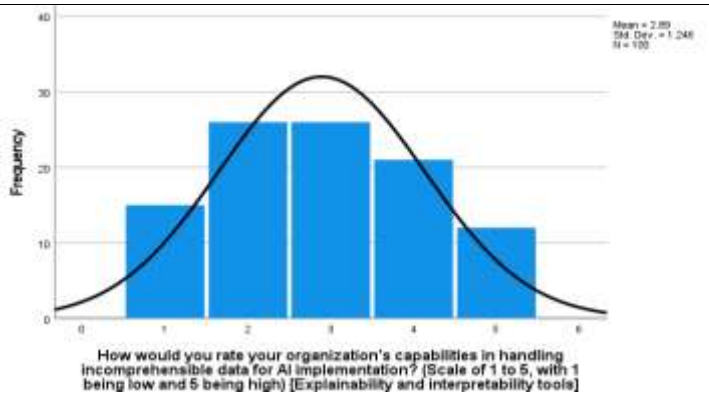


Figure: 36

Table: 36.2

Statistics		
N	100	100
	0	0
Mean		2.89
Median		3.00
Mode		2
Std. Deviation		1.246
Range		4
Minimum		1
Maximum		5

The table shows an average data point of 2.89, slightly below 3.00, with a median of 3.00. The mode value of 2 (Below Average) indicates the respondent's organization's interpretability tools and explain ability for AI implementation.

Data labeling and annotation: The tabular and graphical representation of statistics analyzed is displayed below in Table: 37.1 and Figure: 37 respectively.

Table: 37.1

Data labeling and annotation					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	Low	19	19.0	19.0	19.0
	Below Average	26	26.0	26.0	45.0
	Average	21	21.0	21.0	66.0
	Above Average	22	22.0	22.0	88.0
	High	12	12.0	12.0	100.0
	Total	100	100.0	100.0	

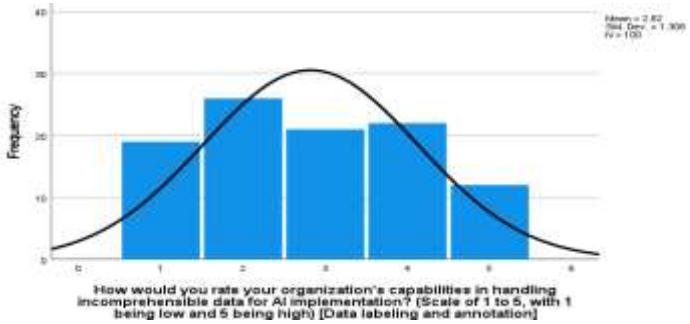


Figure: 37

Table: 37.1

Statistics		
N	100	100
	0	0
Mean		2.82
Median		3.00
Mode		2
Std. Deviation		1.306
Range		4
Minimum		1
Maximum		5

The table shows an average data value of 2.82, slightly below 3. The mode value 2, indicating "Below Average" in data labeling and annotation, indicates a higher frequency of this value. The data is skewly to the right, with a skewness value of 0.147.

Continuous learning and adaptation: The tabular and graphical representation of statistics analyzed is displayed below in Table: 38.1 and Figure: 38 respectively.

Table: 38.1

Continuous learning and adaptation					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	Low	15	15.0	15.0	15.0
	Below Average	26	26.0	26.0	41.0
	Average	27	27.0	27.0	68.0
	Above Average	18	18.0	18.0	86.0
	High	14	14.0	14.0	100.0
	Total	100	100.0	100.0	

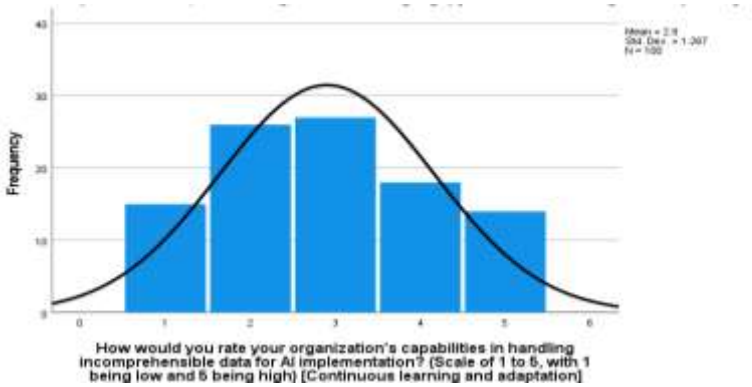


Figure: 38

Table: 38.2

Statistics		
N	100	100
	0	0
Mean		2.90
Median		3.00
Mode		3
Std. Deviation		1.267
Range		4
Minimum		1
Maximum		5

The table shows an average data point of 2.90, slightly below 3.00, with a median value of 3.00. The respondent believes their organization's AI implementation capabilities are "Average" in continuous learning and adaptability. The skewness value is 0.161, indicating a small right skewness, but negligible divergence from the symmetric distribution.

Ethical considerations and bias mitigation: The tabular and graphical representation of statistics analyzed is displayed below in Table: 39.1 and Figure: 39 respectively.

Table: 39.1

Ethical considerations and bias mitigation					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	Low	21	21.0	21.0	21.0
	Below Average	20	20.0	20.0	41.0
	Average	29	29.0	29.0	70.0
	Above Average	17	17.0	17.0	87.0
	High	13	13.0	13.0	100.0
	Total	100	100.0	100.0	

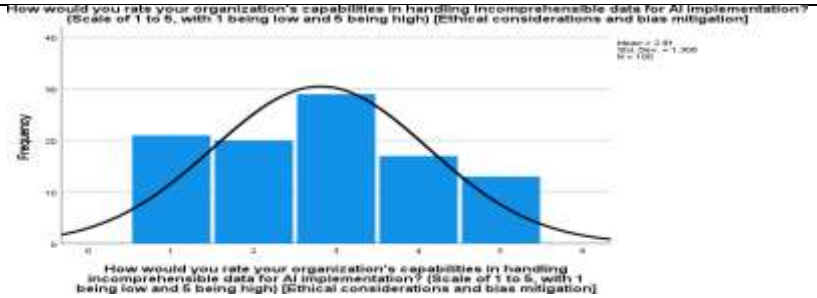


Figure: 39

Table: 39.2

Statistics		
N	100	100
	0	0
Mean		2.81
Median		3.00
Mode		3
Std. Deviation		1.308
Range		4
Minimum		1
Maximum		5

The table shows an average data distribution of 2.81, with a median of 3.00. Mode number 3 indicates average ethical considerations and bias reduction. Skewness value is 0.140, indicating a small right skewness, but little deviation from a symmetrical distribution.

Robust infrastructure and scalability: The tabular and graphical representation of statistics analyzed is displayed below in Table: 40.1 and Figure: 40 respectively.

Table: 40.1

Robust infrastructure and scalability					
		Frequency	Percent	Valid Percentage	CumulativePercentage
Valid	Low	16	16.0	16.0	16.0
	Below Average	22	22.0	22.0	38.0
	Average	32	32.0	32.0	70.0
	Above Average	19	19.0	19.0	89.0
	High	11	11.0	11.0	100.0
	Total	100	100.0	100.0	

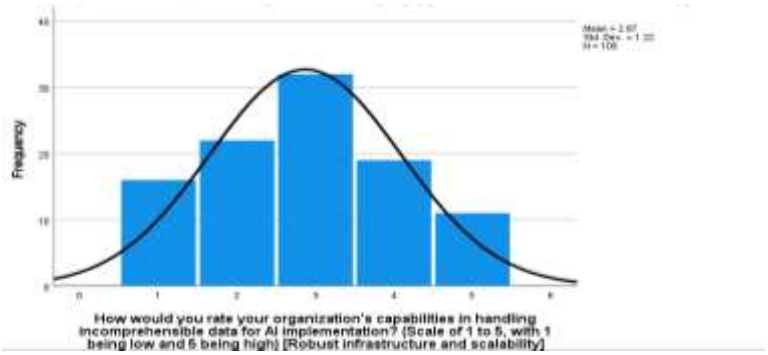


Figure: 40

Table: 40.2

Statistics		
N	100	100
	0	0
Mean		2.87
Median		3.00
Mode		3
Std. Deviation		1.220
Range		4
Minimum		1
Maximum		5

The table shows an average data value of 2.87, below 3. The median value is 3.00, indicating a similar distribution. The mode value indicates an average belief in the organization's skills in handling AI data. The skewness value is around 0.083, indicating a small right skewness, but negligible divergence from the symmetric distribution.

Pleaserateyourorganization'scapabilitiesinthefollowingaspectsrelatedtodatadependencyfor AI on a scale of 1 to 5, with 1 being "Very Weak" and 5 being "Very Strong". The graphical representation of the respondents' distribution is provided below in Table: 41.1 and Figure: 41.

Table: 41.1

Data Quality					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	1-VeryWeak	21	21.0	21.0	21.0
	2-Weak	22	22.0	22.0	43.0
	3-Moderate	18	18.0	18.0	61.0
	4-Strong	24	24.0	24.0	85.0
	5-VeryStrong	15	15.0	15.0	100.0
	Total	100	100.0	100.0	

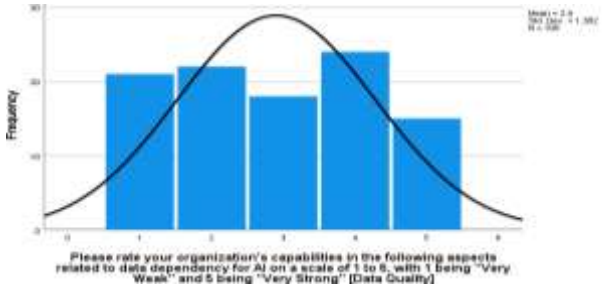


Figure: 41

Statistics		
N	100	100
	0	0
Mean		2.90
Median		3.00
Mode		4
Std. Deviation		1.382
Range		4
Minimum		1
Maximum		5

The table shows an average data distribution of 2.90, slightly below 3.0, with a median of 3.00. The mode value 4 (Strong) indicates strong data quality. The skewness value is 0.042, indicating a small right-skewness, but little deviation from the symmetrical distribution.

Data Accessibility: The graphical representation of the respondents' distribution is provided below in Table: 42.1 and Figure: 42.

Table: 42.1

Data Accessibility					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	1-VeryWeak	18	18.0	18.0	18.0
	2-Weak	21	21.0	21.0	39.0
	3-Moderate	24	24.0	24.0	63.0
	4-Strong	26	26.0	26.0	89.0
	5-VeryStrong	11	11.0	11.0	100.0
	Total	100	100.0	100.0	

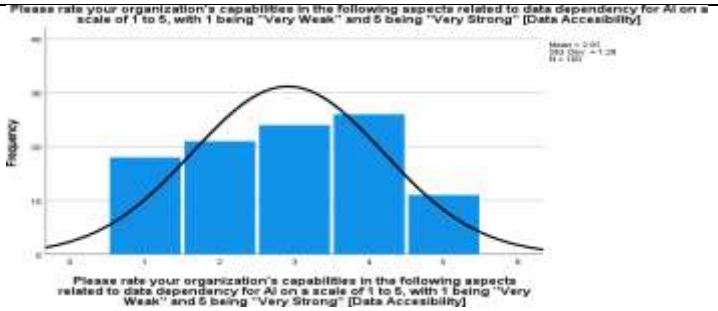


Figure: 42

Table: 42.2

Statistics		
N	100	100
	0	0
Mean		2.91
Median		3.00
Mode		4
Std. Deviation		1.280
Range		4
Minimum		1
Maximum		5

The table shows an average data distribution of 2.91, with a median of 3.00. The mode value 4 (Strong) indicates strong data accessibility. The skewness value is -0.035, indicating small left skewness, possibly due to large values on the left. However, there is minimal divergence from the symmetrical distribution.

Data Governance: The graphical representation of the respondents' distribution is provided below in Table: 43.1 and Figure: 43.

Table: 43.1

Data Governance					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	1-VeryWeak	14	14.0	14.0	14.0
	2-Weak	18	18.0	18.0	32.0
	3-Moderate	30	30.0	30.0	62.0
	4-Strong	22	22.0	22.0	84.0
	5-VeryStrong	16	16.0	16.0	100.0
	Total	100	100.0	100.0	

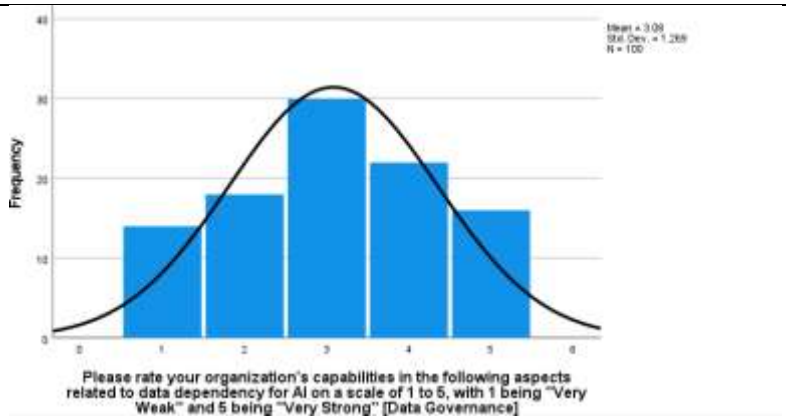


Figure: 43

Table: 43.2

Statistics		
N	100	100
	0	0
Mean		3.08
Median		3.00
Mode		3
Std. Deviation		1.269
Range		4
Minimum		1
Maximum		5

The data distribution is slightly above the median of 3.00, with a mode number of 3, indicating moderate data accessibility. The skewness value is -0.092, indicating a small left skewness, possibly due to large values on the left, and a minor deviation from the symmetrical distribution.

Data Security and Privacy: The graphical representation of the respondents' distribution is provided below in Table: 44.1 and Figure: 44.

Table: 44.1

Data Security and Privacy					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	1-VeryWeak	17	17.0	17.0	17.0
	2-Weak	15	15.0	15.0	32.0
	3-Moderate	22	22.0	22.0	54.0
	4-Strong	25	25.0	25.0	79.0
	5-VeryStrong	21	21.0	21.0	100.0
	Total	100	100.0	100.0	

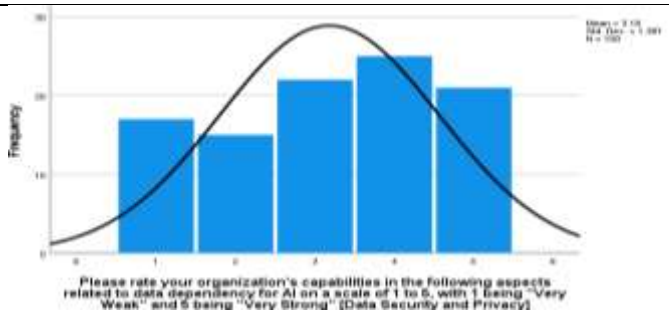


Figure: 44.

Table: 44.2

Statistics		
N	100	100
	0	0
Mean		3.18
Median		3.00
Mode		4
Std. Deviation		1.381
Range		4
Minimum		1
Maximum		5

The table shows a mean of 3.18, centered around a median of 3.00, and a strong belief in the organization's data security and privacy skills. The data distribution is negative and skews with a -0.237 rating.

Data Integration: The graphical representation of the respondents' distribution is provided below in Table: 45.1 and Figure: 45.

Table: 45.1

Data Integration					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	1-VeryWeak	17	17.0	17.0	17.0
	2-Weak	18	18.0	18.0	35.0
	3-Moderate	23	23.0	23.0	58.0
	4-Strong	25	25.0	25.0	83.0
	5-VeryStrong	17	17.0	17.0	100.0
	Total	100	100.0	100.0	

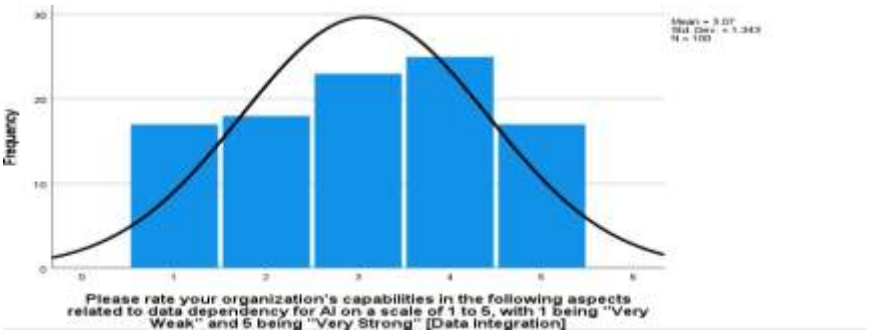


Figure: 45

Table: 45.2

Statistics		
N	100	100
	0	0
Mean		3.07
Median		3.00
Mode		4
Std. Deviation		1.343
Range		4
Minimum		1
Maximum		5

The data distribution is slightly above average, with a median of 3.00. The mode value 4 (Strong) indicates strong data security and privacy skills. The data is negative, concentrated on the right end, and has a skewness value of -0.130.

Data Analysis: The graphical representation of the respondents' distribution is provided below in Table: 46.1 and Figure: 46.

Table: 46.1

Data Analysis					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	1-VeryWeak	18	18.0	18.0	18.0
	2-Weak	17	17.0	17.0	35.0
	3-Moderate	29	29.0	29.0	64.0
	4-Strong	19	19.0	19.0	83.0
	5-VeryStrong	17	17.0	17.0	100.0
	Total	100	100.0	100.0	

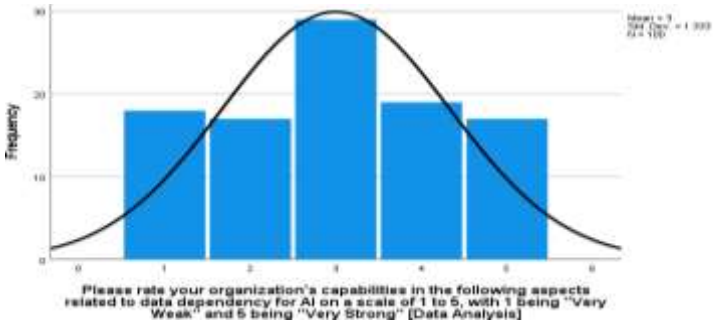


Figure: 46

Table: 46.1

Statistics		
N	100	100
	0	0
Mean		3.00
Median		3.00
Mode		3
Std. Deviation		1.333
Range		4
Minimum		1
Maximum		5

The table shows an average of 3, a median of 3.00, indicating a centered distribution. The mode value of 3 indicates moderate data analysis capabilities. The estimated skewness value is -0.026, indicating a almost symmetrical data distribution.

Data Strategy: The tabular representation of the respondents' distribution is provided below in Table: 47.1 and Table: 47.2

Table: 47.1

Data Strategy					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	1-VeryWeak	15	15.0	15.0	15.0
	2-Weak	22	22.0	22.0	37.0
	3-Moderate	22	22.0	22.0	59.0
	4-Strong	25	25.0	25.0	84.0
	5-VeryStrong	16	16.0	16.0	100.0
	Total	100	100.0	100.0	

Table: 47.2

Statistics		
N	100	100
	0	0
Mean		3.05
Median		3.00
Mode		4
Std. Deviation		1.313
Range		4
Minimum		1
Maximum		5

The data distribution is slightly above 3.00, with a mode value of 4 (Strong) indicating strong organizational capabilities. The data distribution is almost symmetrical but slightly negatively skewed, with a computed skewness value of -0.067.

Data Ethics: The tabular and graphical representation of the respondents' distribution is provided below in Table: 48.1 and Figure: 48.

Table: 48.1

Data Ethics					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	1-VeryWeak	14	14.0	14.0	14.0
	2-Weak	28	28.0	28.0	42.0
	3-Moderate	23	23.0	23.0	65.0
	4-Strong	19	19.0	19.0	84.0
	5-VeryStrong	16	16.0	16.0	100.0
	Total	100	100.0	100.0	

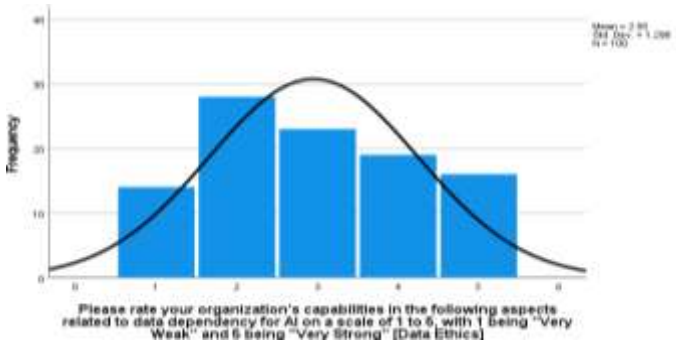


Figure: 48.

Table: 48.1

Statistics		
N	100	100
	0	0
Mean		2.95
Median		3.00
Mode		2
Std. Deviation		1.298
Range		4
Minimum		1
Maximum		5

The table shows a mean value of 2.95, below the average of 3.00, with a median value of 3.00. The median value of 2 indicates weak data ethics, while the data distribution is favorable and concentrated near the left end.

Data Scalability: The tabular and graphical representation of the respondents' distribution is provided below in Table: 49.1 and Figure: 49.

Table: 49.1

Data Scalability					
		Frequency	Percent	Valid Percentage	Cumulative Percentage
Valid	1-VeryWeak	20	20.0	20.0	20.0
	2-Weak	20	20.0	20.0	40.0
	3-Moderate	25	25.0	25.0	65.0
	4-Strong	22	22.0	22.0	87.0
	5-VeryStrong	13	13.0	13.0	100.0
	Total	100	100.0	100.0	

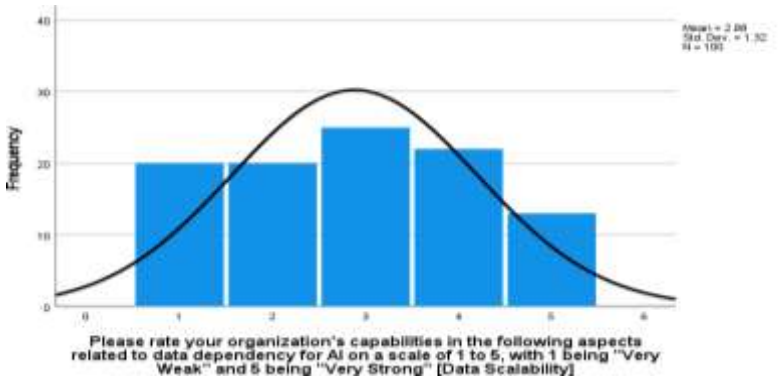


Figure: 49.

Table: 49.1

Statistics		
N	100	100
	0	0
Mean		2.88
Median		3.00
Mode		3
Std. Deviation		1.320
Range		4
Minimum		1
Maximum		5

The table shows an average data distribution of 2.88, slightly below 3. The median value of 3.00 indicates a left skewed distribution, with the data centered on the left end of the scale. The skewness value of 0.037 suggests small right skewness, possibly due to unusually large numbers on the right. However, the degree of skewness remains consistent.

Conclusion and Future Directions: Organizations face significant challenges in data quality, governance practices, ownership, access policies, and data understanding, which may affect the precision, openness, and moral implications of AI applications. These challenges include data noise, bias, lack of context, and dependency on specific sources, ecosystems, and suppliers.

To address these challenges effectively, organizations need to develop and leverage specific capabilities

- A culture of data-driven decision-making and a strong commitment from the leadership are essential for the success of AI.
- The key to guaranteeing data reliability is to implement efficient data governance procedures, which include data ownership, quality requirements, and access restrictions.
- It is crucial to invest in the development of AI expertise, especially machine learning and data science specialists.
- Change management procedures are essential for reducing employee resistance and guaranteeing smooth AI adoption.
- Organizations can manage data efficiently thanks to robust technological infrastructure, such as cloud computing and scalable data storage.
- The relevance and impact of AI implementations are increased when projects are in line with organizational objectives.

Businesses employ strategies like real-world case studies, advanced analytics, data cooperation, and pre-processing to tackle data-related issues, enhancing AI implementation success. These tactics improve model accuracy, ethical compliance, operational efficiency, creativity, and legal compliance.

Managerial Implications: For organizations embarking on AI implementations, several managerial implications emerge from our research:

- Successful AI requires a strong commitment from the leadership. Leaders ought to support AI projects and encourage a culture where decisions are made based on facts.
- To guarantee data security, compliance, and quality, effective data governance procedures should be put in place. A strategic priority should be data management.

- It is imperative to invest in the development of AI talent. Data scientists and machine learning specialists should be hired, trained, and retained by organizations.
- To effectively tackle data challenges, organizations should invest in a strong technology infrastructure, such as cloud computing and scalable data storage.
- To ensure a smooth deployment of AI and reduce employee resistance, change management procedures are essential.
- The significance and impact of AI deployments are increased when strategic alignment of AI projects with organizational goals is achieved.

Theoretical Contributions: This study enhances understanding of AI implementation challenges and solutions, emphasizing the significance of organizational capacities in addressing data reliance and incomprehensibility, paving the way for future research.

Future Directions: It is imperative to conduct additional research on ethical AI frameworks, bias reduction strategies, and responsible AI development processes.

- Comprehensive research on the application of AI in certain sectors, like manufacturing, healthcare, or finance, can offer recommendations and insights unique to that sector.
- It is crucial to conduct research on how AI policy and governance are changing, as well as how new privacy and data protection regulations may affect these developments.
- Examining how AI and humans interact and how workers' roles are evolving in AI-driven businesses.
- Examining how AI promotes innovation and how it affects the competitiveness of organizations.
- Examining the challenges and opportunities for AI adoption in developing economies and its potential for societal transformation.

Research emphasizes the need for effective organizational capabilities and strategies to address data challenges in successful AI implementations, emphasizing the importance of responsible and ethical AI development.

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