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RESEARCH ARTICLE

Big Data analytic Capabilities and Performance of Saudi Tourism Firms: Examining the Moderating Role of Business Strategy Alignment

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ABSTRACT

Tourism is a key driver of the global economy, contributing significantly to job creation and global GDP. In Saudi Arabia, the sector plays a crucial role in diversifying the economy and reducing dependence on oil revenues. Since the Kingdom aims to expand its tourism industry, the integration of big data analytics into decision-making processes has become essential for enhancing firm performance (FP). Despite its importance, there is a scarcity of research investigating the specific impact of the overall Big Data Analytic Capability (BDAC) on FP in the tourism sector, particularly in the context of Saudi Arabia. This study addresses this gap by examining the direct effects of five key BDAC on FP. Additionally, it explores the role of Analytic Capability Business Strategy Alignment (ACBSA) as both a direct influencer and a moderator in the BDAC-FP relationship. Using PLS-SEM analysis, the results show a significant positive impact of both BDAC and ACBSA on FP, filling a gap in understanding their influence within the Saudi tourism industry. However, the hypothesized moderating role of ACBSA on the BDAC-FP relationship was statistically insignificant, suggesting that while strategic alignment is important, it may not enhance the BDAC-FP link in this context. The study emphasizes the need for future research to explore other factors that may influence the effectiveness of BDAC, especially in emerging economies like Saudi Arabia.

INTRODUCTION

Digital content plays a crucial role in the advancement of the tourist sector. Consequently, it is imperative for the Ministry, Saudi tourist Authority (STA), and tourism enterprises in Saudi Arabia to employ BDA in their decision-making processes. This may be achieved by harnessing data-driven insights obtained from various digital platforms, including mobile devices, social media platforms, online travel agencies, and technology companies. To leverage the benefits of digital content, it is essential to invest not only in various analytic technologies to boost the technological capability, but also in human to boost the technical and managerial capabilities (Akter et al., 2016; Mikalef et al., 2020). Possessing various big data analytic capabilities (BDACs) allow companies to leverage the benefits of the data (Popovič et al., 2018). Developing various resources and capabilities related to data, technology, and talent is essential for achieving improved performance (Mikalef et al., 2020). The improved performance depends less on just having data or technology and more on being able

to utilize the technology to analyze the data (Mikalef et al., 2020). Big data capabilities include a range of different capabilities, such as data-driven capability, technology capability, technical skills, managerial skills, and data-driven culture capabilities (Akter et al., 2016; Mikalef et al., 2020).

Problem Statement and Objectives

Tourism is a key driver of the global economy and is a fundamental revenue source for both advanced and emerging countries (Naseem, 2021). Tourism sector is pivotal player in jobs creation.In 2019, tourism sector creates 1 from 4 jobs, represents 10.3% or 333 million of all jobs, contributing 10.3% or 9.6 trillion U.S. dollars of global gross domestic product (GDP) (WTTC, 2022). The Middle East has the potential to be un ultimate tourist destination worldwide because it has exclusive attractions and virgin landscape. The KSA is one of the leading economy in terms of tourism due to its endeavours in shifting its economic away from being oil dependent (Abuhjeeleh, 2019). The KSA's future growth is greatly dependent on developing the tourism sector with its potential to diversify the economy and reduce the oil reliance (Saudi Tourism Authority, 2022).

Between 2010 and 2019, the travel industry in Saudi Arabia underwent notable expansion % (WTTC, 2022). in 2019, The Travel & Tourism contributed to 9.7% (SAR 291.6 billion) of total GDP in 2019 and supported 1.6 million jobs. However, in 2020, it was fall to just 6.6% (SAR 190.6 billion) representing an overwhelming 34.6% loss and the supported jobs reduced to about 1.2 million jobs, representing a loss of 350,000, nearly 22.2% (WTTC, 2022). Therefore, the government of Saudi Arabia has acknowledged the need of revitalizing the Travel & Tourism sector (Tourism Economics, 2021). Any recession in the tourism sector causes negative impacts on the economic growth (Bahrawi et al., 2021). Tourism companies need to boost their performance. Fortunately, the utilization of digital platforms has been found to have a positive relationship with the growth of the tourism sector, as suggested by economic modelling studies conducted by various researchers (e.g., Cordova & Ernesto, 2020; Kumar & Kumar, 2020). Utilizing big data analytics and incorporating various big data related capabilities in large corporations like Google, Facebook, Amazon, and Walmart allowed them to experience greater rates of success (Bhatti et al., 2022).

Therefore, it is advised that tourism enterprises in Saudi Arabia incorporate data analytics into their decision-making processes by harnessing insights-driven data obtained from various digital platforms (e.g. mobile devices, web archives, social media platforms, and online travel agencies) (Nammas et al., 2019; Rahmadian et al., 2022). However, many firms struggle with understanding how to fully leverage advanced data analytics (Korsten et al., 2022). However, the implementation of data analytics involves various approaches and entail different related capabilities (Tourism Economics, 2021).

Although, data-driven organizations outperform competitors in both profitability and productivity (McAfee & Brynjolfsson, 2012), the improved performance depends less on having just data or technology and more on being able to utilize the technology to analyze the data (Mikalef et al., 2020). Therefore, to leverage the benefits of digital data, it is essential for companies to invest in various big data analytic capabilities (Akter et al., 2016; Popovič et al., 2018; Mikalef et al., 2020,).

Tourism firms in Saudi Arabia need to host effective big data analytics to boost their performance. They need to have an overall BDACs, including, but not limited to, Data-driven capability (DD), technology capabilities or (TECH), technical skills Capability (TSKL), Management skills Capability (MSKL), data-driven culture capability (DDC). Though, there is not enough evidence that the presence of these capabilities as a whole influences positively on firm performance.

While BDAC are recognized as a functional capabilities that positively impacts performance, previous research has often overlooked the critical perspective that firms with weaker capabilities may require different strategies or tactics than those with stronger capabilities (Xie et al., 2022). This suggests that additional factors may link BDAC to performance. One such factor is ACBSA, which is

considered an evolutionary capability, which emphasizes the need for organizations to synchronize BDAC with their goals and integrate BDA applications into their business processes (Pathak et al., 2023). Effective synchronization within the BDA ecosystem enhances the use of BDAC by overcoming cognitive, structural, and political challenges (McAfee & Brynjolfsson, 2012). However, discussions on ACBSA alignment are rare in the existing research.

Thus, there are significant knowledge gaps in understanding how the overall big data analytic capability (BDAC) influence firm performance (FP) and how ACBSA impacts FP and the BDAC-FP, such relationships remained underexplored.

The aim of the current research is three folds 1) to examine the impact of BDAC (which composes mainly of five big data related capabilities, DD, TECH, TSKL, MSKL, DDC) on firm performance (FP) of tourism firms in Saudi Arabia, and 2) to examine the impact of ACBSA on FP, and 3) to examine the moderating role of ACBSA on the relationship between BDAC and FP.

LITERATURE REVIEW

Big Data Analytics Capability

Saudi tourism firms must prioritize the development of an overall Big Data Analytics Capability (BDAC) to enhance their overall performance. BDACs offer significant value creation, fostering innovation across various industries (Mikalef et al., 2020; Shaqrah & Alzighaibi, 2023). The deployment of BDAC is key to building competitive advantages (AlNuaimi et al., 2021; Wided, 2023).

The true value of big data lies not in merely understanding its characteristics, but in harnessing its potential for strategic gains (Rahmadian et al., 2022). However, investing only in technological infrastructure does not guarantee a competitive edge (Mikalef et al., 2020). Instead, companies need to build unique resources that are difficult for competitors to replicate.

BDAC can simply be defined as the integration of human resources, advanced data skills, and cutting-edge technologies. Such capabilities combined with statistical techniques and machine learning generate allow businesses to gain actionable insights, ultimately improving performance (Akhtar et al., 2019). BDAC can also be identified as the organization's ability to utilize data and technology for insights that drive corporate transformation (Gupta & George, 2016).

According to Mikalef et al. (2019), various BDAC resources contribute distinct roles to business performance, and the integration of technology, talent, and managerial competencies is essential for successful BDA adoption (Brynjolfsson & McAfee, 2012).

Building BDACs requires addressing three dimensions: tangible resources (technology and data), human resources (skills and talent management), and intangible resources (organizational culture and learning). These dimensions are interconnected but distinct, as omitting one weakens the overall capability (Gupta & George, 2016; Teece, 2014). For instance, having advanced technology without the necessary human expertise and organizational culture would be ineffective (Mikalef et al., 2019, 2020).

In summary, BDAC represents a combination of technology, data, technical and managerial skills, and a data-driven culture, all working together to drive innovation and competitiveness. Establishing these capabilities requires a strategic approach that includes investment in both tangible and intangible resources, alongside the cultivation of human talent. The following sections will explore these resource categories in greater detail.

Analytic Capability -Business Strategy Alignment

The concept of business strategy can be defined as the dynamic plan that a firm implements with the objective of acquiring and maintaining a competitive edge (Sanda, 2018, p. 3). When organization formulate a strategic approach, it is imperative to establish a strategy that maintain its dynamism and effectively respond to emerging information resulting from shifts in customer preferences, competitive landscape, and technological advancements (Sanda, 2018). There has been an increased emphasis on strategic considerations in the field of big data due to its ability to identify business opportunities, economic patterns, consumer preferences, as well as changes within the environmental context (George et al., 2014). The scope of analytics capabilities and its alignment with business strategy (ACBSA) have become topics of significant academic and practical examination (Davenport et al. ,2012). A fundamental principle of big data is that both the world and the data that represents it are in a state of perpetual flux. Consequently, companies that possess the ability to identify these changes and respond promptly and astutely will gain a competitive advantage (Davenport et al. ,2012). Scholars in the field of strategy have continually emphasized the significance of developing strategic fit or alignment inside organizations. They perceive the firm as a compilation of interrelated resources, governed by a certain structure (Peteraf, 1993).

Generally, 'alignment' is a term that refers to the state in which the demands, structure, objectives, and goals of one element are in harmony with those of another element (Nadler, 1983). Accordingly, 'business strategy alignment' (BSA) is a concept pertains to the degree of congruence between the business strategy and the central strategy of an organization, as it contributes to the creation of business value (Wang et al., 2023). Business alignment can be viewed from two perspectives: as a capability and as an outcome (Sabherwal et al., 2019). The importance of BSA stems from several factors. A well-formulated business plan is vital for enhancing corporate values. Business plans align operational strategies, boosting overall performance by improving efficiency, reducing costs, and increasing sales income. Companies aligned with their goals often leverage IT to capitalize on market opportunities, gaining a competitive edge and profitability. Additionally, BSA helps organizations synchronize strategic resources, like BDACs, to achieve objectives and enhance performance as per their strategic plans (Akter et al., 2016; Wang et al., 2023).

The concept of 'analytic capability -business strategy alignment' (ACBSA) refers to the degree of congruence between an organization's BDA strategy and its business strategy (Akter et al., 2016; Sabherwal & Chan, 2001). In this sense, ACBSA in the current research is considered a capability that ensures consistency between BDA practices and business activities (Hung et al., 2019). ACBSA can be defined as the extent to which there is alignment between an organization's analytic strategy and its business strategy.

Hypotheses Development

Theed on Resource-Based Theory (RBT), sociomaterialism, and previous empirical research results, the research model depicted in Figure 1 is proposed. RBT explains how companies strategically allocate resources and capabilities to achieve and maintain a competitive edge(Barney, 1991; Wernerfelt, 1984). Sociomaterialism highlights the interconnectedness of social and material elements within organizations, emphasizing the reciprocal influence between societal and technological factors (Orlikowski, 2007).

Big Data Analytic Capabilities and Firm Performance

Empirical research across various regions consistently underscores the positive impact of BDAC on FP. For example, in Saudi Arabia, Shaqrah and Alzighaibi (2023) highlighted BDAC's role in enhancing value-adding processes, strategic decision-making, and competitiveness. Similarly, Wided (2023) found that BDAC strengthens organizational resilience in SMEs, while Jaouadi (2022) showed its

predictive power in supply chain innovation and sustainable performance in manufacturing organizations. In the UAE, AlNuaimi et al. (2021) identified a strong link between BDAC and environmental performance. Other studies from different countries similarly underline the positive impact of BDAC on various organizational aspects. For example, BDAC contributes to corporate success in Pakistan (Yasmin et al., 2020), financial performance in Taiwan (Lee, 2020), and financial, market, and innovation performance in India (Upadhyay & Kumar, 2020)., BDAC have been found to have a moderating influence, for instance on the relationship between external Corporate Social Responsibility and green supply chain management in China (Wang et al., 2020). Western research aligns with these conclusions, with studies demonstrating BDAC's significant performance improvements in Greek enterprises (Mikalef et al., 2019), its positive impact on circular economy performance in Czech enterprises (Awan et al., 2021), and its enhancement of agility and ambidexterity in European firms (Rialti et al., 2019).

Theoretically, the relationship between BDAC and FP can be understood through the RBT and sociomaterialism. RBT suggests that a firm's competitive advantage stems from effectively managing a mix of tangible and intangible resources, such as data, technology, culture, and skills (Barney, 1991; Mikalef et al., 2019). Firms leveraging an overall BDAC can achieve superior performance by integrating these resources into their strategic decision-making (Su et al., 2022). Meanwhile, sociomaterialism highlights the intertwined nature of social and material elements within organizations, emphasizing how the integration of management, technology, and human skills enhances efficiency and sustains competitive advantage (Cooren, 2020; Akter et al., 2016). This approach underscores the need for a coordinated use of BDAC to drive superior performance outcomes in dynamic environments. Accordingly, we hypothesis that:

H1: Big data analytics capability has a positive impact on the firm performance in tourism organizations in Saudi Arabia.

The impact of strategic alignment

For businesses to ensure consistency between BDA practices and business activities, they need a strategic alignment with the overall strategy. In other words they need ACBSA capability (Hung et al., 2019, Akter et al., 2016; Davenport et al., 2012; Mikalef et al., 2019; Wang et al., 2023). BDA-business alignment, an evolutionary capability, helps synchronize the overall BDAC with business goals, integrating analytics into processes (Pathak et al., 2023). Mikalef et al. (2019) emphasize that a well-defined big data strategy improves performance through clear objectives, top-down approaches, and data-driven cultures. Resource-based theory suggests that IT, combined with human and business resources, creates competitive advantages (Powell & Dent-Micallef, 1997). The success of BDAC is tied to leadership that aligns capabilities with functional goals, such as marketing and operations (McAfee & Brynjolfsson, 2012). However, measuring alignment remains debatable. Aligning BDAC with business strategy helps match resources to market opportunities (Akter et al., 2016), emphasizing strategic and functional integration (Henderson & Venkatraman, 1993; Maes et al., 2000).

Enhanced synchronization within the BD ecosystem can help utilize BDAC to address cognitive, structural, and political challenges (McAfee & Brynjolfsson, 2012). Aligning IT and business strategies improves communication, allowing business managers to contribute to IT initiatives and foster innovation (Jarvenpaa & Ives, 1990). This alignment positively impacts firm performance (Ilmudeen et al., 2019). Many organizations face challenges due to a misalignment between current capabilities and the strategies needed to leverage analytics (Barton & Court, 2012). ACBSA represents a strategic capability that links organizational resources and firm performance. Companies like Amazon and Netflix have embedded these practices into routines, creating obstacles that refrained competitors from emulating their success (Akter et al., 2016). The strategic capability

of ACBSA is contingent upon a firm's capacity to effectively execute and exploit other capability resources (Bharadwaj, 2000).

ACBSA was found to help align organizational resources with evolving market opportunities and when exists, it enhances BDAC's impact on firm performance (Akter et al., 2016). Strategic alignment is crucial for growth, profitability, and ROI, while a misalignment can reduce firm performance. The strategic capability of ACBSA is contingent upon a firm's capacity to effectively execute and exploit other capability resources, as noted by (Bharadwaj ,2000). Strategic alignment, specifically IT-business strategic alignment, was documented to have a positive effect on organizational success (Yayla & Hu, 2009). aligning IT with business strategies improves communication between IT and business managers, boosting participation in IT initiatives and fostering innovation (Jarvenpaa & Ives, 1990; McAfee & Brynjolfsson, 2012). This alignment also positively impacts firm performance (Ilmudeen et al., 2019).

According to the RBT perspective, ACBSA is a crucial resource that enables firms to strategically leverage BDAC for superior performance (Akter et al., 2016). It ensures that data-driven insights align with strategic goals, which in turn drives competitive advantage and improves performance (Bharadwaj, 2000). In the light of Sociomaterialism, ACBSA is co-produced through interactions among people, technologies, and organizational processes (Surbakti et al., 2020). By embedding data-driven decision-making into daily operations, ACBSA supports effective BDAC deployment, enhancing innovation and operational efficiency (McAfee & Brynjolfsson, 2012). Accordingly, we hypothesis that:

H2: ACBSA has a positive impact on FP

H3: ACBSA moderates the relationship between BDAC and FP.

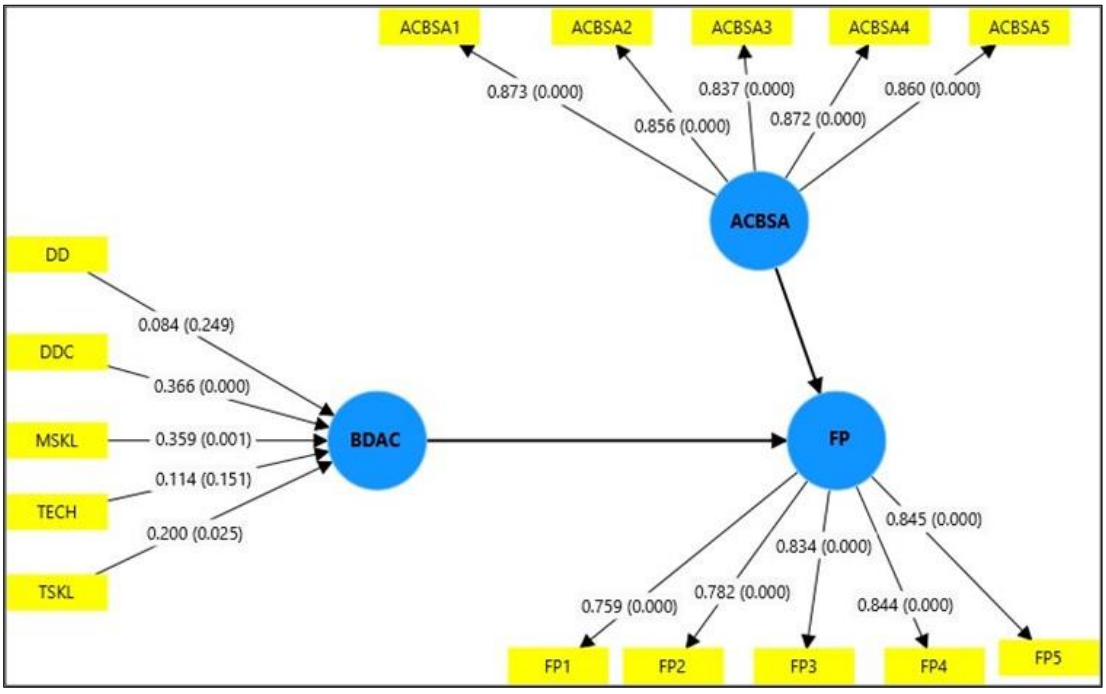

Figure1: The Measurement Model, Outer loadings/weights

We propose that the performance in Saudi Tourism firms is influenced with possessing an overall big data analytic capability (BDAC), which mainly composes of a combination of tangible capabilities (DD and TECH), human capabilities (TSKL and MSKL), and intangible capabilities (DDC). We also propose that the BDAC-FP relationship is influenced by ACBSA, and the latter has a positive impact on FP.

METHODOLOGY

To identify the proposed relationships between the study variables (BDAC, FP, ACBSA), a questionnaire was used (Straub & Gefen, 2004). All the measurement constructs were derived from previous studies (Akter et al., 2016; Gupta & George, 2016; Mikalef et al., 2020, 2020). A 5-point Likert scale was employed. It is easy for respondents to understand and use, plus a 5-point scale provides a balanced range of options, allowing respondents to express both positive and negative views. To check the suitability and clarity of the questions, pre-tests were conducted with an expert and two academics. Then a pilot study of 30 random participants working in big tourism companies were invited. For the main study, the researcher collected 695 responses: 220 were incomplete and four responses were outliers. The valid responses are 471. The researcher ensured that the respondents' identities would remain confidential and anonymous. The questionnaire was self-administered, but follow-up phone calls were required to ensure its completion.

RESULTS

The sample has a higher proportion of males than females, most respondents are well-educated, mostly holding a bachelor's, master's or PhD. Almost three fifths of the respondents have moderate tenure spanning from one to five years. Almost half of the sample confirm BDA practice for over five years, reflecting a type of mature adoption. BDA adoption is prevalent across different company sizes, but it is less predominant in small organizations, Table 1.

Table 1: Demographic data descriptive analysis

Factor	Sample (471)	Proportion (%)
Gender		
Male	359	76.2
Female	111	23.6
Age		
Under 30	64	13.6
30 +	245	52.0
40 +	122	25.9
50 +	40	8.5
Education		
Bachelor/College	247	52.4
Master, PhD/higher	180	38.2
High School/ Diploma	44	9.3
Tenure		
one year or less	66	14.0
one to 5 years	235	49.9
5 years +	86	18.3
10 years +	84	17.8
Big Data Analytic Practice		
one year or less	98	20.8
1- 5 years	142	30.1
5 + years	227	48.2
Organization Type		
1- 9	38	8.1
10-49	165	35.0
50-249	202	42.9

250+	65	13.8

Measurement Model

The model is composed of reflective and formative constructs. Reflective constructs are those where the latent variable is presumed to cause the observed indicators (Mikalef et al., 2020). This means that changes in the latent variable are reflected in the changes in the observed indicators. For the current study, the reflective constructs are ACBSA and FP. ACBSA reflects the extent to which initiatives of big data analytics are aligned with the company's overall goals, mission, and strategies. FP reflects the success of the tourism firms and financial outcomes. Informative constructs are different from reflective constructs in that the indicators cause the construct rather than reflect it. BDAC is an informative construct that was informed by its indicators (DD, TECH, TSKL, MSKL, and DDC).

Validity of the reflective constructs: The validity of FP and ACBSA constructs have been confirmed, Figure 1. All the items for the two constructs have significant outer loadings.

Table 2: Validity of formative construct (BDAC)

Construct	Indicator	Weight	Significance (*p*- value) [a]	VIF	Outer loadings
BDAC	DD	0.084	0.249	2.621	0.794
	TECH	0.114	0.151	2.854	0.815
	MSKL	0.359	0.001	3.534	0.925
	TSKL	0.200	0.025	3.192	0.885
	DDC	0.366	0.000	2.751	0.907
ACBSA -> FP				3.75	
BDAC -> FP				4.11	

Validity of the informative construct: To evaluate the validity of BDAC, both weights and VIF (collinearity tests) were performed. Table 2 illustrates the weights of DD, DDC, TECH, TSKL, and MSKL on BDAC construct along with their outer loadings, along with the significance (p-value) for each item. Although DD and TECH show insignificant weights (p-value= 0.249 and 0.151 respectively), both show no issues in terms of loadings values and collinearity test (VIF), Table 4.15. Accordingly, all indicators of BDAC show no issues and will be kept in the model. They are strong and relevant contributors to the construction. This construct shows good reliability and validity. For the VIF values, Table 2, ensure that the indicators of the indicators of the formative construct are not highly correlated with BDAC. All BDAC indicators have VIF values that are below the common threshold of 5, indicating no severe multicollinearity issues.

Before proceeding with the structural model, VIF tests for the whole model were performed.as shown in Table 2, that ACBSA -> FP and BDAC -> FP have no collinearity issues, allowing us to proceed with the structural equation modelling.

Structural Model

Figure 2 displays the structural model when the BDAC and ACBSA are included. It specifically depicts the path coefficients along with their corresponding statistics. These coefficients provide insight into the relationships between constructs in the structural model. Bootstrapping procedure with 5,000

interactions was used to assess the significant level of the relationship in the structural model (Hair et al., 2021).

BDAC -> FP: The path coefficient is 0.442 (p = 0.000). BDAC has a statistically significant positive effect on FP, indicating that any improvement in BDAC leads to a substantial increase in FP. Thus, the first hypothesis (H1) is accepted and validated.

ACBSA -> FP: The path coefficient from ACBSA to FP is 0.351 (p =0.000). ACBSA has a statistically significant positive effect on FP, indicating that any improvement in ACBSA leads to a substantial increase in FP. This indicates that ACBSA has a strong positive impact on FP. Therefore, the second hypothesis (H2) is accepted.

ACBSA x BDAC -> FP: The moderating effect is not significant. The influence of ACBSA on the relationship between BDAC and FP has a path coefficient of -0.003 (p=0.889). The path coefficients show that the interaction effect of ACBSA on the BDAC-FP is not significant. There is no significant moderating effect of ACBSA on the relationship. Accordingly, the third hypothesis (H3) is rejected.

The statistically insignificant moderating effect of ACBSA can be discussed from different perspectives. Organizations at different stages of analytics maturity might experience different impacts of ACBSA. If companies are in the early stages of adopting analytics, they might not yet benefit fully from alignment with business strategy, compared to more mature organizations. Additionally, the theoretical framework may not fully capture the dynamism of the influence of ACBSA on BDAC- FP relationship. The moderating role of ACBSA might be more complex or interact with other variables not included in the model.

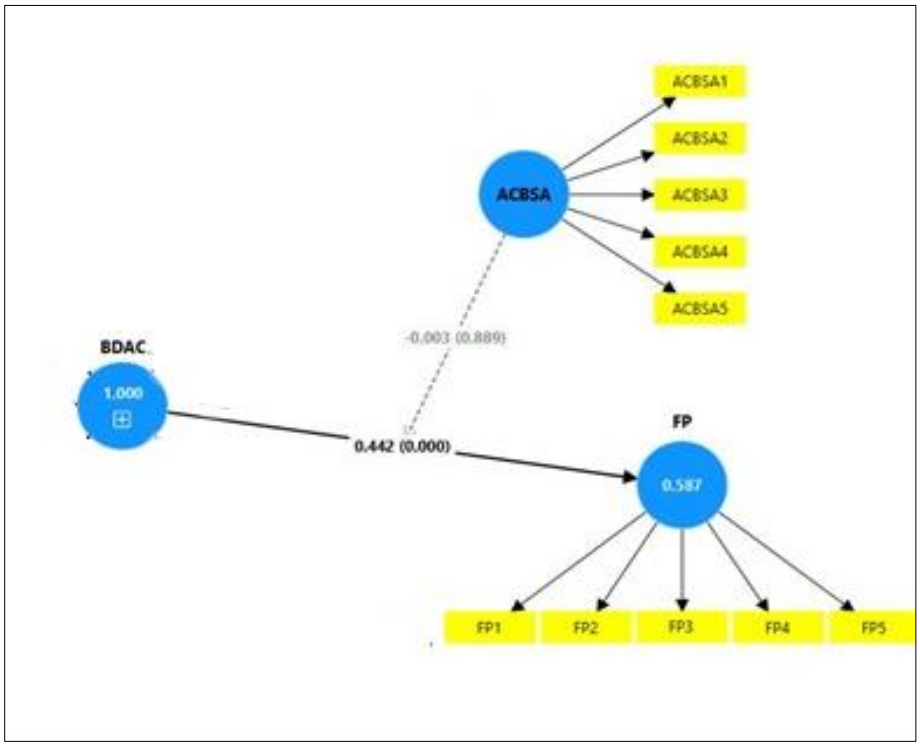

Figure 2: Structural Model

Table 3 displays the Explanatory and Predictive Power for the model. The R^2 value of 0.590 shows that the model explains a significant portion (59.9%) of the variance in FP, indicating strong explanatory power. The adjusted R^2 value of 0.587 confirms that the model remains efficient and accurate when accounting for the number of predictors. The close agreement between the R^2 and

adjusted R^2 indicates that the model is robust and does not suffer significantly from overfitting. The Q^2 statistic measures the predictive relevance of a model. Q^2 was tested based on the blindfolding procedure. It indicates the extent to which a model's predictions are better than simply using the mean of the observed outcomes. The Q^2 predict value of 0.569 highlights the model's strong predictive capability, suggesting that it can effectively predict new, or out-of-sample data related to FP.

Table 3: Explanatory and Predictive Power

Outcome	R^2	R^2 adjusted	f^2	Q^2predict
FP	0.590	0.587		0.569
ACBSA -> FP			0.080	
BDAC -> FP			0.116	

ACBSA -> FP *has* ($f^2 = 0.080$), it is a small to medium effect size, therefore ACBSA has a modest impact on FP because, while BDAC moderately impacts FP ($f^2 = 0.116$).

DISCUSSION

The first objective is to assess the impact of BDAC on FP in Saudi Arabia's tourism companies. It aims to examine the direct and indirect effects of BDAC components, such as data-related capability, technology capability, data-driven culture, technical skills, and managerial skills, on firm performance. This objective addresses a gap, as there is limited research on BDAC's impact specifically within Saudi Arabia's tourism sector. The PLS-SEM analysis showed a significant positive impact of BDAC on FP, with a path coefficient of 0.442 (p=0.000), meaning a one-unit increase in BDAC leads to a 0.442-unit increase in FP, which in turn supports the first hypothesis. Empirical studies confirm BDAC's positive impact across various contexts. In Saudi Arabia, Shaqrah and Alzighaibi (2023) found an improved decision-making and competitiveness due to BDAC, while Wided (2023) reported its positive influence on SME resilience and Jaouadi (2022) highlighted its role in supply chain innovation. Similarly, in the UAE, AlNuaimi et al. (2021) observed a link between BDAC and environmental performance, and in Pakistan, Yasmin et al. (2020) reported BDAC's role in corporate success. Studies in Taiwan (Lee, 2020), India (Upadhyay & Kumar, 2020), and China (Wang et al., 2020) confirmed BDAC's favorable influence on firm performance. In Western nations, specifically in Greece and Norway, Mikalef et al. (2019, 2020) showed BDAC's impact on performance. Awan et al. (2021) found similar results in the Czech Republic, while Rialti et al. (2019) demonstrated BDAC's role in enhancing agility and ambidexterity in Europe. The current result is in line with RBT, where BDAC, as a valuable resource, has a significant impact for competitive advantage (Barney, 1991). Sociomaterialism highlights the synergy between managerial skills, technology, and data-driven culture in optimizing performance (Akter et al., 2016; Cooren, 2020).

The second objective is to 'to examine the impact of ACBSA on FP'. The PLS-SEM analysis emphasized the positive role of ACBSA in enhancing the overall firm performance. Strategic alignment of big data analytics (ACBSA) with business strategies plays a crucial role in enhancing firm performance. By synchronizing BDAC within the broader business ecosystem, firms can address cognitive, structural, and political challenges, thereby optimizing the use of analytics (McAfee & Brynjolfsson, 2012). Strategic alignment, in particular aligning IT and business strategies improved communication and collaboration and enables business managers to contribute more effectively to IT initiatives, fostering innovation and performance gains (Jarvenpaa & Ives, 1990; Ilmudeen et al., 2019). The importance of alignment can be addressed, for example, the struggle that misalignment between capabilities and strategies can cause in organizations and prevents them to fully leverage their capabilities (Barton & Court, 2012). ACBSA, as a strategic capability, links organizational resources to firm performance.

The third objective is to assess the moderating role of ACBSA (big data analytic strategic alignment) on the BDAC-FP relationship, to ultimately addresses a gap, particularly in Saudi Arabia's tourism sector. The PLS-SEM analysis shows no significant effect, with a path coefficient of -0.003 and p-value of 0.889, rejecting the third hypothesis. Contrary to this result, studies show the importance of strategic alignment in enhancing performance. Wu et al. (2024) found IT-strategic alignment improved the relationship between BDAC and dynamic capability, and Xie et al. (2022) showed alignment boosted BDAC's impact on market agility. The lack of significance (as indicated by the current research result) could be due to early-stage BDAC adoption, implementation quality, or interaction complexity. Around 50% of sample companies have been using BDAC for less than five years. From the RBT perspective, the lack of a moderating effect of ACBSA can be explained from different viewpoints: The benefits of BDAC may be realized independently of the strategic alignment with business capabilities, possibly because BDAC itself is a strong enough resource to influence performance without the need for additional alignment. Additional explanation could indicate while ACBSA is an important resource, its alignment with BDAC alone may not be sufficient to drive firm performance. This implies the possible role of other factors in enhancing FP. These factors may include leadership, organizational culture, or external market conditions. The current result also violates what Sociomaterialism posits. The unseen moderating effect could reflect an issue with the dynamic interactions between people, processes, and technologies; they may not be optimized within the firm.

CONCLUSION AND FUTURE WORK

The study examined the impact of BDAC and ACBSA on the firm performance (FP) of tourism firms in Saudi Arabia. The findings support the significant positive influence of BDAC and ACBSA on FP, confirming the hypotheses related to the first two objectives. However, the hypothesized moderating role of ACBSA on the BDAC-FP relationship was rejected, suggesting that alignment may not significantly strengthen or weaken the impact of BDAC on firm performance in this context. Future research could explore the moderating role of ACBSA over a longer period to capture potential delayed effects. Additionally, examining other sectors or comparing findings across industries could provide a broader understanding of BDAC's impact on performance. Investigating other potential moderating or mediating factors, such as organizational culture or leadership, could also offer deeper insights into the dynamics between BDAC and firm performance.

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