

PERCEIVED FINANCIAL BENEFITS AS A BRIDGE BETWEEN ORGANIZATIONAL FACTORS AND BIG DATA TECHNOLOGY ADOPTION IN SAUDI ARABIA

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Abstract

This study explores the role of Perceived Financial Benefits as a mediator between Organizational Factors and the adoption of big data analytics. Based on the resource-based view, the study creates a conceptual model that incorporates financial expectations with organizational, human, and technological aspects. A survey was used to gather information from 159 financial related employees in Saudi Arabia, including both profit and non-profit organizations. Baron & Kenny (1986) four-step regression method was used. The results show that Perceived Financial Benefits play a role as a partial mediator in the relationship between Organizational Factors and big data analytics adoption. In particular, businesses with greater financial gain expectations adopt big data analytics more quickly and widely. By demonstrating how financial expectations support organizational preparedness for big data adoption and empirically validating the role of Perceived Financial Benefits as a mediating factor, the study adds to the body of literature. The findings indicate that managers should quantify the expected financial return of big data analytics initiatives against defined baseline indicators and communicate that return in terms appropriate to each internal stakeholder group, in order to strengthen resource allocation and organizational commitment. To better understand the financial effects of big data technologies, it is advised that future research build on these findings by utilizing real financial data from organizational statements both before and after big data analytics adoption..

Research Paper

Keywords: Resource-Based View, Perceived Financial Benefits, Organizational Factors, Big Data Analytics, Baron and Kenny

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Introduction

In today's information-based business world, advanced technologies have become crucial for any type of organization. They have become a fundamental pillar that cannot be overlooked in contemporary management practices. Understanding the constraints of time and planning ensures that projects remain manageable and aligned with their original goals. It emphasizes the significance of resilience and adaptability, essential characteristics for organizations that utilize big data proficiently (Surbakti et al., 2024). Likewise, Keshavarz et al. (2021a) assert that Big Data Analytics (BDA) is increasingly prevalent across various industries and possesses the capacity to revolutionize different types of sectors.

BDA refers to the advanced process of managing, processing, and analyzing massive, complex amount of data to extract meaningful insights that support better decision-making and strategic advantage (Jamarani et al., 2024). It combines technologies and methods that allow organizations to capture, store, and interpret data with high volume, velocity, and variety to enhance productivity and competitiveness (Raguseo, 2018; Raut et al., 2021a).

Implementing BDA has shown significant advantages in a variety of industries. BDA improves risk management, fraud detection, decision-making, and customer relationship management in the banking and finance industry (Alzaidi, 2018; Hasan et al., 2020). BDA is used by the telecom sector to boost company performance, lower operating expenses, and promote innovation and service customization (Keshavarz et al., 2021). BDA facilitates supplier performance, demand forecasting, operational efficiency, and sustainability evaluations in manufacturing and supply chain management (Raut et al., 2021; Verma, 2017). It makes learning analytics, strategic governance,

and policy development easier in the education sector (Harun, 2021). Advanced risk analysis, algorithmic trading, fraud detection, and financial management are all advantageous to the financial services sector (Hasan et al., 2020). Additionally, BDA is used by the marketing and consumer behaviour domains to improve personalization, optimize marketing campaigns, and gain a deeper understanding of consumer decision-making (Hofacker et al., 2016). Lastly, BDA adoption is progressing in the healthcare and IT sectors, which are utilizing it to enhance service innovation, productivity, and predictive analysis (Baig et al., 2019). Businesses' financial, market, and process performance is significantly affected by BDA adoption (Babalghaith & Aljarallah, 2024).

Nevertheless, the implementation of contemporary technologies such as BDA differs across organizations due to various factors. What one organization deems technically essential might be thought as a luxury by another. For instance, according to (Harun, 2022), there is still a dearth of technical innovation in developing countries' educational systems. Consequently, it is essential for developing nations to recognize the significance of technological progress within educational institutions. Not only educational organizations, Keshavarz et al. (2021a) stated that healthcare organizations are not experiencing an excessive degree of interest in adoption of BDA and they are both at initial stage of BDA adoption. In Saudia Arabian SMEs, Babalghaith & Aljarallah (2024) found that transportation, manufacturing, and wholesale/retailer sectors have considerably lower rates of BDA implementation for firms compared to technology, real estate, and financial services.

Al-Sai et al. (2020) conducted a comprehensive systematic literature review in an organizational manner to identify 74 critical success factors that

are essential for successful utilization of BDA. Organizational Factors (OFs) are a central component of these factors. The most important of these is support from top management, which makes sure that there is strategic direction, resources are allocated, and a culture that encourages data-driven innovation. Adoption is sped up even more by an open and accepting company culture that values analytics and supports trying new things. For big data projects to work well, organizations need to be ready, which means having the right infrastructure, people, and procedures in place.

Raut et al. (2021) indicate that numerous organizations hesitate to adopt BDA technologies because of organizational challenges as well as uncertainty regarding the potential advantages. The findings of their study indicate that four key constructs namely insufficient top management support, inadequate financial backing, a deficiency in skills, and a lack of established techniques or procedures, represent the most significant obstacles. However, when compared across different sectors, the adoption and successful integration of BDA remain uneven across sectors and are influenced by multiple interrelated factors, ranging from technical capabilities to organizational readiness and human competencies (Harun, 2022; Raut et al., 2021).

OFs encompass both internal and external structural elements that influence the adoption and implementation of BDA. These include the organization's size, financial resources, managerial vision, workforce capacity, competitive positioning, and compliance with regulatory and legal frameworks. The strategic orientation of leadership, coupled with supportive policies and change management practices, plays a pivotal role in determining how effectively big data can be integrated into the organization's core processes (Keshavarz et al., 2021a; Raut et al., 2021a).

One of the important factors of BDA is Perceived Financial Benefits (PFBs) which refer to the expected economic gains that businesses hope to achieve through the use of BDA. These benefits include a wide range of financial improvements, such as more revenues, lower costs, better decision-making accuracy, and more efficient operations. More specifically, organizations see BDA as a strategic instrument that helps them cut down on wasteful costs, boost staff productivity through focused interventions, find fraudulent activity more quickly and accurately, and better handle financial risks. BDA also helps businesses find new market possibilities, come up with innovative goods and services, and make the most of their financial assets by using predictive insights and real-time data.

Accordingly, the central objective of this research is to examine the mediating effect of PFBs on the relationship between OFs and BDA adoption. The study not only enhances the theoretical understanding of BDA adoption mechanisms but also offers practical insights for practitioners and policymakers who intend to expedite data-driven transformation within organizations. The results are intended to provide light on how perceived financial incentives might use basic capabilities to improve BDA integration and utilization.

Literature review and theoretical justification

In the beginning, BDA in this manner refers to the process of collecting, processing, and analyzing vast volumes of data characterized by their Volume, Velocity, and Variety (3Vs) to generate actionable insights that enhance organizational performance and innovation (Laney, 2001; Raguseo, 2018; Hasan et al., 2020).

The adoption of BDA has been widely examined through various theoretical lenses, including the Technology-Organization-Environment (TOE)

framework, Diffusion of Innovation (DOI), and the Technology Acceptance Model (TAM). These models consistently emphasize the multidimensional nature of BDA adoption, shaped by a combination of technical capabilities, organizational context, and human resources (Baig et al., 2019; Harun, 2022). In recent years, growing attention has also been given to understanding the role of financial expectations and perceived benefits in shaping technology adoption decisions (Raguseo, 2018).

Thirathon et al. (2018) did a study on medium to big for-profit throughout a wide variety of industries firms in Australia, analyzing the factors that affect analytics-driven management decision-making. The study analyzed survey responses from 163 senior finance managers, including Chief Information Officers and IT leaders, to investigate the impact of three critical factors: the sophistication of BDA, analysts' human contact skills, and the analytical skills of managers themselves. The study, used Partial Least Squares Structural Equation Modeling (PLS-SEM) for analysis, determined that all three criteria greatly improved analytics-driven decision-making. Firm size served as a mediating variable, indicating that managers in smaller businesses were more predisposed to utilize data-driven insights than those in bigger enterprises, presumably due to their closer access to analytics professionals and resources.

Verma (2017) research concentrated on manufacturing enterprises in emerging nations such as India, as they have the potential to obtain the most from the use of BDA. According to the preliminary research, four independent criteria (big data quality, absorptive capacity, perceived advantages of big data, and perceived costs of big data) significantly positively influenced the desire to utilize big data solutions. The survey managed to get 205 responses

from multi-level managers. This study employed PLS-SEM for data analysis. The study indicated that seven out of 10 hypotheses were supported. The perceived benefits of big data services and the quality of big data were identified as the two most significant elements influencing the desire to use big data services. He observed that the implementation of big data services in manufacturing firms was costly; nonetheless, these services provided significant benefits and a competitive advantage for their businesses. However, Verma (2017) 's result indicated that perceived cost and absorptive capacity factors were not statistically supported, implying that these factors exerted no significant influence on the adoption intention or perceived benefits of big data services among manufacturing firms.

Theoretical Framework and Research Gap

RBV offers a valuable theoretical framework for understanding how internal capabilities and resources influence an organization's ability to adopt and benefit from (BDA). According to RBV, competitive advantage arises from a firm's ability to acquire and deploy valuable, rare, inimitable, and organizationally embedded resources. In the context of BDA, these resources encompass technical infrastructure, organizational structures, human expertise, and management capabilities. The literature emphasizes that BDA capabilities such as analytical talent, data infrastructure, and leadership support function as firm-specific resources that, when effectively combined, create superior performance outcomes and long-term competitive advantage. By framing BDA adoption within the RBV lens, researchers can explain why some firms are better positioned than others to exploit the potential of big

data: they possess resource bundles that are not only aligned with their strategic objectives but are also difficult for competitors to replicate.

The literature establishes a strong conceptual foundation for examining BDA adoption through the interplay of Technical, Organizational, and Human Factors. It also emphasizes the significance of PFBs as a motivational force that can amplify or hinder these relationships. However, a notable gap exists in the integration of these constructs under a cohesive theoretical model that captures their dynamic interdependencies, particularly the mediating role of PFBs in linking organizational-level capabilities to adoption outcomes. Moreover, while RBV has been acknowledged in selected studies, its potential to frame BDA as a strategic resource and capability bundle remains underutilized. This study aims to bridge these gaps by empirically testing a model in which PFBs mediate the effects of TFs, OFs, and HF on BDA adoption, thereby offering new insights into how perceived value can catalyze the translation of internal strengths into innovation-driven outcomes.

Aligning big data initiatives with company strategy guarantees that analytical results directly bolster operational and competitive goals, while organized change management approaches aid in reducing opposition and easing transitions. Financial assistance is essential for maintaining investments in big data technology, tools, and training. Leadership and a distinct organizational vision establish the foundation for strategic alignment and enduring dedication. The existence of well-defined goals and objectives directs project execution and evaluation. An adaptable and agile organizational framework promotes cross-functional collaboration and responsiveness to data insights. Training and skill development programs are crucial for fostering internal

competences required for analytics projects. Efficient collaboration and communication channels among departments and stakeholders improve knowledge exchange and synergy. The implementation of performance measurement tools and key performance indicators allows organizations to monitor, assess, and enhance their big data activities, guaranteeing alignment with strategic objectives and operational efficiency. These organizational elements collectively create a strong framework that facilitates the adoption and maintenance of BDA in company environments.

Even if there is more and more research on using and analyzing big data, there are still some gaps that are clear. Several research have underscored population-related constraints, wherein results are confined to particular regions or sectors, hence diminishing their generalizability. For example, studies done in India and South Africa generally warn against using the results in other situations since organizational, industrial, and regional differences have a huge impact on how big data is used (Kondo, 2025; Raguseo, 2018). Similar difficulties are expressed in educational and telecommunications environments, where limited samples hinder generalization and necessitate the incorporation of a broader range of organizations and geographical areas (Harun, 2022; Keshavarz et al., 2021).

Research Framework

Figure 1. Research Framework

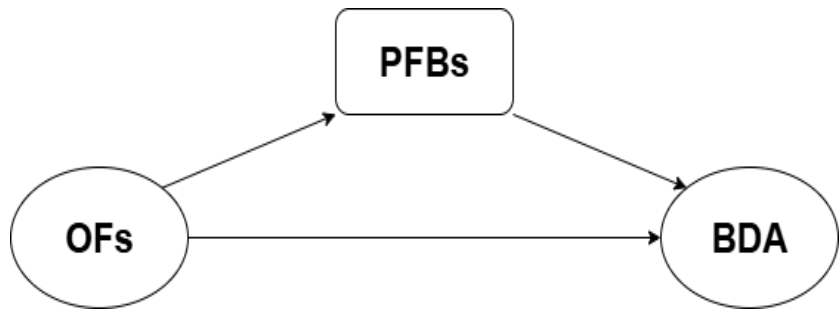


Figure 1 above shows the proposed conceptual framework of this study. According to earlier research, OFs are seen to be the primary determinants of managerial and technological preparedness for the adoption of BDA. However, organizational capacity is rarely the only factor considered when deciding whether to begin implementing BDA. Managers frequently assess the expected returns and possibilities for value development of those programs. Consequently, PFBs are established as a mediating construct that connects organizational variables to adoption decisions. This framework emphasizes that, while OFs create the groundwork, the expectation of noticeable financial rewards is critical in speeding or slowing adoption.

Based on the conceptual framework outlined above, the following hypotheses are developed to empirically investigate the direct and intermediary links among organizational characteristics, PFBs, and the adoption of big data analytics:

- H1:** Organizational factors (OFs) have a significant positive influence on big data analytics adoption (BDA).
- H2:** Organizational factors (OFs) have a significant positive influence on perceived financial benefits (PFBs).

H3: Perceived financial benefits (PFBs) have a significant positive influence on big data analytics adoption (BDA).

H4: Perceived financial benefits (PFBs) mediate the relationship between organizational factors (OFs) and big data analytics adoption (BDA).

Methodology

This study employed a quantitative, cross-sectional design, suitable for testing relationships between variables at a single point in time. A structured survey was used to collect data efficiently. The questionnaire was reviewed by four experts, two from academia and two from the professional field who are managing their own businesses, all holding degrees in computer science, business studies or both, as part of a content validity assessment. Additional validation procedures were conducted, including reliability testing to assess internal consistency and face validity to ensure the clarity and relevance of the items.

People who work for or own businesses and have regular contact with the financial management department are the ones who have agreed to participate in this survey. They are headquartered in Saudi Arabia and come from a wide range of industries and sectors in the Saudi economy.

Participants were selected using simple random sampling to ensure representativeness. The final sample size was $N = 159$. An a priori power analysis was conducted using G*Power 3.1.9.7 to determine the minimum sample size required for the analysis. The test family selected was F tests, with linear multiple regression (fixed model, R^2 deviation from zero) specified as the statistical test, corresponding to the regression models employed in the mediation procedure. Following established conventions, a medium effect size was assumed ($f^2 = 0.15$), with a significance level of $\alpha = 0.05$ and a

statistical power of 0.95 ($1 - \beta = 0.95$). The analysis was specified for two predictors, consistent with the largest model estimated in this study, in which organizational factors and perceived financial benefits jointly predict big data analytics adoption. Under these parameters, the minimum required sample size was 107 ($\lambda = 16.05$; critical $F = 3.084$; numerator $df = 2$; denominator $df = 104$), yielding an actual power of 0.952. The obtained sample of 159 respondents therefore exceeds the minimum requirement by a substantial margin, indicating that the analyses reported in this study are adequately powered. Data were gathered through a self-administered questionnaire distributed via an online form and face to face. Participation was voluntary and anonymous. Survey items measured study variables using a 6-point Likert scale (1 = Strongly Disagree to 6 = Strongly Agree), adapted from existing validated instruments. Subsequently, Baron & Kenny (1986) four-step regression method was used to test mediation. Regression Models for Mediation Analysis Baron & Kenny:

Model 1 (Total Effect):

$$BDA = \beta_1 + \beta_2(\mathbf{OFs}) + \varepsilon_1$$

Model 2 (Effect of Independent Variable on Mediator):

$$\mathbf{PFBs} = \beta_3 + \beta_4(\mathbf{OFs}) + \varepsilon_2$$

Model 3 (Mediator and Independent Variable Predicting Dependent Variable):

$$BDA = \beta_5 + \beta_6(\mathbf{OFs}) + \beta_7(\mathbf{PFBs}) + \varepsilon_3$$

Mediation is confirmed when the coefficient of OFs decreases in Model 3 compared to Model 1 after including PFBs.

Analysis was performed using SPSS. Results will be shown in the findings section below.

Ethical Considerations

At the start of the online questionnaire, participants were provided with an informed consent statement explaining the purpose of the study, what their participation involved, the types of questions asked, and any potential risks or benefits of participation. Only those who acknowledged the consent form were allowed to continue to the survey questions. In line with ethical guidelines, participants were informed that their data would be used solely for research purposes, and that their responses would be handled with strict confidentiality. The study ensured anonymity of the respondents. No personally identifying information (such as names, emails, or ID numbers) was collected in the survey.

Ethical approval for the study was obtained from the ethics committee in Shaqra University before data collection began. The approval process ensured that the study protocol met all necessary ethical requirements.

Findings and Discussion

This chapter presents the findings of the mediation analyses conducted to examine the role of PFBs as a mediator in the relationship between independent variable (OFs) and the dependent variable (BDA). Using the Baron & Kenny (1986) method, four-step regression analyses were employed for model to determine whether PFBs serves as a full or partial mediator in this relationship. First, the relationship between the independent variable and the dependent variable was assessed. Second, the effect of the independent variable on the mediator was evaluated. Third, the direct relationship between the mediator and the dependent variable was tested independently. Finally, the combined effects of the independent variable and the mediator on the dependent variable were examined in the same regression model.

Respondents’ information

Table 1. Respondents information

	FRE- QUENCY	PERCENT
GENDER		
PREFER NOT TO SAY	23	14%
FEMALE	31	19%
MALE	105	66%
AGE		
>60	3	2%
18-23	7	4%
24-34	82	52%
35-44	43	27%
45-60	24	15%
ROLE IN ORG.		
OWNER	27	16%
FINANCIAL PLANNER	13	8%
INVESTMENT ANALYST	26	16%
AUDITOR	35	21%
ACCOUNTANT	12	7%
OTHER	51	31%
PROFITABILITY_ORG_CAT		
FOR-PROFIT ORGANIZATION	84	53%
NON-PROFIT ORGANIZATION	75	47%
GOVT_PRIVATE_CATEGORY		
GOVERNMENTAL	70	44%
PRIVATE	89	56%
LEVEL OF UNDERSTANDING		
1	25	16%
2	23	14%
3	34	21%
4	27	17%
5	42	26%
6	8	5%

HAVE YOU USED LOGARITHMS		
NO	97	61%
YES	62	39%
SECTOR		
FINANCE AND BANKING	20	13%
INFORMATION TECHNOLOGY	13	8%
RETAIL AND CONSUMER GOODS	18	11%
EDUCATION	62	39%
CONSTRUCTION	9	6%
OTHER	37	23%
TOTAL	159	100%

Reliability, validity and exploratory factor analysis

Table 2. Reliability, validity and exploratory factor analysis

Items	Factor loading	α	% of Variance
Organizational Factors		0.895	52.08
OF1	0.676		
OF2	0.667		
OF3	0.646		
OF4	0.678		
OF5	0.769		
OF6	0.813		
OF7	0.742		
OF8	0.706		
OF9	0.736		
OF10	0.766		
Perceived Financial Benefits		0.955	67.69
PFBs1	0.721		
PFBs2	0.693		
PFBs3	0.8		
PFBs4	0.832		
PFBs5	0.823		
PFBs6	0.838		
PFBs7	0.828		
PFBs8	0.871		

PFBs9	0.868		
PFBs10	0.844		
PFBs11	0.868		
PFBs12	0.865		
Big Data Analytics Adoption		0.928	73.92
BDA1	0.801		
BDA2	0.834		
BDA3	0.892		
BDA4	0.902		
BDA5	0.83		
BDA6	0.894		

Mean, standard deviation and correlation between variables

Table 3. Mean, standard deviation and correlation between variables

	Mean	SD	OFs	PFBs	BDA
OFs	3.9025	1.07527	1	.345**	.625**
PFBs	4.7825	0.96633	.345**	1	.373**
BDA	3.9874	1.18825	.625**	.373**	1

** Correlation is significant at the 0.01 level (2-tailed).

Results of OFs and BDA with PFBs as a Mediator

The mediation analysis was conducted to determine whether PFBs (the mediator) mediates the relationship between OFs (independent variable) and BDA (dependent variable) following the Baron & Kenny (1986) method. The analysis involved three steps, as detailed below.

The first step tests whether the independent variable (OF) significantly predicts the dependent variable (BDA). The results indicate that OF has a positive and significant association with BDA ($r = 0.625$, $p < 0.01$), fulfilling the first condition. This result is consistent with many studies that have concluded that there is a direct impact of organisational factors on the decision to adopt big data analytics, such as (Babalghaith & Aljarallah, 2024)’s

study which found that there is an impact of organizational factors on small and medium-sized enterprises in Saudi Arabia in the process of making the decision to adopt BDA.

The second step examines the relationship between the independent variable and the mediator. The correlation analysis shows that OF is positively and significantly related to PFBs ($r = 0.345$, $p < 0.01$). Thus, the second requirement is also satisfied. The correlation analysis shows that OF is positively and significantly related to PFBs.

This finding is consistent with prior research showing that organizational conditions shape financial outcomes. For example, Al Shahrani & Zhengge (2016) demonstrate that several organizational factors such as firm size, asset utilization, and market share position are positively associated with superior financial performance, indicating that strong organizational foundations tend to yield better financial returns.

Given that these factors enhance actual financial performance, it is reasonable to expect that they also elevate organizations' perceptions of the potential financial benefits associated with adopting new technologies. Accordingly, the positive relationship identified in this study between OF and PFBs aligns with the notion that robust organizational structures foster stronger expectations of financial gains.

The third step evaluates whether the mediator (PFBs) is significantly associated with the dependent variable (BDA). Results demonstrate a positive and significant relationship between PFBs and BDA ($r = 0.373$, $p < 0.01$), indicating that the third condition is met. This finding aligns with prior systematic reviews conducted Baig et al. (2019) which emphasized the importance of financial considerations in BDA adoption process. Moreover, this result

correspond well the logic of cost–benefit analysis frameworks, which posit that organizations favor technology adoption when the perceived financial benefits outweigh the expected costs (Misuraca, 2014). Thus, the significant effect observed in this study reinforces the conclusion that financial value expectations function as a primary driver of BDA adoption.

However, in Saudi Arabian context, this result contradicts the findings of Babalghaith & Aljarallah (2024) when they found that there is no direct relationship between the decision to adopt BDA and its cost in Saudi Arabian enterprises.

The final step involves testing whether the effect of the independent variable on the dependent variable decreases when the mediator is included in the regression model. The findings reveal that, after entering PFBs as a mediator, the effect of OF on BDA decreases from ($\beta = .625$, $t = 10.026$, $p = <.001$) to ($\beta .563$, $t = 8.657$, $p = <.001$) As shown in the table 4 below. This reduction suggests that PFBs partially mediates the relationship between OF and BDA. Therefore, the mediation hypothesis is partially supported. Consistent with prior research, organizational conditions have been shown to shape organizations' expectations of the financial returns associated with adopting big data technologies. Baig et al. (2019) emphasized that OFs directly influence the perceived financial benefits of big data initiatives. Likewise, evidence from the educational sector demonstrates that organizational resources and top management support, particularly the belief that investment in big data is worthwhile, significantly shape expectations of financial gains (Harun, 2022). Taken together, these findings align with the current study's result, suggesting that OFs operate partly through PFBs to influence BDA adoption. This partial mediation is put in the Saudi context to explain why

perceived financial benefits transmit only part of the impact of organisational factors on adoption. Two features of the local environment seem to be particularly pertinent.

The first is the timing of the returns to technology investment. Evidence from Saudi organisations shows that the relationship between the adoption of an advanced digital technology and expenditure is negative in the short term and positive only in a longer horizon as the implementation costs are gradually compensated by efficiency and verification gains (Alshahrani & Alshahrani, 2021). In areas where financial returns are expected to be realised long after the investment, expected financial gain is not likely to be the only mechanism through which organisational readiness leads to adoption. This is consistent with the partial rather than full mediation seen here. Hence, organisational factors like leadership commitment, infrastructure, and skills might still directly influence adoption regardless of financial expectations.

The second is the mechanism of financial capacity in Saudi organisations. Evidence from Saudi institutions shows that variation in the adoption of advanced technologies is largely influenced by the size of budgets allocated for such initiatives, availability of technical support, clarity of institutional vision, and the incentives extended to those who utilise these technologies (Habib Al-Otaibi et al., 2025). Financial considerations in this context are thus not only limited to prospects of future gain, but also act upstream, as a form of organisational capability itself. It is also captured in the attenuated indirect path by the organisational factors construct that captures part of the influence on adoption where budgetary allocation is already embedded in organisational readiness instead of perceived financial benefits.

Overall, these considerations suggest that the perceived financial benefits in the Saudi environment act as one of several meaningful channels but not the dominant mechanism through which organisational capability and big data analysis adoption are linked.

Table 4. Regression analysis, mediation effects.

Coefficients ^a		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
Model		B	Std. Error	Beta		
1	(Constant)	3.048	2.372		1.285	.201
	OFs	.373	.043	.563	8.657	<.001
	PFBs	.110	.040	.179	2.747	.007
a. Dependent Variable: BDA						

The mediation analyses provided significant insights into the relationships between the independent variables OFs and the dependent variable BDA through the mediator PFBs. The results indicated partial mediation, where PFBs partially explained the relationship between independent variable and BDA while the independent variable retained significant direct effect on BDA. These findings highlight the dual role of the independent variable in influencing BDA directly and indirectly through PFBs, underscoring the importance of considering both direct and mediated effects in understanding the factors driving BDA adoption decision. Collectively, the results contribute to a deeper understanding of the interplay between these variables and provide a foundation for future research in this area.

Table 1 illustrates that the sample included entities from both the public and private sectors, with 70 governmental and 89 private organisations, as well as both for-profit and non-profit classifications, with 84 and 75 respectively. The aforementioned mediation model was evaluated using the com-

bined sample, and no distinct analysis was performed by sector. It is conceivable that the significance attributed to perceived financial advantages differs among these organisational structures. Private and for-profit entities are generally regulated by profitability and return-on-investment standards, leading to the prominence of expected financial returns in technology investment choices. In contrast, governmental and non-profit entities often rationalise such expenditures by citing service provision, adherence to regulations, or fulfilment of mandates, thereby making financial return merely one factor among many rather than the primary decision-making criterion. In such instances, the mediating influence of perceived financial advantages is anticipated to be proportionately diminished. This insight is presented as an interpretative reflection instead than an empirical assertion, and systematic evaluation via multi-group comparison signifies a prospective avenue for subsequent investigation.

Practical Implications

The discovery that perceived financial advantages partially mediate the connection between organisational elements and the adoption of big data analytics has a practical implication: organisational preparedness alone is insufficient for adoption unless decision-makers foresee a financial gain. Managers aiming to promote big data initiatives should hence regard the expression of anticipated financial value as a purposeful managerial responsibility instead of a mere supplementary aspect of the business case.

Three potential courses of action ensue. Initially, the anticipated financial yield must be clearly defined and quantifiable prior to seeking approval. Instead of framing big data analytics as a broad capability investment,

project sponsors ought to express expected results in the financial metrics familiar to the organization, including reductions in operational expenses, declines in losses due to fraud or mistakes, enhancements in employee productivity, or advancements in forecasting precision that lower inventory or provisioning expenditures. Determining baseline metrics for these indicators prior to execution facilitates the assessment of the actual return subsequently.

Secondly, the financial rationale must be conveyed distinctively to various stakeholders. Financial executives and auditing roles address payback durations, cost-avoidance projections, and their foundational assumptions; operational leaders react to indications of diminished processing times and a reduction in manual interventions; and senior management responds to the congruence of the investment with strategic objectives. Delivering a uniform financial narrative to all stakeholders is likely to diminish the perceived worth of the endeavour for certain individuals.

Third, the magnitude of investment ought to correspond with the robustness of the existing evidence. In situations when anticipated financial advantages are ambiguous, a restricted pilot program inside a specific function, accompanied by established metrics and a specified evaluation timeframe, enables the firm to produce internal proof of financial yield. Such proof is typically more compelling internally than external standards, and it offers a justifiable foundation for future growth.

The previously noted observation concerning public and private entities implies that these suggestions necessitate modification. In governmental and non-profit contexts, where investment choices are not primarily dictated by profit, the financial argument is more compelling when framed as cost-

effectiveness, better management of allocated funds, or superior service provision per expenditure unit, rather than focusing on revenue generation.

Limitations

Several limitations should be acknowledged when interpreting the results of this study.

The first concerns the analytical approach. Mediation was assessed using the causal steps procedure of Baron and Kenny (1986). Although this method is widely applied and offers a transparent and readily replicable analytical sequence, it is subject to recognised constraints. The procedure infers mediation from a pattern of separate significance tests rather than from a direct test of the indirect effect, and its reliance on the sequential satisfaction of several conditions makes it comparatively conservative, with a corresponding risk that genuine indirect effects go undetected. It also yields no confidence interval for the indirect effect, so the magnitude and precision of that effect are not directly quantified in the present analysis. Contemporary practice increasingly favours bootstrapping procedures, which estimate the indirect effect directly and construct confidence intervals without assuming that its sampling distribution is normal. Future studies examining this model would benefit from applying such procedures alongside, or in place of, the causal steps approach.

A second limitation relates to the research design. The study is cross-sectional, and all data were collected at a single point in time. The relationships reported here therefore describe associations rather than causal effects, and the temporal ordering implied by the mediation model, in which organi-

zational factors shape perceived financial benefits, which in turn shape adoption, is derived from theory rather than established empirically. Longitudinal designs would permit a stronger evaluation of this sequence.

A third limitation concerns the measurement approach. All constructs were measured using self-reported perceptions obtained from a single questionnaire, which introduces the possibility of common method variance and may inflate the observed relationships among variables. In addition, perceived financial benefits reflect respondents' expectations rather than realised financial outcomes, and expectations may diverge from actual returns.

Finally, the findings are bounded by the characteristics of the sample. Data were collected from 159 respondents in financial-related roles within organizations based in Saudi Arabia. While the sample spans several sectors and includes for-profit, non-profit, governmental, and private organizations, the distribution across sectors is uneven, with the education sector accounting for the largest share of respondents. Generalisation to other national contexts, or to organizational roles outside the financial function, should therefore be made with caution.

Conclusion and suggestions

This study has shown how important organizational aspects are in the decision to adopt big data, and how PFBs contribute to that decision within a sample spanning for-profit, non-profit, governmental, and private organizations. The results show that expected financial benefits act as a middle factor in the adoption process. In other words, organizations are more likely to speed up their adoption of big data technologies when they expect to harvest money from their usage. Accordingly, the study offers specific guidance for practice,

recommending that expected financial returns be quantified against baseline indicators, communicated in terms suited to each stakeholder group, and validated through limited pilot implementations before wider deployment. The study suggests that subsequent research should investigate these dimensions more comprehensively, namely by utilizing actual financial data from organization's accounting records and analyzing the results before and after the implementation of BDA decisions to gain deeper insights into the financial implications of such adoption.

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