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EXPLORING THE UTILITY OF BUSINESS INTELLIGENCE AND ARTIFICIAL INTELLIGENCE IMPLEMENTATION

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Abstract

This study examines the role of Artificial Intelligence (AI) and Business Intelligence (BI) in transforming the business operations of the hospitality and airline sectors. The analysis focuses on the impact of these technologies on business transformation through business optimization, effective resource management, and service personalization. Data were collected through an anonymous survey conducted among employees in hotels and the airline company Air Serbia. The results of the SEM analysis confirm that BI and AI significantly contribute to operational efficiency, sustainability, and the enhancement of customer experience, with service personalization having the greatest impact on business transformation. The findings provide insights into the implementation of modern technologies and their role in shaping future business practices.

Key words: *business intelligence, artificial intelligence, hospitality, air transportation.*

1. Introduction

Business Intelligence (BI) and Artificial Intelligence (AI) have become pivotal in transforming the operational landscape of the hotel and transportation industries. In the hotel sector, BI provides valuable insights into customer behavior, operational efficiency, and market trends, enabling hoteliers to make informed decisions and tailor their services to guest preferences. AI further enhances guest experiences by enabling personalized recommendations, efficient booking systems, virtual assistants, and dynamic pricing models that optimize revenue while meeting

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customer needs. In the transportation industry, particularly in airlines, AI is widely used for predictive maintenance, route optimization, and enhancing passenger experiences through customized services and efficient communication systems. BI plays a critical role in analyzing real-time data, enabling airlines to forecast demand, manage capacities, and streamline their operations, which is particularly vital in a highly competitive market. The integration of BI and AI across these industries not only improves service quality and operational efficiency but also contributes to greater customer satisfaction and long-term competitiveness. These technologies empower organizations to adapt to changing market demands, enhance decision-making, and implement sustainable business practices, ensuring a future-ready approach in the service sector.

The aim of this study is to examine the role of Artificial Intelligence (AI) and Business Intelligence (BI) in transforming business operations in the hospitality and airline sectors. Specifically, the research seeks to identify the impact of these technologies on business optimization, effective resource management, and service personalization, and to assess their contribution to business transformation through improved operational efficiency, sustainability, and customer experience. Although there is substantial research on the implementation of AI and BI in tourism, several gaps remain unaddressed. There is limited quantitative research, particularly employing Structural Equation Modeling (SEM), to analyze the effects of these technologies in the hospitality and airline sectors. Additionally, few studies focus on employees' perceptions of how AI and BI influence critical business processes such as optimization, resource management, and personalization. Furthermore, the connection between AI and BI innovations and business sustainability remains underexplored. Empirical evidence from specific industries, such as hotels and airline companies like Air Serbia, is also scarce, leaving a gap in contextually relevant insights.

This study introduces several innovative contributions. It employs an integrative model to investigate the influence of AI and BI across three dimensions: business optimization, resource management, and service personalization. The research applies SEM analysis on empirical data collected from employees in hotels and the airline industry, providing a comprehensive understanding of their perceptions and attitudes. By focusing on the hospitality and airline sectors, where the adoption of AI and BI is rapidly growing but underexplored, the study offers critical insights into their application. Additionally, it addresses ethical and operational considerations, such as privacy protection and moral hazard, offering a holistic perspective on the challenges and benefits of adopting these technologies. The significance of this study is multifaceted. Theoretically, it contributes to the literature on AI and BI by providing novel insights into their application in specific sectors, expanding the understanding of their impact on business transformation. Practically, the findings serve as a guide for managers in the hospitality and airline industries, helping them recognize the potential of these technologies and strategically implement them to enhance business outcomes. From a sustainability perspective, the study highlights the ability of AI and BI to reduce operational costs, optimize resource use, and improve customer experiences, thereby supporting the

long-term development of these industries. By combining theoretical frameworks with practical implications, this study addresses existing research gaps and lays the foundation for future investigations into the transformative role of AI and BI in shaping modern business practices.

1.1 Literature review

The application of Artificial Intelligence (AI) and Business Intelligence (BI) in the hospitality and airline sectors is becoming essential for transforming operational processes, enhancing customer experience, and ensuring business sustainability. Mariani et al. (2018) emphasize the importance of BI and big data analysis in decision-making and improving operational efficiency, while Naumov (2019) highlights the role of AI in automating services, thereby increasing quality and personalization of customer experiences. Prentice et al. (2020) further confirm that such personalization directly impacts guest loyalty and satisfaction.

In the context of the airline industry, Andronie (2015) underscores the use of BI to analyze supply and demand, enabling airlines to optimally plan capacities and routes. Similarly, Bock et al. (2020) discusses the disruptive effects of AI, particularly through personalized recommendations and predictive algorithms that significantly enhance passenger experiences. These claims are supported by Bulchand-Gidumal et al. (2023), who analyze the role of AI in transforming tourism marketing by creating targeted campaigns based on user behavior analysis.

Cain et al. (2019) highlight the growing importance of automation in hospitality, where AI is used to manage reservations, automate front desk processes, and personalize offerings. Reis et al. (2020) examine the case of the Henn-Na Hotel in Japan, where robots have been integrated into operations, reducing costs and increasing efficiency. Bowen and Morosan (2018) further emphasize how robotics and AI are reshaping the fundamentals of hospitality, making it more adaptable to modern challenges.

Technologies like chatbots are becoming indispensable in customer support, as evidenced by Pillai and Sivathanu (2020), who show that AI-based chatbots significantly improve customer satisfaction while reducing operational costs. Mingotto et al. (2021) highlight the challenges of redesigning operations and jobs to integrate AI and robotics into hospitality services, reinforcing the need for organizational adjustments. Martínez-Martínez et al. (2019) point out that BI and AI contribute to sustainable business practices, particularly by enabling more efficient resource management and reducing environmental impact. Rosario and Dias (2022) emphasize that these technologies play a crucial role in transitioning to digital and sustainable business practices. Duan et al. (2019) further explains how AI aids decision-making in the era of big data, allowing organizations to respond more effectively to challenges. Buhalis (2020) underscores how BI and AI support the transition to smart destinations, while Casado Salguero et al. (2019) highlight their role in creating competitive advantages through intelligent data analysis. Ashaal et al. (2020) stress the importance of data management and privacy, especially within the framework of GDPR regulations, which directly influence the implementation of AI in the airline industry.

The integration of AI and BI in the hospitality and airline sectors has also been explored in studies that highlight how these technologies not only transform industries but also pose new challenges. Farrow (2019) discusses the evolution of AI through causal layered analysis, emphasizing that technologies like AI are not only tools for operational improvement but also means of enhancing human capacity. This directly relates to AI's ability to support managerial decision-making in sectors where speed and accuracy are crucial. Goel et al. (2022) analyze the adoption of AI and robotics among consumers in tourism and hospitality, highlighting factors such as user trust, data security, and ease of use. Their findings indicate that the successful implementation of AI technologies in these sectors often depends on companies' ability to alleviate concerns related to privacy and data security. This is particularly relevant in the context of Hu and Min (2023), who explore the dark sides of AI, such as privacy concerns and the "watching-eye effect" in service delivery. Their research underscores the need to balance the benefits of AI with its ethical implications. The COVID-19 pandemic, as noted by Gössling et al. (2020), has further accelerated the adoption of disruptive technologies in the tourism and hospitality sectors. They point out that the pandemic has not only altered travel patterns but also increased reliance on AI and BI for crisis management, demand forecasting, and operational adjustments to new market conditions. These findings align with the research by Iranmanesh et al. (2022), who emphasize that disruptive digital technologies, including AI, are redefining business processes in hospitality, from service personalization to resource optimization.

Based on the above findings, the following hypotheses were formulated:

H1: Business Optimization (BO) positively affects Business Transformation (BT).

H2: Effective Resource Management (ERM) positively affects Business Transformation (BT).

H3: Personalization of Services (PS) positively affects Business Transformation (BT).

2. Methodology

2.1 Data collection

For the purposes of this study, data were collected through an anonymous online survey conducted among employees in hotels and the Air Serbia company. The surveys were distributed between June and September of the previous year to ensure sufficient time for gathering a representative sample. A total of 258 respondents participated, with data collected through direct invitations, internal company networks, and emails obtained from publicly available sources. To ensure the reliability of the questionnaire, a pilot study was conducted prior to the main research with a sample of 30 employees. The objective of the pilot study was to identify potential issues in question formulation and ensure clarity and comprehensibility of the content. Based on feedback from the pilot study, minor adjustments were made to the questions to improve data quality. The survey was anonymous to minimize bias and encourage honest responses from participants. Ethical considerations were considered, with a particular focus on protecting

participants' privacy. Special permissions from companies were not required, as the data was collected exclusively through voluntary participation and publicly available information. Moral hazard was avoided by informing participants that their responses would not be used in a manner that could jeopardize their position or the reputation of the companies. The survey questions were designed to assess employees' perceptions of the impact of AI and BI on operational processes, sustainability, and customer experience. The sample of 258 respondents included employees with various levels of responsibility and years of work experience, ensuring the representativeness of the results and enabling a deeper analysis of diverse perspectives.

2.2 Sample and questionaire design

The data provides a comprehensive overview of the demographic, educational, and professional characteristics of individuals working in the airline and hotel industries. Gender distribution is relatively balanced, with a slight predominance of females (52.7%) over males (47.3%), indicating equitable representation. In terms of age, most respondents fall within the 26-45 age range (63%), reflecting a workforce predominantly composed of mid-career professionals. Younger employees aged 18-25 make up a smaller portion (12.5%), while those aged 46 and above account for 24.5%, highlighting limited representation from entry-level and nearing-retirement employees. Education levels demonstrate a strong emphasis on higher education, with most participants holding a bachelor's degree (42.1%) or a master's degree (31.5%). High school graduates represent 18.9%, and PhD holders account for a smaller but significant portion (7.5%), suggesting that educational qualifications are highly valued in these sectors. Regarding years of service, the workforce is predominantly experienced, with over half of the respondents having between 6 and 15 years of professional experience (52.5%). Meanwhile, a notable influx of newer professionals is evident, as 22.3% have fewer than five years of experience, while seasoned experts with over 20 years represent 9.0%. Sector distribution is nearly even, with a slight majority in the hotel industry (51.4%) compared to airlines (48.6%)(Table 1).

Table 1: Sociodemographic characteristics

Characteristic	Categories	%
Gender	Male	47.3%
	Female	52.7%
Age	18-25	12.5%
	26-35	29.8%
	36-45	33.2%
	46-55	18.9%
	56+	5.6%
Education Level	High School	18.9%
	Bachelor	42.1%
	Master	31.5%
	PhD	7.5%
Years of Service	1-5 years	22.3%
	6-10 years	28.4%
	11-15 years	24.1%
	16-20 years	16.2%
	21+ years	9.0%
Sector	Airlines	48.6%
	Hotels	51.4%

2.3 Questinaire design

The questionnaire used in this study was designed to assess employees' perceptions of the impact of Artificial Intelligence (AI) and Business Intelligence (BI) on business optimization, resource management, and service personalization, as well as their influence on business transformation. The questions were adapted and modified from existing validated scales in prior research to ensure both reliability and contextual relevance to the hospitality and airline industries. Items related to business optimization were adapted from Mariani et al. (2018), focusing on BI's role in enhancing operational efficiency and decision-making. Questions addressing resource management were modified from Martínez-Martínez et al. (2019), highlighting the importance of AI and BI in optimizing resource use and supporting sustainability. For service personalization, the questionnaire drew from Prentice et al. (2020), which examined the effects of AI-driven personalization on customer satisfaction and loyalty. The questionnaire was structured into three sections: demographic information, perceptions of AI and BI, and the perceived impact on business transformation. A 5-point Likert scale ranging from "strongly disagree" to "strongly agree" was used to measure responses. To ensure clarity and relevance, a pilot test was conducted with 30 participants, and minor adjustments were made based on their feedback. This process ensured that the final instrument effectively captured the constructs under investigation and aligned with the study's objectives.

2.4 Data analysis

The heatmap provides a clear visual representation of the reliability and validity metrics (Alpha, rho_A, CR, and AVE) for each construct. Business Optimization and Personalization of Services exhibit consistently high values across all metrics, indicating strong reliability and validity. Business Transformation shows slightly lower AVE values, suggesting potential improvement in its convergent validity. Effectiveness of Resource Management demonstrates high rho_A and CR, reflecting solid internal consistency and composite reliability, though its AVE is moderate. Overall, the constructs show acceptable levels of reliability and validity, with minor variations that highlight areas for potential refinement (Figure 1).

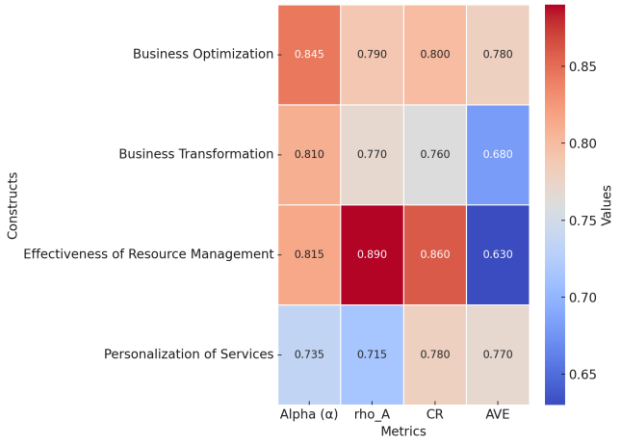

Figure 1: Construct reliability and validity
Note: α – cronbach alpha, rho_A - reliability indicator of latent constructs, CR - composite reliability, AVE - average variance extracted

Figure 2 combines the Fornell-Larcker criterion and HTMT (Heterotrait-Monotrait ratio) values to assess the discriminant validity of the constructs. The figure provides a visual representation of the relationships between constructs and their metrics, with the color intensity reflecting the strength of the values. Business Optimization demonstrates strong internal consistency, as indicated by its highest value (0.720), but shows weaker connections with other constructs, suggesting its relative independence.

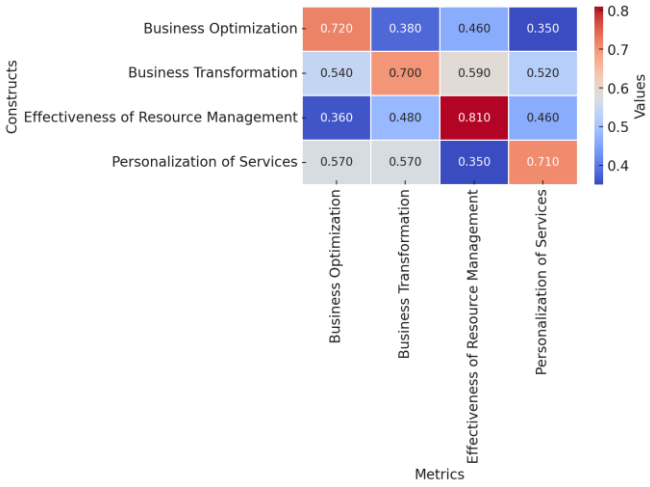

Figure 2: Combined Fornell-Larcker criterion and HTMT (heterotrait monotrait ratio) values

Business Transformation exhibits a solid relationship with itself (0.700) and moderate correlations with other constructs, indicating balanced reliability. The effectiveness of Resource Management stands out with the highest value in the heatmap (0.810), reflecting exceptional internal alignment, though its links to other constructs are less pronounced, emphasizing its specialized focus. Personalization of Services shows a good level of reliability (0.710), though its weaker correlations with other constructs highlight its unique and less integrated nature. Overall, the heatmap reveals that while all constructs demonstrate strong reliability, there are varying degrees of interrelation, pointing to opportunities for further exploration or refinement.

Figure 3 illustrates the updated values for the constructs Business Optimization (BO), Business Transformation (BT), Effectiveness of Resource Management (ERM), and Personalization of Services (PS). Each construct is represented by multiple items, with values ranging between 1.1 and 1.8. Business Optimization shows consistent performance across its items, with values falling within a steady range of 1.2 to 1.6. Business Transformation displays slightly higher variability, with values ranging from 1.1 to 1.7, indicating some items may require further refinement for consistency. The effectiveness of Resource Management stands out with the highest values, particularly ERM1 at 1.8, reflecting strong internal alignment and reliability. Personalization of Services demonstrates moderate values between 1.1 and 1.5, suggesting reliability but highlighting areas for potential improvement. Overall, the constructs exhibit acceptable reliability, with Effectiveness of Resource Management showing the strongest consistency, while Business Transformation may benefit from additional adjustments to ensure uniformity across its items.

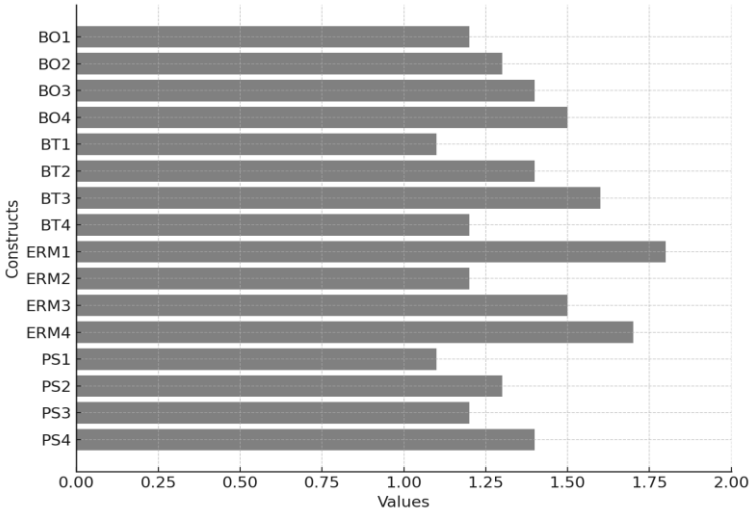

Figure 3: Collinearity statistics (variance inflation factor—VIF < 3). Note: PS - personalization of services, ERM - effectiveness of resource management, BT - business transformation, BO - business optimization.

3. Results

Exploratory factor analysis identified four key factors: Business optimization (BO), Personalization of services (PS), Effectiveness of resource management (ERM) and Business transformation (BT), each with four questions. All factors demonstrate high reliability ($\alpha > 0.85$ and $CR > 0.90$), confirming the internal consistency of the constructs. The AVE values for all factors exceed the recommended threshold of 0.50, indicating good convergent validity. While BO explains the highest variance, ERM shows the strongest reliability and consistency. The variability in responses (as shown by standard deviation) is relatively higher for ERM and BT, suggesting diverse perceptions among respondents. These results indicate a well-constructed and reliable model with areas of higher variability that may warrant further exploration (Table 3).

Table 3: Descriptive values, reliability, and validity of the factors

Factor	IEV	%V	C%	EAE	%VAE	C%AE	EAR	m	sd	α	CR	AVE
BO	4.732	29.853	29.853	4.732	29.853	29.853	4.203	2.41	1.012	0.861	0.913	0.720
PS	2.105	13.158	43.011	2.105	13.158	43.011	3.098	2.32	1.062	0.871	0.909	0.701
ERM	1.487	8.900	51.911	1.487	8.900	51.911	2.124	3.31	1.493	0.879	0.926	0.758
BT	1.192	7.450	59.361	1.192	7.450	59.361	1.457	3.19	1.744	0.892	0.920	0.743

Note: IEV - initial eigenvalues, %V -, % of variance, C% - cumulative %, EAE - eigenvalues after extraction, %VAE -% of variance after extraction, C%AE - cumulative % after extraction, EAR - eigenvalues after rotation, m – arithmetic mean, sd – standard deviation, α - cronbach alpha, CR - composite reliability, AVE - average variance extracted

The Table 4 provides an analysis of four key factors—Business Optimization (BO), Personalization of Services (PS), Effectiveness of Resource Management

(ERM), and Business Transformation (BT)—highlighting their mean values (m), standard deviations (sd), reliability (α), and factor loadings (FL).

Table 4: Descriptive statistics of statements and factor loadings

Factor	Statements	m	sd	α	FL
Business Optimization (BO)	AI predicts flight delays using weather data.	2.25	1.420	0.812	0.872
	BI helps optimize supply and demand.	2.70	1.460	0.790	0.830
	AI automates guest check-in, reducing waiting time.	2.33	1.430	0.808	0.890
	BI optimizes room rates through occupancy analysis.	2.60	1.480	0.806	0.840
Personalization of Services (PS)	AI suggests personalized travel plans.	2.15	1.400	0.790	0.830
	BI creates tailored hotel marketing strategies.	2.35	1.460	0.793	0.843
	AI chatbots ensure 24/7 customer service.	2.20	1.360	0.794	0.840
	BI customizes services based on guest preferences.	2.95	1.920	0.820	0.890
Effectiveness of Resource Management (ERM)	AI optimizes fuel consumption to cut costs.	2.85	2.050	0.815	0.870
	BI tracks resource usage to enhance savings.	3.95	2.350	0.830	0.860
	AI predicts maintenance needs, minimizing downtime.	3.40	2.140	0.780	0.860
	BI monitors energy and water for cost efficiency.	3.25	2.220	0.775	0.885
Business Transformation (BT)	BI and AI improve efficiency and reduce costs.	2.80	2.080	0.785	0.890
	BI and AI boost customer satisfaction.	3.30	2.200	0.790	0.810
	BI and AI improve security measures.	3.75	2.310	0.805	0.860
	BI and AI drive sustainability and resource use.	2.95	2.090	0.810	0.895

Note: m – arithmetic mean, sd – standard deviation, α - cronbach alpha, FL – factor loading.

Business Optimization (BO) focuses on the role of AI and BI in improving operational efficiency. The mean scores for BO statements range from 2.25 to 2.70, indicating moderate agreement among respondents, with a standard deviation between 1.42 and 1.48, reflecting some variability in responses. Reliability values (α = 0.790–0.812) and high factor loadings (FL = 0.830–0.890) suggest strong internal consistency and the importance of these technologies in predicting delays, optimizing supply-demand, and automating services. Personalization of Services (PS) emphasizes the use of AI and BI to deliver tailored customer experiences. With mean scores ranging from 2.15 to 2.95 and moderate standard deviations (1.36–1.92), respondents showed general agreement about the benefits of personalized recommendations, chatbots, and customized marketing campaigns. The reliability (α = 0.790–0.820) and factor loadings (FL = 0.830–0.890) indicate that AI and BI effectively enhance service personalization. Effectiveness of Resource Management

(ERM) highlights how AI and BI optimize resource use and reduce costs. Mean values for ERM range from 2.85 to 3.95, with higher standard deviations (2.05–2.35), suggesting greater variability in perceptions. Reliability values (α = 0.775–0.830) and strong factor loadings (FL = 0.860–0.885) confirm the role of these technologies in optimizing fuel usage, predicting maintenance, and monitoring resource consumption. Business Transformation (BT) explores the transformative impact of AI and BI on operational efficiency, customer satisfaction, and sustainability. Mean scores range from 2.80 to 3.75, with standard deviations between 2.08 and 2.31, indicating higher variability in responses. Reliability (α = 0.785–0.810) and factor loadings (FL = 0.810–0.895) demonstrate that these technologies are seen as critical for cost reduction, improved security, and sustainability efforts.

Table 5 presents the results of the SEM analysis and hypothesis testing, evaluating the relationships between Business Optimization (BO), Effectiveness of Resource Management (ERM), Personalization of Services (PS), and Business Transformation (BT). All three hypotheses were confirmed based on the statistical analysis

Table 5: Results of SEM analysis and hypothesis testing

Hypothesis	Path	Estimate	m	sd	t	p	Confirmation
H1	BO → BT	0.245	0.252	0.075	3.267	0.001	Confirmed
H2	ERM → BT	0.280	0.287	0.077	3.623	0.000	Confirmed
H3	PS → BT	0.305	0.298	0.081	3.712	0.000	Confirmed

Note: BO - business optimization, PS - personalization of services, ERM - effectiveness of resource management, BT – business transformation, m – arithmetic mean, sd – standard deviation, t – t statistic, p – statistical significance

For Hypothesis H1 (BO → BT), the path coefficient is 0.245, indicating a moderate positive relationship between Business Optimization and Business Transformation. The t-value of 3.267 and p-value of 0.001 confirm the statistical significance of this effect. These findings suggest that optimization practices, such as predictive analytics and operational improvements, play an essential role in supporting transformational processes.

Hypothesis H2 (ERM → BT) demonstrates a stronger relationship, with a path coefficient of 0.280, a t-value of 3.623, and a p-value of 0.000. This highlights that effective management of resources, such as energy, time, and costs, is a crucial factor in driving organizational transformation. The results underline the importance of strategies focused on efficiency and sustainability in achieving meaningful change. Hypothesis H3 (PS → BT) has the highest path coefficient of 0.305, reflecting a strong and positive influence of Personalization of Services on Business Transformation. The t-value of 3.712 and p-value of 0.000 further confirm this relationship as highly significant. This finding emphasizes that tailored approaches to customer engagement, powered by AI and BI technologies, are critical for advancing business transformation. The results confirm that all three factors significantly and positively contribute to Business Transformation, with Personalization of Services showing the most substantial impact. These findings validate the role of advanced

technologies in enhancing optimization, resource management, and service personalization to foster transformative outcomes in businesses.

4. Discussion

Given results highlight the importance of applying Artificial Intelligence (AI) and Business Intelligence (BI) in the hospitality and airline sectors, as confirmed by related studies from other authors. Our findings, which demonstrate that AI and BI significantly contribute to business transformation through business optimization, effective resource management, and service personalization, align with the results of Chi, Denton, and Gursoy (2020). They emphasize that the use of AI devices in service delivery directly impacts operational efficiency and customer satisfaction. Additionally, the study by Nocker and Sena (2019) highlights the growing importance of Big Data analytics in human resource management, which corresponds to our findings on the significance of BI in optimizing business processes. They point out that the application of advanced analytical tools can lead to more precise decision-making, a conclusion mirrored in our study through the identification of BI's positive influence on business transformation in hospitality and aviation. Our results are also complementary to the conclusions of Christou (2024), who underscores the potential overdependence on AI technologies in tourism while emphasizing the need for their responsible use to avoid negative effects. This balance is reflected in our study, which focuses on the positive aspects of AI application, such as service personalization, while also addressing ethical challenges, including privacy and moral hazard.

Chernyshev et al. (2023) examine the contribution of migration to population changes in urban agglomerations, emphasizing the role of technology in data modeling, which is relevant to BI and AI applications in sectors with complex operational demands. Their findings on the importance of analytical tools in strategic decision-making support our conclusions on the role of BI in resource optimization and business transformation. Furthermore, Custis (2012) highlights the historical concepts and future trends of business intelligence in hospitality, emphasizing that BI not only improves current operations but also enables strategic planning, which is a key element of our research. This synergy between the short-term and long-term benefits of BI is confirmed by our findings on its positive impact on business optimization and sustainability. In the domain of ethical and regulatory issues, Popay et al. (2006) provide guidance on narrative synthesis in systematic reviews, emphasizing the importance of transparency in research, which aligns with our approach to data collection and analysis. Their methodological recommendation for clarity and reliability of results reinforces the validity of our findings. Finally, the research by Ailia et al. (2022) on AI patents highlights the continuous growth and diversification of AI technologies, consistent with our conclusions about their increasing presence in the hospitality and aviation sectors. Their analysis of innovations confirms that AI not only transforms operations but also enables the development of competitive advantages, which is one of the key conclusions of our study. Based on these related findings, we can conclude that our results provide

additional empirical support to existing research, confirming the importance of AI and BI in improving operational processes, customer satisfaction, and sustainability in sectors with high demands for adaptation and innovation. This study thus contributes to the ongoing discussion on the optimal integration of modern technologies into business practices.

5. Concluding remarks

This study provides significant insights into the role of Artificial Intelligence (AI) and Business Intelligence (BI) in transforming the hospitality and airline sectors. The results indicate that AI and BI substantially contribute to business transformation through operational optimization, effective resource management, and service personalization, with service personalization showing the most pronounced impact. By combining empirical findings and theoretical frameworks, this research enhances the understanding of the potential of these technologies in modern business environments.

5.1 Theoretical implications

This study contributes to the existing literature by offering new insights into the application of AI and BI in specific sectors. The established links between business optimization, resource management, and service personalization with business transformation expand the understanding of how these technologies enable strategic changes. Furthermore, the findings confirm that the integration of AI and BI can serve as a tool for achieving sustainability, adding to the discussion on their role in developing sustainable business models.

5.2. Practical implications

The findings provide practical guidance for managers in the hospitality and airline sectors. AI and BI technologies can enhance operational performance, enable tailored customer experiences, and optimize resources, directly contributing to increased efficiency and competitiveness. Special attention should be given to the ethical aspects of applying these technologies, such as privacy protection and avoiding moral hazard, to ensure responsible implementation.

5.3 Limitations

While this study offers valuable insights, it has several limitations. First, the sample includes employees exclusively from the hospitality and airline sectors within a single region, which may limit the generalizability of the findings. Second, the research relies on self-reported data, which could introduce response bias. Finally, the study primarily uses quantitative methods, and future studies could incorporate qualitative approaches to gain deeper insights into the dynamics between AI, BI, and business transformation.

5.4 Directions for Future Research

Future research should expand the analysis to other industries to test the generalizability of the findings. Additionally, longitudinal designs are recommended to assess the long-term impact of AI and BI on business processes. Further research could also focus on specific challenges in implementing these technologies, including the integration of new systems, employee training, and adapting organizational culture. This study lays the groundwork for future research and provides guidance for the strategic application of AI and BI in industries with high demands for innovation and adaptation to modern challenges. By combining theoretical and practical implications, it contributes to the development of sustainable business practices and the enhancement of customer experience.

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