

Impact of Big Data Analytic on Business Decision Making at Industry Owl

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ABSTRACT

Big data analytics (BDA) has become a potent tool for facilitating both operational and strategic business choices in the era of digital transformation. This study investigates how BDA transforms large, intricate datasets into useful insights, changing the face of decision-making. In addition to providing real-world case studies from a variety of industries, including manufacturing, logistics, and energy, it describes the theoretical underpinnings of data-driven strategies. The results indicate that businesses using BDA make decisions more quickly, accurately, and effectively. Nonetheless, issues with talent, integration, and data quality continue to exist. Recommendations for optimising BDA benefits and encouraging a data-driven culture in modern businesses are included in the study's conclusion.

INTRODUCTION

Massive amounts of data are generated and exchanged by modern enterprises from sources like social media, Internet of Things devices, customer interactions, and corporate systems. Conventional decision-making that relies on gut feeling or scant historical information is no longer enough.

Big Data Analytics (BDA) examines massive datasets for hidden trends, correlations, and patterns using sophisticated tools and algorithms.

- Better consumer insights.
- more informed strategic planning.
- real-time operational choices.
- predictive and prescriptive analytics to reduce risk are all made possible by the incorporation of BDA into corporate operations.

Notwithstanding its advantages, implementing BDA has drawbacks, such as the need for qualified personnel, data governance, and connection with legacy systems. This study examines the theoretical underpinnings of BDA's influence and uses a case study methodology to highlight its practical ramifications.

RESEARCH METHODOLOGY

1. Research design

A quantitative descriptive-correlational design is used in this investigation. It looks at how firms in industries including manufacturing, shipping, finance, and healthcare may increase the efficacy of their decision-making by implementing Big Data Analytics (BDA).

2. Target population and samples

Professionals at the management and executive levels who work for companies that have used or are now using BDA tools are included in the target market. To guarantee varied representation across industries, a stratified random selection technique was employed.

- There were 385 responders in the sample.
- The representation of industry:

- Production: 26%
- Utilities and Energy: 21%
- Supply Chain & Logistics: 18%
- Gas and Oil: 16%
- Automobiles: 10%
- Others: 9%

3. Data collection

The following methods were used to gather data: semi-structured interviews with 15 executives and managers; structured online questionnaires with multiple-choice and Likert-scale questions; and case studies from businesses that showed effective BDA integration. The following were the main topics of the survey:

- Type and level of BDA usage
- Perceived influence on tactical, strategic, and operational decisions
- Measures of organisational performance like customer satisfaction, decision-making speed, and cost savings

4. Data analysis techniques

- The demographics and BDA usage of the respondents were compiled using descriptive statistics (mean, frequency, and standard deviation)
- Pearson's r correlation analysis was used to ascertain the connections between decision quality and BDA adoption.
- The effect of BDA usage on business performance KPIs was predicted using regression analysis.
- Interview transcripts were subjected to qualitative thematic analysis using NVivo.

THEORETICAL FRAMEWORK

Using the following frameworks, the impact of BDA on decision-making is examined:

1. Resources based view(RBV)

According to RBV, analytics and data capabilities are strategic assets that offer a long-term edge over competitors. Businesses can outperform rivals if they have better data assets and analytical capabilities.

2. Technology organisation environment(TOE) framework

This approach uses the following technical elements to explain BDA adoption:

- BDA tool complexity, compatibility, and relative advantage.
- Organisational factors: top management support, firm size, and culture.
- Environmental factors: the regulatory environment and industry pressure.

3. Decision theory

The main goal of decision theory is to maximise decisions in the face of uncertainty. BDA helps with this by increasing the objectivity of judgments, decreasing uncertainty, and improving the quality of the information.

CASE STUDY

1. Context

As a leader in global logistics, DHL has difficulties controlling delivery schedules, fuel usage, and route optimisation throughout its extensive worldwide network.

Putting BDA into Practice

2. DHL used big data analytics in order to examine:

- Historical delivery times
- Traffic and weather data
- Real-time GPS tracking Results

3. Outcomes

- Delivery Efficiency: Increased by 15% to 20%.
- Fuel consumption was greatly decreased by using more efficient routes.
- Resource Allocation: Using predictive algorithms to improve staffing vehicle usage Strategic Consequences.

4. Strategic implications

By using BDA, DHL was able to make decisions more proactively rather than reactively, which reduced operating expenses and raised customer satisfaction.

CONCLUSION

Across all industries, business decision-making is significantly impacted by big data analytics. BDA improves risk management, operational agility, and strategic foresight by turning unstructured data into insightful knowledge. Better performance results are reported by organisations that include BDA into their core operations, especially in terms of responsiveness and efficiency. However, major obstacles including data silos, integration problems, and a lack of talent must be overcome in order to fully realise BDA's potential. In addition to investing in technology, businesses also need to cultivate a culture of data-driven decision-making.

RECOMMENDATIONS

The following suggestions are made in light of the findings:

1. Make an Investment in Talent Development

- Educate employees in decision science, analytics platforms (Power BI, R, Python), and data literacy.
- When needed, hire analysts and data scientists.

2. Include BDA in Every Level of Decision Making

- Incorporate BDA not only into IT or reporting, but also into operational, tactical, and strategic workflows.
- To match insights with company goals, form cross-functional teams.

3. Strengthen Data Governance

- Put in place privacy, security, and quality data policies.
- To preserve data integrity, routine validation and audits should be carried out.

4. Make Use of Scalable Systems

- Use adaptable, cloud-based solutions that facilitate real-time analytics.
- To overcome data silos, use integration technologies and scalable data lakes.

REFERENCE

1. Chiang, R. H. L., Storey, V. C., and Chen, H. (2012). huge data to huge impact: corporate intelligence and analytics. 36(4), MIS Quarterly, 1165–1188. 10.2307/41703503 <https://doi.org>
2. Harris, J. G., and Davenport, T. H. (2007). Analytics-Based Competition: The New Science of Winning. Harvard Business Press.
3. McAfee, A., Davenport, T. H., Patil, D. J., Brynjolfsson, E., & Barton, D. (2012). Big data: The revolution in management. 60–68 in Harvard Business Review, 90(10).
4. Chopin, G., Edwards, A., Wamba, S. F., Akter, S., & Gnanzou, D. (2015). Results from a longitudinal case study and a systematic evaluation show how "big data" can have a significant influence. 165, 234–246; International Journal of Production Economics. 10.1016/j.ijpe.2014.12.031 <https://doi.org>
5. Hopkins, M. S., LaValle, S., Lesser, E., Shockley, R., & Kruschwitz, N. (2011). Analytics, big data, and the journey from insights to value. 52(2), 21–32; MIT Sloan Management Review.