

Challenges of the Tourism and Hospitality Industry in Business Analytics Adoption: An Article Perspective

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Abstract

Business Analytics (BA) is increasingly used by tourism and hospitality businesses to improve customer experience, streamline operations, and boost revenue. However, the adoption of business analytics has created different challenges. A mini literature review was used in the study to identify challenges in the tourism and hospitality industries, focusing on adopting business analytics and identifying future research opportunities. The study found that the industry's growing customer data collection raises concerns about data issues, skills and resources, and organizational factors. Furthermore, addressing challenges like data management, skill gaps, and technological integration through strategic investments, research-driven insight, and ethical data practices can lead to sustainable growth and competitive advantage.

Keywords: *business analytics, tourism, hospitality industry, challenges, business performance*

1. Introduction

The Philippines' tourism and hospitality industry is experiencing significant growth, with a market size of USD 2.75 billion in 2024 and projected to reach USD 3.37 billion by 2029 (Mordor Intelligence, 2024). Though it has made tremendous progress in 2024, the global tourism and hospitality industries are still far from returning to their pre-pandemic levels. The industry is experiencing a surge in local and foreign tourists, driven by infrastructure improvements and marketing efforts (Disimulacion, 2021). Despite challenges, the industry's natural beauty, rich culture, and warm hospitality remain strong selling points (Yu, 2020; Zafra, 2021). The government actively promotes tourism, and the hospitality sector has shown resilience and innovation. The post-COVID time in the Philippines' tourism and hospitality industries is adopting technology to improve operational efficiency and customer experience. Artificial intelligence (Khoalenyane & Ajani, 2024), contactless services, and digital infrastructure are critical to recovery and growth (Chissom, 2024). Contactless reservation systems, cashless payments, and changed operational procedures are among the innovations employed to adapt to new market realities (Florence, 2023). Digital adoption is critical for enhancing service quality, lowering costs, and ensuring industrial resilience (Coutinho, 2024). Adopting AI technologies, improving digital infrastructure, and investing in staff training are all strategies for meeting changing client expectations.

In today's data-driven world, business analytics is becoming more significant. Businesses leveraging data to obtain insights have a significant competitive advantage over their rivals. The main goal of business analytics is to use data to support wiser business decisions (Liu et al., 2023). Business analytics depends on how a firm uses the data to capture significant insights and anticipate

the future to create excellent decision-making processes. However, business analytics must be conducted while considering the complexity of the firm's environment, technology, and organization (Silaban, 2022). The tourism and hospitality sectors rely heavily on business analytics to optimize visitor experiences, manage revenue, target advertising, set dynamic prices, and spot revenue-generating opportunities (Mnyakin, 2023). Businesses may enhance revenue, boost customer satisfaction (Lee et al., 2020), and improve operational efficiency by using data to estimate demand, understand guest preferences, and make data-driven decisions (Ebiesuwa et al., 2023). Analytics can also enhance marketing and sales strategies by personalizing advertising and measuring campaign effectiveness. Information technology is becoming increasingly important in the tourism and hospitality industries since client input improves service quality. Guest reviews reflect experiences, opinions, feelings, and worries, which help hotel administrators make decisions. Intangible assets such as opinions, positions, and improvement concerns are vital for word-of-mouth marketing and client retention. Hence, information is considered an intangible asset in the commercial setting (Marcolin et al., 2019). However, according to Mariani (2020), improvements are necessary for better understanding and application. Big data analytics has the potential to advance artificial intelligence and Internet of things-based digital technology, hence fostering a new sector of digital entrepreneurs.

Even though there is a growing body of literature about business analytics (Yin & Fernandez, 2020), research on business analytics adoption in tourism and hospitality is still limited. Most studies focus on specific Business analytics applications, like data analysis, rather than a broader picture of adoption challenges and best practices. Thus, the researchers aimed to identify the key challenges to business analytics adoption in the tourism and hospitality industry and their impact on business performance. Furthermore, this may catalyze further investigation into studies about the use of business analytics in the tourism and hospitality industry.

2. Literature Review

2.1. Role of Business Analytics in the Tourism and Hospitality Industry

The hospitality and tourism industry is defined by its dynamic nature, fierce competition, and rising client demands. To prosper, organizations require data-driven insights to guide strategic decisions. Business analytics (BA) is an effective tool for streamlining operations, improving customer experiences, and increasing performance (Mariani & Baggio, 2022). Business analytics in the hospitality and tourism industries improves decision-making by transforming data into meaningful insights, increasing efficiency, and promoting sustainability (Amiri & Ramos, 2024; Hurbean et al., 2023). It improves services, operational efficiency, and the consumer experience through intelligent analysis (Sequeira et al., 2023). On the other hand, Sakas et al. (2022) highlighted the importance of business analytics in tourism, which optimizes digital marketing strategies and enhances customer engagement, personalization, and brand visibility. It also helps in customer feedback analysis, pricing strategies, revenue management, and corporate image (Abas et al., 2023). In the post-COVID era, the hospitality and tourism sector requires analytics solutions to revitalize businesses and plan for the future. Real-time big data can be used for predictive strategic decision-making, enhancing tourist demand prediction, customer interaction management, and operational efficiency (Mousavian et al., 2023). This increases productivity, customer satisfaction, personalized marketing campaigns, and more efficient operations.

Integrating business analytics and big data technology is crucial for the sector's growth and success (Ghafar, 2022).

2.2. Impact of Business Analytics on business performance

Despite the increasing number of companies engaging in business analytics, only a few have had positive results on their investments. Business analytics can achieve a business advantage if the firm simultaneously focuses on tangible, human, and intangible assets or capabilities. However, firms should pay attention to capabilities, complementary resources, and the ability to align with their business analytics capabilities. Moreover, the business analytics field has evolved, and it now includes talents, skills, and cultures that have created a strong foundation for business analytics capabilities. (Hussinki, 2022). According to Cao et al. (2020), business analytics directly improved environmental scanning, improving a company's innovation ability. Business Analytics (BA) is a crucial tool in the tourism industry for data analysis, reports, dashboards, and strategic planning. This provides a competitive advantage by enabling data-driven management for new tourism businesses and cross-process knowledge extraction, making it essential for decision-making and enhancing the competitiveness of tourism destinations (Jiménez-Partearroyo et al., 2024). It was discovered that business analytics directly improved the development of a data-driven culture, improving environmental scanning. Moreover, a data-driven culture significantly moderated the correlation between environmental scanning and the significance of new goods. Notably, by improving the quality of information and encouraging creativity, business analytics skills helped firms become more agile in identifying market shifts and making the necessary adjustments. Significantly, the relationship between agility and performance shifted when the moderating effect of ambient turbulence was considered (Ashrafi et al., 2019).

3. Methodology

The researchers utilized the qualitative research design through a modified systematic literature review, specifically the mini literature review (Parsa et al., 2006). The Mini Literature Review article aims to quickly and easily emphasize a specific issue or group of related topics and identify possibilities for future research and gaps in the body of literature (Collins, 2014). The systematic review primarily used open-access academic articles published in the last five years and available in the Google Scholar database. The search terms were "business analytics," "tourism industry," "hospitality industry," and "challenges." The researchers adopted the literature review matrix of Navales et al. (2023) to summarize and review the challenges of business analytics adoption.

4. Result and Discussion

Table 1 shows the summary of the systematic literature review on reference from 2019 to the present related to challenges of business analytics adoption in the tourism and hospitality industry. Segment screening was utilized to summarize the reviewed literature related to the variables used in this study. It revealed challenges in adopting business analytics in the tourism and

hospitality industry. The challenges were categorized into data issues, skills and resources, and organizational factors.

Table 1. Mini Literature Review Matrix

Author/s	Year	Relevant Results	Variable Relevance	Methodology Notes
Kumar and Krishnamoorthy	2020	Among the factors influencing firms' adoption of business analytics were perceived benefits, corporate data environment, technical assets, and competitive pressure. Data quality, human resource competency, and business analytics skills are challenges. The findings can facilitate future research on higher-level Business analytics skills and add to the body of information on Business analytics adoption. They can also help businesses differentiate themselves from rivals and create best practices.	Skills and resources	Thematic Content Analysis
Silaban	2022	Businesses must consider organizational, technological, and environmental factors when implementing BA. Organizational issues include leadership, knowledge, stakeholders, culture, and funding support. Effective integration requires the backing of executives, as well as teamwork and an open culture. Technological challenges include resource preparedness, data availability, quality, and collection procedures. Data privacy concerns must be addressed. Future research should focus on data analytics in various industries and methods to tackle complex	Data issues, Skills and resources, Organizational factors	Systematic Literature Review

		problems. Combining the framework with other theories can create structural models and statistical tests to determine the effectiveness of BA implementation.		
Ardito et al.	2019	Big Data integration can promote innovative growth in the tourism industry by boosting innovation, cutting-edge services, and integrated operations. However, there aren't many real-world examples, and the implementation of these models is still theoretical. Managing extensive data, addressing future competencies and new business models, and optimizing performance are some challenges. Tourism businesses can benefit from complementary investments, transactional, strategic, and informational opportunities, and methods for deriving strategic value from the industry.	Skills and resources, Organizational factors	Systematic Literature Review
Yallop and Seraphin	2020	Technology profoundly impacts The tourism business, with big data and analytics supporting research, analytics, and decision-making. Advances in hardware and cloud infrastructure have brought about cost savings and improved performance, opening new avenues for competitive advantage. In the tourism and hospitality industry, data governance entails putting policies and	Data issues, Skills and resources, Organizational factors	Systematic Literature Review

		procedures into place while prioritizing ethics and privacy. On the other hand, data security and privacy issues emphasize the need for data governance and ethics studies in the travel and hospitality industries.		
Mnyakin	2023	The hospitality industry is leveraging big data analytics to enhance customer experience, streamline operations, and boost revenue. However, challenges like data volume, quality, security, skill gaps, costs, and software integration remain. Strategies for hospitality firms include investing in data management systems, ensuring data integrity, prioritizing staff training, evaluating costs and benefits, and integrating software platforms.	Data issues	Systematic Literature Review
Dang and Nguyen	2023	The tourism and hospitality sectors should use artificial intelligence (AI) and new technologies to co-create value with various stakeholders, including travelers, workers, and the industry. AI, blockchain, and IoT applications provide immersive interactions, tailored experiences, and real-time communication while resolving privacy and data security issues.	Data issues	Systematic Literature Review
Camilleri	2019	Tourism businesses use monitoring, geolocation, and advertising solutions to enhance customer-focused	Data issues, Skills and resources,	Systematic Literature Review

		<p>marketing campaigns. These data-driven solutions give insights into prospects, customer segmentation, personas, and marketing performance. Better decision-making based on projecting future events is possible with prescriptive analytics. However, businesses are starting to prohibit marketers from following and sending adverts due to growing concerns about data protection. The difficulty lies in appreciating the usefulness of smart technology for studying the marketing environment, which includes competitors and customers.</p>		
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Discussion

Business Analytics (BA) is increasingly adopted by tourism and hospitality businesses to enhance customer experience, streamline operations, and increase revenue through data-driven insights and decision-making. However, implementing BA requires a well-structured data environment, investments in hardware, cloud infrastructure, and integrated software platforms, and competitive pressure to innovate and offer personalized services. Challenges in BA implementation include data quality and security, human resource competency, and technological integration. Future research and innovation opportunities include developing advanced analytics skills tailored to the tourism and hospitality industries, exploring best practices in data governance, ethics, and privacy, and integrating AI and emerging technologies like blockchain and IoT. Strategies for businesses in tourism and hospitality include investing in robust data management systems, staff training and skill development, and strategic decision-making. Prioritizing investments in robust data management systems and analytics platforms can improve data quality and derive actionable insights. Continuous training programs are crucial for upskilling employees in BA techniques and tools. Finally, addressing challenges such as data management, skill gaps, and technological integration through strategic investments, research-driven insights, and ethical data practices can pave the way for sustainable growth and competitive advantage in the industry.

5. Conclusion

The researchers concluded that turning data into valuable insights is difficult for those in the hospitality and tourism industries. Online reviews, social media, reservation systems, and other sources might lead to inconsistent and erroneous data fragmentation and quality. It takes time and resources to clean and integrate this data. The lack of expertise in the available data makes it difficult to interpret, leading to a shortage of skilled workers. The growing amount of customer data the industry collects raises issues about data privacy and the need for regulatory compliance and openness in data-gathering practices. To overcome the challenges of business analytics adoption in tourism and hospitality, businesses should invest in data management, centralize information from various sources, and establish data quality management to ensure accuracy and completeness. Prioritize data security and privacy by complying with regulations to build customer trust and protect their information. Be transparent about data collection, storage, and usage practices and communicate clearly with customers about their data use. Considerably, the researchers found that Systematic Literature Reviews (SLRs) are widely used to analyze the challenges of business analytics adoption in the tourism and hospitality industry. This study recommends that future researchers explore other research methodologies to further understand the challenges in business analytics adoption in the tourism and hospitality industry.

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