CHAPTER – 5

FINDINGS, RECOMMENDATIONS & CONCLUSIONS

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5.1 MAJOR FINDINGS:

Big Data Analytics (BDA) and Business Intelligence Systems (BIS) play a pivotal role in modern organizations by providing data-driven insights that enhance decision-making, operational efficiency, and strategic planning. They enable businesses to harness valuable information, optimize processes, and remain competitive in a data-centric environment. Their importance lies in their ability to turn raw data into actionable intelligence, driving business success.

- A significant majority of respondents, approximately 36%, held the view that there is a high utilization of BI planning/reporting suites in Indian companies for managing big data and implementing analytics for business solutions. Additionally, about 28.5% of respondents expressed agreement with this perspective, while 16% indicated a belief in very low usage of such suites in this context.

- 22% respondents confirmed that business analytics and business intelligence systems are very highly used in data visualization tasks in the organization both public and private, also about 28% confirmed that these systems have high usage whereas 18% in total were against the above-mentioned view point.

- In total, approximately 23% of the respondents believed that AI-enabled BI tools primarily serve the purpose of predictive modelling within companies, while around 54% of respondents disagreed with this viewpoint. Additionally, 23% of respondents remained unsure about the role of AI-enabled BI tools in this context.

- Among the respondents, approximately 41.5% strongly supported the idea that Business Intelligence Systems (BIS) are beneficial for statistical analysis, while 26% agreed that Business Analytics and BIS are employed for statistical data analysis. Conversely, about 8% of respondents held a contrary perspective on this matter.

- 2.5% respondents strongly agreed that BA-BIS are used for data quality: data volume adequacy, 77.5% were also in agreement, around 16.5% respondents as BA-BIS users were not sure about it whereas about 3.5% disagreed with the statement and none were strongly in disagreement with view point.

- The majority of respondents, comprising 64%, strongly supported the notion that Business Analytics (BA) and Business Intelligence Systems (BIS) are instrumental in facilitating effective decision-making within organizations. However, around 9.5% of BA-BIS users remained uncertain about this aspect, while approximately 23% disagreed with the statement to varying degrees. A smaller percentage, approximately 3.5%, held a strong disagreement with this viewpoint, indicating a diverse range of perspectives within the respondent group.

- Majority of respondents about 36% strongly agreed that Business analytics and intelligent systems are being used for decision making in sales and marketing whereas about 13.5% strongly disagreed with the above-mentioned view point.

5.2 HYPOTHESES TESTING RESULTS:

The incorporation of Big Data Analytics and Business Intelligence Systems has the potential to substantially boost organizational performance. These tools enable data-driven decision-making, enhance operational efficiency, and foster innovation. However, their success hinges on strategic implementation, skilled personnel, data security measures, and a commitment to data quality and continuous improvement. When wielded effectively, they can be a pivotal asset in achieving and maintaining competitiveness in today's data-centric business landscape.

5.2.1 Big Data Analytics and Business Intelligence Systems and Organizational Performance:

$H_0$1: Big data analytics and business intelligence system do not have a significant impact on organizations performance.

H_a1: Big data analytics and business intelligence system have a significant impact on organizations performance.

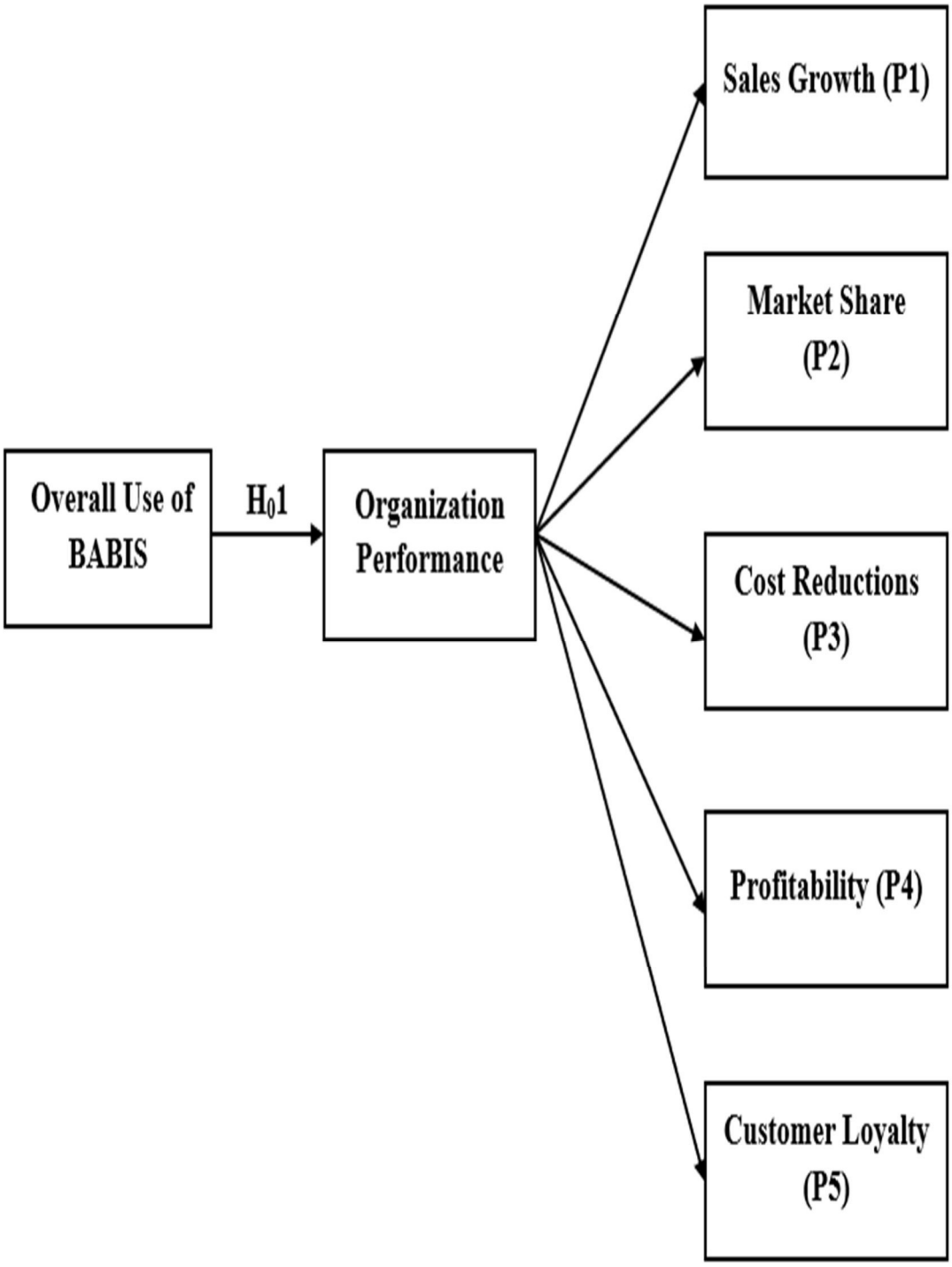

Figure 5.1: Relationship between Overall Use of BABIS & Organization Performance

Sales Growth and Overall Use of BABIS:

$H_0$1.1: There is no association between organization performance measure sales growth (P1) and overall use of BABIS.

H_a1.1: There is association between organization performance measure sales growth (P1) and overall use of BABIS

Performance: Sales Growth (P1) $\xrightarrow{\mathbf{H_0 1.1}}$ Overall Use of BABIS

Results: The null hypothesis was being rejected as p-value was found to be lower than the standard alpha value of 0.05 which suggest that the alternate hypothesis is found to be significant enough and it can be concluded that there is association between organization performance measure sales growth (P1) and overall use of BABIS.

The relationship between organization performance measure sales growth (P1) and overall use of BABIS can be represented in form as shown below:

Performance: Sales Growth (P1) = 0.943 (Overall Use of BABIS) + 0.249

Market Share and Overall Use of BABIS:

$H_0$1.2: There is no association between organization performance measure market share (P2) and overall use of BABIS.

H_a1.2: There is association between organization performance measure market share (P2) and overall use of BABIS.

Performance: Market Share (P2) $\xrightarrow{\mathbf{H_0 1.2}}$ Overall Use of BABIS

Results: The null hypothesis was being rejected as p-value was found to be lower than the standard alpha value of 0.05 which suggest that the alternate hypothesis is being accepted and finally it can be concluded that there is association between organization performance measure market share (P2) and overall use of BABIS.

The relationship between organization performance measure market share (P2) and overall use of BABIS can be represented in form of model as shown below:

Performance: Market Share (P2) = 0.839 (Overall Use of BABIS) + 0.610

Cost Reductions and Overall Use of BABIS:

$H_0$1.3: There is no association between organization performance measure cost reductions (P3) and overall use of BABIS.

H_a1.3: There is association between organization performance measure cost reductions (P3) and overall use of BABIS.

Performance: Cost Reductions (P3) $\xrightarrow{\mathbf{H_0 1.3}}$ Overall Use of BABIS

Results: The null hypothesis was being rejected as p-value was found to be lower than the standard alpha value of 0.05 which suggest that the alternate hypothesis is being accepted and finally it can be concluded that there is association between organization performance measure cost reductions (P3) and overall use of BABIS.

The relationship between organization performance measure cost reductions (P3) and overall use of BABIS can be represented in form of model as shown below:

Performance: Cost Reductions (P3) = 0.807 (Overall Use of BABIS) + 0.782

Profitability and Overall Use of BABIS:

$H_0$1.4: There is no association between organization performance measure profitability (P4) and overall use of BABIS.

H_a1.4: There is association between organization performance measure profitability (P4) and overall use of BABIS.

Performance: Profitability (P4) $\xrightarrow{\mathbf{H_0 1.4}}$ Overall Use of BABIS

Results: The null hypothesis was being rejected as p-value was found to be lower than the standard alpha value of 0.05 which suggest that the alternate hypothesis is being accepted and finally it can be concluded that there is association between organization performance measure profitability (P4) and overall use of BABIS.

The relationship between organization performance measure profitability (P4) and overall use of BABIS can be represented in form of model as shown below:

Performance: Profitability (P4) = 0.947 (Overall Use of BABIS) + 0.199

Customer Loyalty and Overall Use of BABIS:

$H_0$1.5: There is no association between organization performance measure customer loyalty (P5) and overall use of BABIS.

H_a1.5: There is association between organization performance measure customer loyalty (P5) and overall use of BABIS.

Performance: Customer Loyalty (P5) $\xrightarrow{\mathbf{H_0 1.5}}$ Overall Use of BABIS

Results: The null hypothesis was being rejected as p-value was found to be lower than the standard alpha value of 0.05 which suggest that the alternate hypothesis is being accepted and finally it can be concluded that there is association between organization performance measure customer loyalty (P5) and overall use of BABIS.

The relationship between organization performance measure customer loyalty (P5) and overall use of BABIS can be represented in form of model as shown below:

Performance: Customer loyalty (P5) = 1.025 (Overall Use of BABIS) – 0.162

It was found that majority of the sub hypotheses were being rejected which concludes that the null $H_0$1: “Big data analytics and business intelligence system do not have a significant impact on organizations performance” is being rejected. The research findings indicate that there is indeed a significant impact of big data analytics and business intelligence systems on organizational performance. This suggests that these technologies play a substantial and positive role in influencing how organizations operate and perform, aligning with the hypothesis that their implementation can yield tangible benefits and improvements in various aspects of organizational functioning.

5.2.2 BA & BIS and Economic/Financial Performance:

$H_0$2: Big data analytics & business intelligent system do not have better economic and financial performance.

H_a2: Big data analytics & business intelligent system have better economic and financial performance.

Economic and Financial Performance $\xrightarrow{\mathbf{H_0 2}}$ Overall Use of BABIS

Results: The null hypothesis was being rejected as p-value was found to be lesser than the standard alpha value of 0.05 which suggest that the alternate hypothesis is being accepted and finally it can be concluded that big data analytics & business intelligent system have better economic and financial performance.

The relationship between economic and financial performance and overall use of BABIS can be represented in form of model as shown below:

Economic & Financial Performance = 0.888 (Overall Use of BABIS) + 0.362

5.2.3 BABIS System and Decision Making:

$H_0$3: There is no significant difference between the impact of big data analytics & business intelligence system on decision making in both type of organizations (Private and Public).

H_a3: There is significant difference between the impact of big data analytics & business intelligence system on decision making in both type of organizations (Private and Public).

The null hypothesis $H_0$3 was being divided into sub hypotheses as shown below in the table with hypothesis testing results.

Table 5.1: $H_0$3 Sub-Hypotheses Testing Results

Hypothesis	Statement	Test Statistics	Result
$H_0$3.1	There is no significant difference between the impact of big data analytics & business intelligence system on decision effectiveness in both type of organizations (Private and Public).	Chi-Square Test P-Value (0.00) < 0.05	Rejected
$H_0$3.2	There is no significant difference between the impact of big data analytics & business intelligence system on accuracy/correctness of decision making in both type of organizations (Private and Public).	Chi-Square Test P-Value (0.00) < 0.05	Rejected
$H_0$3.3	There is no significant difference between the impact of big data analytics & business intelligence system on timeliness/speed of decision making in both type of organizations (Private and Public).	Chi-Square Test P-Value (0.00) < 0.05	Rejected
$H_0$3.4	There is no significant difference between the impact of big data analytics & business intelligence system on rationale/informed decisions in both type of organizations (Private and Public).	Chi-Square Test P-Value (0.00) < 0.05	Rejected
$H_0$3.5	There is no significant difference between the impact of big data analytics & business intelligence system on decision making related to key indicators in both type of organizations (Private and Public).	Chi-Square Test P-Value (0.00) < 0.05	Rejected

Finally, it can be concluded that all the sub hypotheses were being rejected confirming that the alternate hypothesis is being accepted and there is significant difference between the impact of big data analytics & business intelligence system on decision making in both type of organizations (Private and Public).

5.2.4 Success Factors and Organization Type:

H_0 4: There is no significant relationship between big data & business intelligence system success factors and type of organizations.

H_0 4: There is significant relationship between big data & business intelligence system success factors and type of organizations.

Table 5.2: $H_0$4 Sub-Hypotheses Testing Results

Hypothesis	Statement	Test Statistics	Result
$H_0$4.1	There is no significant relationship between big data & business intelligence system success factor: data volume adequacy and type of organizations.	Chi-Square Test P-Value (0.00) < 0.05	Rejected
$H_0$4.2	There is no significant relationship between big data & business intelligence system success factor: data Access and type of organizations.	Chi-Square Test P-Value (0.00) < 0.05	Rejected
$H_0$4.3	There is no significant relationship between big data & business intelligence system success factor data quality: use and type of organizations.	Chi-Square Test P-Value (0.00) < 0.05	Rejected

$H_0$4.4	There is no significant relationship between big data & business intelligence system success factor diversity of unstructured data: access and type of organizations.	Chi-Square Test P-Value (0.00) < 0.05	Rejected
$H_0$4.5	There is no significant relationship between big data & business intelligence system success factor diversity of unstructured data - use and type of organizations.	Chi-Square Test P-Value (0.00) < 0.05	Rejected
$H_0$4.6	There is no significant relationship between big data & business intelligence system success factor rate of change of data – access and type of organizations.	Chi-Square Test P-Value (0.00) < 0.05	Rejected
$H_0$4.7	There is no significant relationship between big data & business intelligence system success factor rate of change of data-use and type of organizations.	Chi-Square Test P-Value (0.00) < 0.05	Rejected
$H_0$4.8	There is no significant relationship between big data & business intelligence system success factor user satisfaction: effectiveness & efficiency of BI system and type of organizations.	Chi-Square Test P-Value (0.00) < 0.05	Rejected
$H_0$4.9	There is no significant relationship between big data & business intelligence system success factor user satisfaction: suitability/task relevance of BI information and type of organizations.	Chi-Square Test P-Value (0.00) < 0.05	Rejected

$H_0$4.10	There is no significant relationship between big data & business intelligence system success factor user satisfaction: BI system meeting user requirements and type of organizations.	Chi-Square Test P-Value (0.00) < 0.05	Rejected
$H_0$4.11	There is no significant relationship between big data & business intelligence system success user satisfaction: general end-user satisfaction with BI system and type of organizations.	Chi-Square Test P-Value (0.00) < 0.05	Rejected
$H_0$4.12	There is no significant relationship between big data & business intelligence system success factor decisions about new products/services/market and type of organizations.	Chi-Square Test P-Value (0.00) < 0.05	Rejected
$H_0$4.13	There is no significant relationship between big data & business intelligence system success factor decisions about strategic/key suppliers and type of organizations.	Chi-Square Test P-Value (0.00) < 0.05	Rejected
$H_0$4.14	There is no significant relationship between big data & business intelligence system success factor decisions about outsourcing/BPM and type of organizations.	Chi-Square Test P-Value (0.00) < 0.05	Rejected
$H_0$4.15	There is no significant relationship between big data & business intelligence system success factor decisions about sales and marketing and type of organizations.	Chi-Square Test P-Value (0.09) > 0.05	Accepted

The results conclude that majority of null hypotheses are being rejected as p-value is lesser than the standard alpha value of 0.05 except sub hypothesis $H_0$4.15. So, it is interpreted that the null hypothesis $H_0$4 is being rejected and there is significant relationship between big data & business intelligence system success factors and type of organizations.

5.2.5 BABIS and Administrative Effectiveness:

$H_0$5: There is no significant impact of big data analytics & business intelligent system on administrative effectiveness of private and public sector organizations in India.

Result: The obtained p-value of .001 for both the Pearson Chi-Square Test and the Likelihood Ratio Test indicates that the probability of observing the results by chance is extremely low. This p-value is well below the commonly accepted significance level of 0.05, which suggests strong statistical evidence against the null hypothesis (H0 5). Consequently, the rejection of the null hypothesis is justified. This means that there is a significant and positive impact of implementing big data analytics and business intelligence systems on the administrative effectiveness of both private and public sector organizations in India. These systems are evidently associated with improvements in administrative processes, decision-making, and overall efficiency, reinforcing their value as transformative tools in enhancing organizational performance and effectiveness.

5.2.6 BABIS and Effectiveness of Organization:

$H_0$6: There is no impact of big data analytics & business intelligent system on the effectiveness of organizations in Indian perspective.

Result: According to T-Test outcome it can be concluded that the null hypothesis is being rejected as p-value < 0.05 (standard alpha value) which confirms that there is significant impact of big data analytics & business intelligent system on the effectiveness of organizations in Indian perspective.

5.3 FUTURE SCOPE:

The integration of Big Data Analytics (BDA) and Business Intelligence Systems (BIS) has substantial implications for decision-making processes within Indian companies and offers promising future prospects. These systems enhance decision accuracy, enable real-time decision-making, and improve customer understanding, while also optimizing costs and aiding in strategic planning and risk management. Additionally, they assist in ensuring regulatory compliance and require investments in talent development and cybersecurity. Ethical considerations related to data privacy and transparency are increasingly crucial. As technology advances, Indian companies must adapt to evolving tools, standards, and regulations to fully capitalize on these capabilities, contributing to their growth and competitiveness in the domestic and global markets.

Enhanced Decision Accuracy: BDA and BIS provide Indian companies with the tools to collect, process, and analyse vast amounts of data. This enables organizations to make data-driven decisions, reducing guesswork and increasing decision accuracy. Future scope lies in improving these systems to provide even more accurate insights.

Real-time Decision Making: BDA and BIS empower companies to access real-time data, which is crucial in today's fast-paced business environment. Organizations can respond promptly to market changes, customer preferences, and emerging trends. As technology advances, real-time capabilities will become even more sophisticated.

Improved Customer Understanding: Indian companies can leverage BDA and BIS to gain a deeper understanding of their customers. By analyzing customer data, organizations can personalize products, services, and marketing efforts, leading to improved customer satisfaction and loyalty. Future developments may include more advanced customer profiling and predictive analytics.

Cost Optimization: These systems enable organizations to identify cost-saving opportunities and optimize operations. This is particularly important in a competitive market like India. The future scope involves more advanced cost modelling and optimization algorithms.

Strategic Planning: BDA and BIS provide valuable insights for long-term strategic planning. Indian companies can use historical data and predictive analytics to plan for

expansion, new product launches, and market entry. The future may see the integration of AI and machine learning for more sophisticated strategic planning.

Risk Management: BDA and BIS help identify potential risks and vulnerabilities. Indian companies can better manage risks by monitoring data for anomalies and trends. Future scope includes improving risk prediction models.

Regulatory Compliance: As regulations evolve, BDA and BIS can assist Indian companies in ensuring compliance. Automation and data analytics can help in reporting and adhering to complex regulatory requirements.

Talent Development: To harness the full potential of BDA and BIS, Indian companies need skilled professionals. The future scope involves investing in workforce training and development in data analytics and business intelligence.

Cybersecurity: With the increasing reliance on data, cybersecurity becomes crucial. Indian companies need to invest in robust cybersecurity measures to protect sensitive data. The future scope includes advancements in cybersecurity technologies to combat evolving threats.

Ethical Considerations: As data collection and analysis become more pervasive, ethical considerations such as data privacy and transparency become critical. Indian companies should stay attuned to ethical concerns and adopt best practices in data handling.

5.4 LIMITATIONS:

The research limitations identified after analysing the impact of Big Data Analytics and Business Intelligence Systems (BIS) on decision-making and organizational performance in both type of organizations (Private or Public) are as follows:

Data Quality and Availability: The process of analysing start after data collection so availability and quality of data plays very important role as it can affect the final output. The availability and quality of data can vary widely, which might affect the accuracy and reliability of the study's findings.

Sample Size and Representativeness: Limited access to organizations or a small sample size can restrict the generalizability of the findings. It's important to ensure that the sample represents a diverse range of public and private organizations to draw meaningful conclusions.

Measurement and Metrics: Defining and measuring the impact of Big Data Analytics and BIS on decision-making and organizational performance can be challenging. Researchers need to establish clear and consistent metrics to assess these impacts accurately.

Resource Constraints: The implementation of Big Data Analytics and BIS can be resource-intensive. Smaller organizations, whether public or private, might face limitations in adopting and maintaining these systems, potentially affecting the study's scope.

Timeframe: The study's timeframe might not capture the long-term effects of implementing Big Data Analytics and BIS. The impacts on decision-making and performance could evolve over time, and a shorter study duration might miss these trends.

Context Specificity: The impact of these technologies can vary depending on the specific industry, sector, or region. The study's findings might not be universally applicable and could be context-specific.

Technological Advancements: The rapidly evolving nature of technology means that the capabilities and features of Big Data Analytics and BIS might change during the study, potentially impacting the relevance of the findings.

In summary, the implications of Big Data Analytics and Business Intelligence Systems on decision-making in Indian companies are significant and offer promising future scope. As technology continues to advance and data availability grows, these tools will play an increasingly pivotal role in shaping the strategies and operations of Indian businesses, contributing to their growth and competitiveness in both domestic and global markets. However, companies must adapt to evolving technologies, ethical standards, and regulatory requirements to fully harness the benefits while managing associated challenges.