STANZALEAF INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY STUDIES (SLIJMS) *(ISSN:* 3139-3373*)*

Volume 1 Issue 2 March 2026- Available at https://slijms.com

Business analytics in managerial decision-making in emerging economies: evidence from Pakistan

[1]Zahij Iqbal, [2]Muhammad Hamza Khan

[1]National College of Commerce NCBA&E
E-mail: ZahijIqbal2@gmail.com
ORCID: 0009-0009-3040-1044
[2]Hailey College of Commerce, University of the Punjab
E-mail: Hamzah8887@gmail.com

Abstract

Purpose: Firms in emerging economies are increasingly investing in business analytics (BA) capabilities to strengthen their decision-making processes and move toward more evidence-based organizational governance. While a growing body of literature documents the operational and strategic benefits of BA in mature market contexts, its application in complex top management decisions in emerging economies, such as Pakistan, remains considerably underexplored. Grounded in the resource-based view of the firm, this study investigates top management perceptions of the adoption and use of BA when making decisions concerning the firm's resource base in a Pakistani corporate environment. Design/methodology/approach: This study employed a qualitative research design using semi-structured interviews to gather in-depth perceptions from 15 top managers employed in large Pakistani firms. Participants were drawn from firms with significant decision-making responsibilities spanning multiple industries, enabling a rich and contextually grounded understanding of BA use. Findings: The findings reveal that top managers in Pakistan primarily rely on BA output to monitor business performance against established targets and to guide short-term corrective measures. For more complex, future-oriented strategic decisions, top managers supplement BA-derived knowledge with non-analytical knowledge sources, including stakeholder consultations, industry expert opinions, and contextual judgments shaped by local market dynamics. Furthermore, both individual-level and organizational-level expectations regarding BA significantly shape how and why top managers choose to engage with it. Originality/value: This study contributes to the emerging literature on business analytics value in developing economies by documenting the purposes and rationales underlying top management ’sBA use in Pakistan. It advances the resource-based view discourse by demonstrating how top managers in a high-uncertainty, relationship-intensive business environment navigate the boundaries between analytics-driven and experience-driven decision-making.

Keywords: *Strategy, Strategic management, Decision-making, Business analytics, Emerging economies, Pakistan, RBV*

1. Introduction

According to the RBV, competitive advantage is the result of a firm ’s capability to recognize, create, and utilize resources in a manner that is difficult for others to imitate (Barney, 1991). Top managers (TM) occupy the peak of this resource management activity and are responsible for ultimate decision-making regarding how organizational resources can be acquired, configured, and deployed (Noda and Bower, 1996). As such decisions are knowledge-based, the quality and appropriateness of the information accessible to TMs determine the firm’s strategic direction (Spender, 1996). Digitalization has essentially changed the information environment of modern organizations. Companies can now access more data than ever before, created up and down their chains of value, at their customer contact points, and in their competitive arenas (Davenport, 2018). Business analytics (BA), including

descriptive, diagnostic, predictive, and prescriptive business analytics, has provided companies with the capability to transform such data to formulate operational knowledge (Lepenioti et al., 2020). In turn, companies in developed and developing economies have significantly increased their investments in BA to achieve gains in the speed, accuracy, and coherence of decision-making (Davenport and Harris, 2017; Khan, 2023).

Pakistan is one of the largest and fastest-developing economies in South Asia; therefore, the study of BA use in managerial decisions is especially interesting in the country. Institutional complexity, regulatory uncertainty, accelerated adoption of digital technologies, and increasing competition pressure from domestic and foreign competitors define the environment of Pakistani firms (Khwaja et al., 2021). In this context, major Pakistani companies have started to invest heavily in digital infrastructures and analytics capabilities; however, it is still not clear how well the top management utilizes these capabilities (Ahmed et al., 2020).

Academic knowledge regarding the application of BA to managerial decision-making processes has been generated in Western and high-income country backgrounds. Research on how TMs in emerging market's view, internalize, and implement BA is limited. This is a significant gap because the factors that define the formation of BA value, such as institutional settings, the way managers think, the maturity of data infrastructure, and cultural beliefs regarding the use of evidence, might be significantly different among national settings (Wamba et al., 2017). Knowledge of how Pakistani TMs employ BA and why is thus relevant to both theory and practice.

This study addresses two research questions to fill this gap. First, when TMs in large Pakistani companies apply BA in their decision-making will be investigated. Second, why they would want to interact with it is examined. The answers to these questions are provided in the form of 15 detailed semi-structured interviews with top leaders who have strategic decision-making roles in various industries. The remainder of the paper discusses the review of the theoretical background, description of the methodology, presentation of the empirical results, and a conclusion that places our results within the overall literature.

2. Theoretical background

2.1 Managers and firm decision-making

Firm performance does not solely rely on the resources that a firm holds, but rather on the effectiveness with which the resources are managed and utilized over time (Barney, 1991). Changing competitive environments demand that firms change their resource structures, such as divesting from resources with decreasing returns and investing in resources that provide future competitive advantage (March, 1991; O'Reilly and Tushman, 2008). Those firms that are very successful in this kind of dynamic resource management activity are likely to have far-out performances in relation to other rivals (Barney, 1991; Teece, 2007).

Resource management contains a variety of decisions of varying complexities, newness, and information needs (Sirmon et al., 2007). Routine decisions are those based on familiar situations, in which familiarity with the options and their implications can be accommodated by systematic procedures or even automation (Simon, 1960; Holsapple, 2008). In contrast, non-routine decisions are characterized by a high level of novelty or uncertainty, and decision-makers can not depend on heuristics; instead, they must undertake strenuous exploration of options while considering possible effects (March & Simon, 1993).

Most of the decisions that TMs have to make fall into the latter category. In strategic choices related to the distribution of resources, entry mode, capability building, or restructuring of the organization, there

is significant uncertainty regarding the future of the external environment as well as the firm's internal capabilities (Hutzschenreuter & Kleindienst, 2006). Consequently, to make these decisions, TMs must rely on a variety of knowledge bases, few of which include historical data, expert judgment, stakeholder input, and intuition (Vuorinen et al., 2018). The difficulty lies in combining these sources productively, particularly when they point in different directions (Phillips-Wren et al., 2019).

In Pakistan, in particular, TMs have to deal with other tiers of complexities. Regulation systems are shifting quickly, the quality of infrastructure changes significantly across the country, and even informal networks and relationship capital have a significant impact on business performance, in addition to official statistics (Khwaja et al., 2021). Such contextual characteristics define the decision environment in a manner that can alter the nature of decisions that TMs encounter, as well as the mode through which they make their decisions (Ahmed et al., 2020).

TMs also work under the organizational control and hierarchical structures that influence decision-making roles and responsibilities. At the level of group or subsidiary management teams, managers are normally responsible for making decisions that impact the resource constellation of their areas of dealings (Hambrick et al., 2015; Wang et al., 2022). Their tasks are divided into external and internal analyses, strategy development, control of its implementation, and monitoring of its performance (Cohen and Cyert, 1973; Randall and Dent, 2019). All these activities characterize the landscape in which BAs can deliver value.

2.2 Purposes for using business analytics in managerial decision-making

Various activities are involved in the strategic management process, which, when combined, form the competitive position and configuration of resources of the firm in the long run (Cohen and Cyert, 1973). These include environmental scanning, strategy development, setting of targets, monitoring, and implementation of corrective actions when performance is not on course (Randall and Dent, 2019). BA has the potential to assist all these activities, although its role and level of contribution to them can differ and fall on both ends of the decision-making spectrum (Lepenioti et al., 2020). On the operational end of the decision spectrum, BA performs well in tracking performance against set targets, detecting deviations, and facilitating the choice of corrective action (Kesavan and Kushwaha, 2020). The empirical data produced by operational systems are valuable to these analyses, as they help TMs to stay aware of the situation in their respective areas of work without having to collect a lot of information manually (Luoma, 2016). These applications are well-established in the literature and tend to be universal across organizational settings (Davenport and Harris, 2017).

There are more problems at the strategic end of the decision-making spectrum in BA. Strategic decisions are made with reference to unpredictable future conditions, new strategic choices, and judgments concerning the organizational capacity that do not particularly manifest themselves in available data (Kunc and O'Brien, 2019). Such decisions can be extended to scenario analysis and simulation modelling; however, these types of analysis involve assumptions based on the future of the situation, and uncertainty is always introduced by uncertainty (Volberda et al., 2021). These challenges may be aggravated by the speed and unpredictability of environmental change in emerging economies such as Pakistan, so BA output can be a helpful but inevitably incomplete contribution to the strategic decision-making process (Wamba et al., 2017).

Recent research has started to report a more debilitated view of the involvement of BA in the approach to management, whereby analytical output is not an algorithm for making a choice but a part of many that go into a highly extended procedure of deliberation (Vidgen et al., 2017; Khan & Shah, 2024). It seems that TMs build on BA-based insights, add tacit knowledge to them, stakeholder views, and situational judgment to come up with decisions that capture the entire complexity of the strategic

dilemma before them (Pauleen and Wang, 2017). One of the key interests of this study is to understand how this integration takes place in the Pakistani context.

2.3 Reasons for using business analytics in managerial decision-making

The question of why managers use BA differs from the question of when or how they use BA. Various bodies of literature have addressed this question by taking a varied theoretical approach. Technology acceptance models, including the Unified Theory of Acceptance and Use Technology (UTAUT), focus on performance expectancy, effort expectancy, and social influence as the reasons behind people's adoption of technology (Venkatesh et al., 2003; Khan M.H, 2023). When applied to BA, these frameworks imply that TMs will utilize analytical tools to the extent that they believe that BA will improve their performance in decision-making, that interacting with it is practical to incorporate into their working processes, and that their colleagues and managers in the organization also appreciate BA use (Zaman et al., 2021; Khan et al., 2025).

Outside these generic adoption drivers, research has focused particularly on the managerial use of BA and has identified specific decision factors. Managers testify that they use BA to reduce uncertainty and increase the factual basis of their decisions (Davenport and Harris, 2017; Rafi et al., 2025). They also apply it to validate decisions for superiors, colleagues, and boards, providing an evidential source for making choices, which may otherwise be subjective (Korherr et al., 2023). In addition, BA may allow uncovering new horizons or inconsistencies in the data that might make managers rethink previous assumptions, which is a cognitive challenge that can be beneficial (Ali and Essien, 2023).

Organizational expectations also play a role. Companies that have high investments in BA infrastructure usually anticipate their top-level management to be the leaders of its application, both in their deeds and in the organizational culture and norms they set as examples (Carillo, 2017). In some companies, TM interaction with BA is at least partially normative in the sense of what it takes to be an effective executive in an organization with the capability of analytics (Min and Lea, 2021). Such organizational social and cultural expectations can be especially compelling in Pakistani organizations, where top-down power and role-based demands have a significant effect on managerial behavior (Ahmed et al., 2020).

Managerial confusion and decision-making styles also determine BA utilization due to individual differences. Analytically oriented managers who are more data literate (or technologically self-efficacious) tend to be more inclined to pursue BA actively and successfully (Martinsons and Davison, 2006; Yu et al., 2022). In contrast, managers with high intuitive decision-making styles or less exposure to BA might be more discriminating in using analytics, mainly relying on personal judgment and treating the output of analytics as a checkpoint (Phillips-Wren et al., 2019). These differences at the individual level also add value to the heterogeneity of BA patterns used within and among different organizations.

Drawing on these theoretical foundations, this study explores TM BA use in large Pakistani firms through two key research questions.

1. RQ1. When do TMs in large Pakistani firms use BA?
2. RQ2. Why do TMs in large Pakistani firms use BA?

3. Methodology

3.1 Research approach

This study relies on a qualitative research concept based on abductive logic, which enables us to pass between the concepts and hypotheses of the empirical findings (Timmermans & Tavory, 2012). The sparsity of previous research on the use of BA in the Pakistani managerial setting justified the qualitative

research design, as it allowed us to develop an informed perception, as opposed to proving specific hypotheses (Saldana et al., 2011). After examining the available literature on BA application in organizational decision-making and specific situations in Pakistani corporate settings, our present research developed a semi-structured interview protocol as the main measure of data collection (Qu & Dumay, 2011).

The population of this study comprised large firms, that is, those with revenues above PKR 5 billion annually, based in Pakistan, and whose head offices were located in major commercial cities such as Karachi, Lahore, and Islamabad. The importance of firm size is due to the fact that a large organization is more likely to invest in BA capabilities and TMs with significant BA exposure (Chen and Nath, 2018). They were eligible to participate in the study as 15 TMs in strategic decision-making roles, which was deemed sufficient to reach thematic saturation in this type of qualitative research (Galletta, 2013).

3.2 Data collection and handling

Semi-structured and individual interviews were also utilized as the main form of data collection, as they provided thematically structured, but verbally free, conversations between interviewers and participants (Qu & Dumay, 2011). This type of interview is ideal for obtaining rich and experience-based responses from senior managers, who can describe the particulars of their BA usage in a manner that is not possible using structured surveys (Galletta, 2013). The interview guide was created through a gradual series of discussions with pilots and had four thematic areas:

1. The informant's managerial role and overall orientation toward decision-making;
2. The informant's perceptions of the BA's organizational benefits and challenges;
3. The informant's direct experience with BA use in planning and strategic decision-making; and
4. The informant's personal motivations and expectations regarding BA use.

Six heads in business units, five heads in functions, and four heads in strategy formed the interviewees (Table 1). The interviews were conducted mostly in person between March 2023 and September 2023, with a few conducted via video conferencing. Each session lasted an average of 58 minutes and was tape-recorded with the consent of the participants and later transcribed verbatim. All participants received full anonymity, and their identifying information was substituted with generalized descriptors during the analysis and reporting stages.

Table 1 Interview statistics

Identifier	Type of responsibility	Industry sector	Interview type	Language	Duration (min)
A	Head of business unit	Manufacturing	Onsite	Urdu	62
B	Head of strategy	Financial services	Onsite	English	55
C	Head of strategy	Telecommunications	Onsite	English	60
D	Head of business unit	FMCG	Onsite	Urdu	72
E	Head of function	Energy	Onsite	Urdu	51
F	Head of business unit	Retail & e-commerce	Onsite	English	58
G	Head of function	Manufacturing	Onsite	Urdu	64
H	Head of strategy	Financial services	Online	English	49
I	Head of business unit	Logistics	Onsite	Urdu	56

J	Head of function	Healthcare	Onsite	Urdu	61
K	Head of strategy	FMCG	Onsite	Urdu	53
L	Head of function	Telecommunications	Online	English	47
M	Head of business unit	Energy	Onsite	Urdu	65
N	Head of function	Retail & e-commerce	Online	English	52
O	Head of business unit	Healthcare	Onsite	Urdu	59

Source: Authors' own work

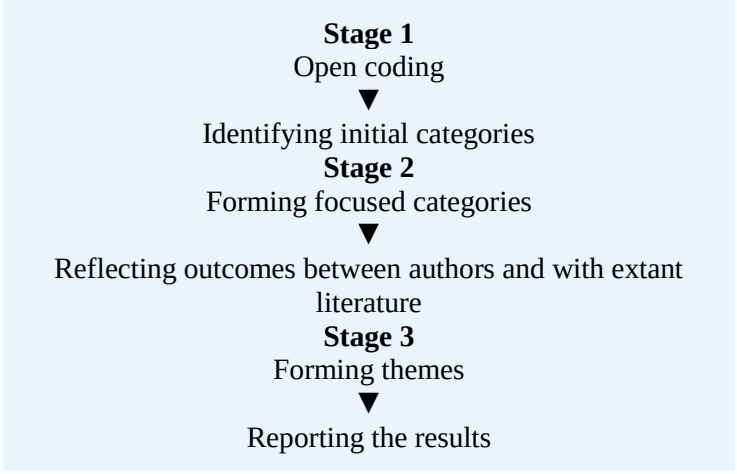
3.3 Data analysis

The analysis of the interview transcripts was conducted using a three-stage data coding strategy that is in line with standard qualitative methods in management research (Roulston, 2014). In the initial step, open coding was used on all transcripts to develop first-order categories that reflected the content of the participants' descriptions of their BA use (Gioia et al., 2013; Khan & Ahmaad, 2025). These preliminary categories were retained as they were close to the words and frames of the participants, and the richness of the data in the context was maintained. All Urdu–English translations were performed by other members of the research team who were bilingual and ensured that the translations were semantically correct.

In the second stage, the first-order categories were corrupted into second-order themes in the form of cross-case comparisons and continued reflections against the existing literature (Fereday & Muir-Cochrane, 2006). This step entailed repeated deliberations by all three authors and specific attention to categories that seemed specific to the Pakistani situation, such as those involving the role of personal relations, regulatory demands, and family ownership patterns in influencing BA use. Third-order constructs were subsequently created to reflect larger era trends within the themes.

It was analyzed simultaneously based on deductive logic, whereby the purposes and reasons behind the use of BA in the existing literature were tested in the Pakistani context, and inductive logic, in which values that were not expected by existing literature could emerge (Timmermans & Tavory, 2012). The anonymity of the respondents was preserved during the reporting process; descriptive role names were written instead of personal names. A summary of the data analysis process is presented in Figure 1.

Figure 1. Data analysis process



Source: Authors' own work based on Roulston (2014)

3.3.1 Analyzing data to identify when top managers use business analytics

The initial analytical sub-question concerned the circumstances under which TMs had used BAs. The transcripts were transcribed, following which open coding was conducted to identify 13 first-order categories representing the diversity of the decision contexts and activities reported by the informants. The cross-case comparison and reflection on the previous literature resulted in the formulation of four second-order themes that conveyed the various purposes for using BA:

1. Business and operations follow-up and adjustments
2. mid-term monitoring, planning, and decision-making;
3. Long-term planning and scenario analysis; and
4. Strategic options evaluation and decision-making.

These purposes, along with the underlying first-order categories, are summarized in Table 2 and discussed in the results section.

3.3.2 Analyzing data to identify why top managers use business analytics

Answering the second analytical sub-question, open coding revealed 16 first-order categories pertaining to the variables and motives that informants used to decide what to do with BA. These groupings were further divided into eight second groups, and each group was categorized into two third groups based on whether the manifestations were all organizational or individual expectations. Organizational expectations were associated with four themes: leveraging digital transformation, sustaining competitive position, promoting regulatory compliance and governance, and enabling business management. Individual expectations were linked to four additional themes: gaining new analytical insights, making a decision based on facts, justifying decisions to stakeholders, and establishing managerial confidence. Table 3 summarizes these findings.

4. Results

4.1 Top manager perceptions on when to use business analytics

4.1.1 Follow-up and adjustments in business and operations.

Throughout the interview data, TMs repeatedly spoke about BA as the key tool by which they maintain real-time performance of their business unit or business sector. Vital elements of daily management were outlined in monitoring dashboards, automated reports, and exception-flagging systems that were established on the BA infrastructure. Interviewee A verbalized this direction:

> *In my case, analytics is not an option but a prerequisite. Unless I have reviewed the numbers before walking into a review meeting, I feel that I am walking in the dark. I have made a habit of checking the dashboards every morning. Regional sales, margin sales, product category sales, customer complaint/solve time. These are the beating of the business.*

In addition to regular monitoring, BA allows TMs to detect performance deviations and develop corrective actions quickly. Interviewee D explains that BA offers operational decisions in various business spheres simultaneously:

> *There are 12 distribution regions. At the end of every month, BA informs me about the ones that are not performing in terms of volume, those that are experiencing a decline in their margins, and those that are receiving poor customer satisfaction feedback. This triangulation cannot be done manually at my level. It becomes manageable through analytics and helps me understand where I will have to concentrate and where I can rely on my team to take it up.*

The area of functional monitoring is naturally dependent on the functional mandate of the TM. Business unit heads are likely to track overall business performance composites based on revenue, margin, and customer measures. Functional chiefs are better defined around the measurements most applicable in the sphere, such as supply chain performance, human resources effectiveness, or political campaign payoff. Interviewee G, a head of manufacturing operations, explains how BA has changed his management of the manufacturing operations in an environment whereby local supply chain breakdowns are typical:

> *There are too many variables in Pakistan, such as frequent power failures, fluctuations in raw material prices, and delays in deliveries. Analytics will enable us to model these and project when they will occur so that we can prepare inventory or change the production schedule in advance, but not afterwards.*

These descriptions align with previous studies that reported high fit of BA to operational monitoring and rapid changes (Lepenioti et al., 2020). The aspect of operational disruptions that particularly concerns the Pakistani environment also suggests it: the intensity and inconsistency of operational disruptions seem to increase the importance that TMs attach to real-time BA capabilities (Khwaja et al., 2021).

4.1.2 Mid-term monitoring, planning, and decision-making.

The BA is also an important component in the activities of medium-term planning, such as annual budget cycles, project planning, and road mapping product development, and investment timing. These actions have a more extended planning horizon than daily operational scrutiny and involve the incorporation of trend information, forecasting models, and inter-functional fresh streams. Interviewee F explains that the BA supports the annual planning cycle within her company:

> *The first stage of our planning has become practically analytics-driven. We access three years of performance, divide it into individual product, channel, and customer cohort performance, and apply predictive models to each segment. This provides us with a data-based starting point before we superimpose judgment concerning strategy. It has minimized the noise in our planning conversations to a great extent.*

Another aspect brought out by the mid-term planning context is the relevance of BA in investment planning and capital allocation. Interviewee I, Head of Business Unit in a logistics company, explains how the output of BA is used to determine the timeline of investment in warehouse infrastructure:

> *We are continually making decisions regarding where to invest in new sorting and warehousing capacity. Analytics uses predictive models to project our growth volumes relative to regions in the next two years. This informs us of where we will cross demand barriers and thus, we can schedule our capital spending to arrive slightly ahead of the demand and avoid congested situations.*

In the descriptions of mid-term BA usage, product planning was also an important aspect of TMs. Here, BA can be used in the context of FMCG and retail to analyze the performance of individual product lines in a granular way, the slow-moving lines, preempting indicators of shifting consumer preference, and estimating the revenue value of portfolio changes. As interviewee K noted, this is the case:

> *Each quarter, my department conducts churn analytics on our product portfolio. We analyze which SKUs are slowing down, our margins are going down, and unexpectedly new products are cannibalizing old product lines. This informs us where we should make choices regarding reformulation, repricing, or discontinuation prior to the effect on the P&L at scale.*

4.1.3 Long-term planning and scenario analysis

In addition to medium-term planning, TMs explained the role of BA in the processes of long-term strategic analysis support. In this case, BA plays a main part in terms of scenario modelling, market sizing exercises, and environmental trend analysis. These activities are used to establish the strategic context against which more precise decisions are made. Interviewee C, Head of Strategy with one of the telecommunications firms, explains that scenario analysis can be used to help with long-term planning:

> *Our analytics provide one scenario corridor, a combination of plausible future outcomes based on varying combinations of macro assumptions. We simultaneously simulate penetration curves, price development, and regulatory scenarios. It is more of a stress test on our strategic assumptions than a forecast. It informs us of the strategic decisions that are resilient in all types of situations and those that require the realization of particular outcomes.*

Some informants commented that long-term analytics in Pakistan do not but need to include a broader focus on external data than could be expected in more secure economic settings. Government policy trends, currency fluctuation models, infrastructure investment strategies, and demographic forecasts are all aspects of TMs in their reports of long-horizon planning analytics. According to interviewee H, this is described as follows:

> *Planning in Pakistan over a five- or ten-year horizon, one must be cognizant of the limits of one's models. This is a case in which the macro environment is changing radically, even though we can construct analytically rigorous scenarios, such as interest rates, exchange rates, and changes in policy. We do not view analytics as a forecast but rather as a structure of thought. It teaches us the same lesson: it is a stiffening discipline, not to attempt to tell us of what nothing can tell us.*

In this respect, scenario analysis often entails the merging of BA products with the qualitative inputs of inside and external personnel, industry organizations, and government intermediaries. The development of this hybrid method is based on the recognition of TMs that data-driven models would help to understand the quantifiable tendencies but could not reflect the relational and political aspects of the Pakistani business environment (Ahmed et al., 2020). According to Interviewee B, successful planning in the long term in Pakistan should not be viewed as just a lens but an analytical platform; BA can be said to be one among the many lenses (Kunc and O'Brien, 2019).

4.1.4 Strategic options evaluation and decision-making

The centrality of BA in terms of assessing and choosing particular strategic options is perceived as it gradually gets less dominant as the TMs shift long-term planning into the actual analysis and decision-making process. Even as the output of analytics is still taken into account, the choice procedure at that stage is more of a human undertaking, with a statement of deliberation of the senior leadership teams, board interaction, and open interaction with stakeholders, whose understanding cannot readily be coded into information (Cohen and Cyert, 1973). According to interviewee O, planning becomes more strategic rather than being based on analytics:

> *Analytics helps us to arrive at a mutual understanding of the figures. However, the real decision, whether to buy a business, leave a market, or invest in a capability, is a judgment decision. It entails reading people, reading the market instinctively, knowing the family situation in case it is a family-owned counterpart, and board expectations. Analytics can not be left to chance.*

The influence of relationship capital and family ownership systems in Pakistani businesses was identified by some TMs as a force that essentially restricts the level of scope in BA when it comes to the strategic decision-making stage. Significant deals, such as mergers, joint ventures, and entry partnerships in the market, all require interpersonal trust and network relations, which are not fully reflected in information (Khwaja et al., 2021). Interviewee M explains such a dynamic with regards to a recent investment decision:

> *We had conducted due diligence in terms of analytics-driven market size, growth forecasts, and competitive space. However, it eventually boiled down to how we perceived the individuals at the other end of the table, their standing in the market, and whether we believed that we had a relationship that could withstand trying times. No spreadsheet can assess such factors.*

Nonetheless, BA is still at the strategic decision stage as a legitimizing and structuring input. TMs also reported that they use BA output to frame conversations, to verify their assumptions about a strategic alternative proporters are advancing, and to report the quantitative explanation behind decisions to the boards and shareholders (Vidgen et al., 2017). Table 2 presents the interconnection between the four purposes identified during our analysis, which we will discuss in the conclusion section.

Table 2 Purposes for using BA

First-order categories	Second-order themes
Monitoring product and asset-related operations Monitoring sales performance and channel effectiveness Monitoring customer acquisition, retention, and satisfaction	Business and operations follow-up and decisions on improvement activities
Annual budget planning and variance analysis Capital investment planning and timing Product portfolio planning Project planning and milestone tracking	Mid-term monitoring, planning, and decision-making
Long-term market sizing and demand forecasting Macroeconomic and regulatory scenario modelling Demographic and trend analysis	Long-term planning and scenarios
Mergers, acquisitions, and divestment decisions Market entry and exit evaluations Strategic partnership assessment	Strategic options evaluation and decision-making

Source: Authors' own work

4.2 Top manager perceptions on why to use business analytics

4.2.1 Reasons linked to organizational expectations

4.2.1.1 Leveraging digital transformation.

Similarities were also identified in the interviews, in which the adoption of BAs was framed as an organizational adaptation to the overall digital transformation experienced in the Pakistani economy. The fast spread of mobile network access, the development of data payment systems, and the appearance of data-branded e-commerce platforms have combined to establish the conditions in which companies that cannot build an analytics unit risk obsolescence (Khwaja et al., 2021). Interviewee F explains how her firm has been transformed by digital transformation, which has totally changed the operating model:

> *Three years ago, the majority of our transactions were in cash, and we were practically non-existent in an electronic format. The modern world is nearly entirely digital. Data are produced every time a purchase is completed, a customer is contacted, and a return is made. There was no option but to develop analytical capacity, or the information*

> *would be useless, and our rivals who have developed analytical capacity would circle around us like flies.*

Interviewee L, who works in the telecom industry, highlights the same point by stating that the changing behavior of customers that has been brought about by digitalization has introduced not only the opportunities of data, but has also brought forth analytical demands that did not exist a decade ago. The increasing availability of customer data in Pakistan, especially among younger demographic groups, has produced large volumes of data that must be interpreted using analytical tools and acted upon (Ahmed et al., 2020).

4.2.1.2 Maintaining a competitive position

In addition to the digital transformation impetus, TMs persistently identified competitive pressure as an important organizational driver of BA investments and usage. The knowledge that local rivals–and, in other industries, foreign entrepreneurs joining the Pakistani market–are making investments in sophisticated analytical functions imposes a sense of competitive urgency (Davenport and Harris, 2017). This dynamic is embodied by interviewee B:

> *Those Pakistani banks that have invested in predictive credit scoring and product analytics personalization are drifting away from their rivals, as compared to other banks that continue to rely on relationship managers to do everything manually. It is not an event in the future; it is occurring now. We are losing customers and our ability to match price risk with our rivals.*

BA use is driven by competitive motivation that extends beyond defensive issues. Some of the TMs identified BAs as a plausible source of first-mover advantage in markets where analytical penetration is low (Wamba et al., 2017). Interviewee C presented this sentiment concerning customer analytics in the telecommunications industry, stating that the consideration of customer segmentation-related and churn-predictive analytical leadership can provide lasting commercial benefits, despite the fact that competitors will eventually develop the same facilities.

4.2.1.3 Supporting regulatory compliance and governance.

One such theme that was not evident in the literature regarding BA on an international level was found in the Pakistani setting, and that was the role of BA in enforcing regulatory compliance and corporate governance expectations. Some of the TMs, especially within the financial services and energy industries, referred to BA as paramount in producing the data trails and audit logs and compliance reports needed by Pakistani regulators and, in some instances, by international joint venture partners or investor expectations (Ahmed et al., 2020; Khan M.H, 2022). This is as described by interviewee E:

> *Our NEPRA requirements in the energy industry and international lender covenants make us observe some standards of reporting in the energy industry. Analytics is also concerned with competitive comparisons, but also with the ability to show compliance relatively fast and in a straightforward manner when the regulator requires it. In case you are not able to generate the data, there will be severe implications.*

This aspect of governance of BA utilization demonstrates a valuable contextual aspect of the Pakistani business environment: companies working at the crossroads between local regulatory standards and international investor expectations face increased information management pressures, which increase the organizational value of powerful BA capabilities (Khwaja et al., 2021).

4.2.1.4 Facilitating overall business management

In a more general sense, TMs would have specified BA as a facilitator of systematic and coherent business management between large, geographically dispersed enterprises. In a nation the size of Pakistan, with its business operations that include a variety of provinces and the requirements to operate

in different regions with various market conditions, it is practically impossible to sustain consistent control over performance without the help of analytical tools (Luoma, 2016). Interviewee M states it as follows:

> *We run in Karachi to Peshawar. In the absence of analytics, I cannot know at all whether whatever is being reported to me out of each region portrays the truth or not. Analytics develops a detached perspective, which I might cross-reference with the stories that I am being told. It is a management science, just like a decision maker.*

4.2.2 Reasons linked to individual expectations.

4.2.2.1 Gaining new perspectives and insights

At the individual level, the ability of BA to extract insights that would not be made by intuitive reasoning or experience alone was a common theme among TMs. The capability of BA to process a significant amount of information and detect non-intuitive patterns was appreciated as a tool for testing cognitive bias and exposing the flaws of the existing mental models of TMs (Phillips-Wren et al., 2019). Interviewee N explains that analytics has transformed her market segmentation thought process:

> *We believed that we understood our customer segments because we had been in this market for many years. We then ran a proper clustering analysis and found a high-value group that we had never served in a proper manner and not because we were not serving them but because our intuitive segmentation had not been able to separate them. This was worth millions of dollars in re-targeted marketing.*

The digestion of BA-based intelligence also indicates a wider cultural change in major corporations in Pakistan, where younger management groups with international study are increasingly influencing concerns about analytical rigor in the preparation of decisions (Ahmed et al., 2020). Some of the TMs also remarked that the passion of team members about the outputs of analytics alone acted as an incentive to their own motivation in promoting BA.

4.2.2.2 Justifying decisions to stakeholders

One of the main reasons for the contribution of analytics output to justifying decisions in front of various stakeholders, including boards of directors, leading of the parent company, family shareholders, and key institutional shareholders, was the availability of individual BA applications in the interview dataset. Under the conditions of TMs functioning in a corporate governance environment where the concentration of ownership and family control is still widespread in Pakistan, TMs are often under tight control and required to show rigor in decision-making (Khwaja et al., 2021). Interviewee J explains as follows:

> *Whenever I present a recommendation to the board, the first thing is always, what do the data say? Although I can tell you that my experience tells me this is the right move. They desire to have the analytics. The language of credibility is analytics in these negotiations.*

BA also aids in justifying decisions made internally to colleagues and subordinates. Some of the TMs wrote about applying analytics as a mechanism to create organizational coherence, especially in cases where the suggested changes are likely to face opposition (Korherr et al., 2023). By putting an analytic output framing around a decision, what might otherwise be seen as highly subjective or politically driven decisions may be depersonalized and, therefore, implementation may be made easier.

4.2.2.3 Decisions based on facts

All three role categories outlined TMs as performing fact-based decision-making, which pervades both personal desire and organizational expectation (Davenport & Harris, 2017). The availability of BA output was perceived as facilitating a kind of decision hygiene, a rigorous divorce between evidence

and opinion that minimizes the role played by interpersonal relationships, authority based on seniority in an organization, and anecdote in decision making. Interviewee L explains how this value can be valuable:

> *Within most Pakistani organizations, the individual who is the most senior in a room is wrongly legitimized and thus assumes that role by default. These are analytical transformations that alter such. When the information disagrees with the opinion of the highest-paid person, then you should have a valid reason to assert with respect. That is a culture change, and analytics facilitates it.*

Framing highlights an aspect of BA value in the Pakistani situation that is not identified as limited to decision quality improvement. Changes in organizational culture are also promoted by BA adoption, which helps to replace authority-based with evidence-based decision norms (Volberda et al., 2021). One of the roles of TMs who promote BA in their own decision-making model is to introduce the change to their teams and help instill it in the organizational routine (Korherr et al., 2023).

4.2.2.4 Having a sense of making the right decisions.

In addition to the organizational and social aspects of BA use, TMs also reported on personal and psychological aspects, such as confidence and calmness, which are experienced when one realizes that their decisions are based on data. This dimension aligns with previous studies that found managerial comfort and risk reduction as important motivations at the individual level of BA adoption (Yu et al., 2022). According to interviewee A, this is as follows:

> *I sleep better when I have a major resource allocation decision and I cannot be sure that I have done the analytics. This is not because the analytics makes the correct decision, which, of course, it does not assure, but because I am aware that I have made the most out of the available information. This is the best I can do.*

Interviewee O adds another perspective to this, which is that to the TMs who in this particular case are quantitatively oriented, the BA engagement also offers intrinsic satisfaction that maintains its habitual use. This dynamic is self-reinforcing and thus indicates that individual predispositions towards analytical reasoning might be useful in mediating BA adoption patterns among older managers (Martinsons and Davison, 2006).

Table 3 Reasons for using BA

First-order categories	Second-order themes	Third-order constructs
Industry is digitalizing Customer behavior shifting to digital channels new data streams from digital transactions	Leveraging digital transformation	**Organizational expectations**
Competitors are leveraging analytics First-mover advantage in analytics-driven markets	Maintaining competitive position	
Regulatory reporting requirements Governance obligations to shareholders and lenders	Supporting regulatory compliance and governance	
Systematic oversight of dispersed operations Early warning signals for performance deviation	Facilitating overall business management	
Data surfaces hidden segments and patterns new viewpoints challenge existing assumptions	Gaining new perspectives and insights	**Individual expectations**

Analytics as evidence for boards and family shareholders Building internal consensus for change	Justifying decisions to stakeholders
Separating evidence from opinion Challenging authority-based norms	Making decisions based on facts
Data brings confidence and peace of mind Personal preference for quantitative grounding	Having a sense of making the right decisions

Source: Authors' own work

5. Discussion

These observations contribute to the existing knowledge of BA utilization in the decision-making of top management by placing it in the context of the specific institutional and organizational factors of a large emerging economy. They validate some of the patterns found in previous studies and add contextually sensitive dimensions that enlarge the conceptual space of BA use studies.

As other studies suggest, the key reason why Pakistani TMs interact with BAs is to monitor the performance of business operations in progress and swiftly address existing deviations in operational performance that must be rectified (Lepenioti et al., 2020; Davenport and Harris, 2017). This observation endorses the fact that BA is in the middle of what can be referred to as the swap of resources in terms of control of firm resource management operations: the orderly management of available resources within the pre-existing parameters of operation (March, 1991). In this case, BA acts as a real-time institutional memory, which allows TMs to maintain awareness of the situation in complex, geographically dispersed operations (Luoma, 2016).

In the Pakistani context, the operational value of BA in any case is increased by the higher occurrence of supply chain disruptions, currency fluctuations, and governmental changes, which typify the nation's business environment (Khwaja et al., 2021). In this respect, TMs do not utilize BA to track stable operations; instead, they utilize it to predict and outposition disruptions that would occur without analytics and would only manifest as operational crises. Such a proactive orientation introduces risk management as a factor to the operational value of BA, which is less eminent in the results of more stable economic settings (Ahmed et al., 2020).

To organize medium-term planning and budgeting activities, the BA is identified as the main data platform upon which the planning activity is based, and this observation aligns well with the current literature on the role of the BA in organizational planning cycles (Vidgen et al., 2017; Kunc and O'Brien, 2019). It can be assumed that using historical performance data, forecast modeling, and cross-functional analytics in the annual budgeting and investment planning processes has become standard in large Pakistani firms, as in our sample, which can be seen as being in a relatively mature stage of operations planning (Chen and Nath, 2018).

The presence of BA in the analysis of the long-term scenario is not new; however, our findings provide a certain twist because they emphasize that the number of external variables is significantly broader and poses a challenge to Pakistani TMs when building models to address long-horizon issues (Volberda et al., 2021). Long-term analytical exercises of government policy trends, exchange markets, investments in infrastructure, and demographics are all prominent among the long-term analytical exercises that our informants describe. This breadth is indicative of the structural uncertainty of the Pakistani macro-environment and implies that successful long-run BA in emerging economies may need to incorporate a broader scope of public and semi-public data than would be expected in developed countries (Wamba et al., 2017).

Perhaps the most theoretically important finding is that the role of BA is significantly reduced in the area of strategic option evaluation and selection. When analysis gives way to action, that is, knowing what may happen deciding what to do, the human deliberative process itself emerges, with BA output being one of inputs among others, but not in control of a decision being made (Cohen and Cyert, 1973). This result is consistent with and builds upon the results of previous research involving other national settings, indicating that the distinction between analytics-based and judgment-based decision-making is a generic characteristic of strategic management, as opposed to a specific object of an individual organization or national setting (Pauleen and Wang, 2017).

The motivations for why TMs interact within BAs are both organizational and personal, which is in line with the known models of technology adoption (Venkatesh et al., 2003). All the identified organizational expectations, which were outlined in our data, including being responsive to digital transformation, being at par with competitors, being able to meet governance requirements and compliance requirements, and being able to offer a systematic approach to running a business, are all structural conditions according to which the adoption of BA is not solely facilitated but rather predetermined (Zaman et al., 2021). The governance and compliance aspects, which are less apparent in the current BA literature, seem especially relevant in the Pakistani case because the regulatory requirements and accountability expectations of concentrated ownership structures provide firm institutional incentives to ensure a strong analytical capacity (Khwaja, et al., 2021).

At the individual level, TMs' motivations for using BA are mixed in the epistemic, social, and psychological aspects (Yu et al., 2022). The epistemic aspect–the willingness to base decisions on facts and obtain analytical information not available by intuition alone–is not novel and has been extensively studied in previous research, and our results validate it (Davenport and Harris, 2017). The social aspect, making decisions with the use of BA to justify them to boards, family shareholders, and governance structures, is enhanced in the Pakistani context by the fact that a large proportion of shareholders are family-based shareholders and concentrated shareholdings that pose special accountability relationships with other parties, not so evident in Anglo-American corporate governance situations (Martinsons and Davison, 2006). The cultural aspect is most evident in how TMs describe BA as a means of moving organizational norms in authority by seniority to evidence-based deliberation, a way of institutional change work that senior leadership achieves partially through self-BA-engaged behavior (Korherr et al., 2023).

6. Conclusions

This study was conducted to determine when and why top managers of large Pakistani companies use business analytics in their decision-making. The study records a pattern of BA utilization of thirty operational monitoring, medium-term planning, long-horizon scenario analysis, and strategic option evaluation that spans several industries and through in-depth interviews with thirty TMs who are responsible for strategic decision-making. It classifies eight causes of BA usage, which can be classified into organizational and individual expectations, and introduces a governance and compliance aspect that adds to the previous literature and a cultural change-enabling aspect that specifically addresses the Khorasani business environment in the well-known corporate world.

6.1 Implications

This research is important to theorists as it is an empirical report on how TMs can strike a compromise under an emerging economy setting in the application of analytics in resource-based decision making (Barney, 1991; Sirmon et al., 2007). It increases the demand for context-sensitive BA research by showing how aspects of the Pakistani business environment, such as institutional uncertainty, relational

capital norms, family ownership structures, and regulatory forces, influence not only the purposes of TM application but also the motivations that drive TM application. It also recreates and confirms the discovery that, even in organizations with established BA skills, strategic decision-making continues to be dominated by humans, indicating that the factor of analytical versus deliberative decision-making is strong between nations (Lepenioti et al., 2020).

To managers and organizational leaders, this study presents viable knowledge on how BA capabilities can be best situated in large organizations. The observation that TMs rely on BA the most to track operational performance and medium-term planning implies that the highest short-term benefits will be centralized on investments made by real-time performance dashboards, forecasting, and planning analytics. Simultaneously, the low, yet significant involvement of BA in strategic considerations, especially as a legitimizing and structuring input to board-level considerations, suggests the importance of evolving analytical capacities that can produce scenario outputs and strategic reasoning, which can be used by non-expert audiences.

To practitioners tasked with building management talent and analytics culture in Pakistani companies, this research suggests that they prioritize training TMs with analytical literacy to effectively interact with the output of BA, as well as discretion to identify the constraints of analytics-driven decision-making in high-complexity and high-uncertainty contexts. Through management education programs, TMs should be able to navigate freely between fact-based reasoning and judgment-based reasoning as complementary, not competitive, modes of strategic thinking. The fact that educational programs adopt the culturally specific aspects of BA implementation in Pakistan, such as the role of analytics in governance, accountability among stakeholders, and changes in the organizational culture, is equally significant.

6.2 Limitations and future research avenues

This study has a few limitations, and these should be taken into consideration when interpreting the findings and planning further studies. The sample was suitable in that it was based on large firms in major metropolitan centers in Pakistan, but was appropriate for a qualitative investigation. Smaller cities or rural areas are not represented, in which firms may have significantly different conditions of data infrastructure. Similarly, the sample mainly covers areas of the economy where digitalization curves are rather progressive; the results may not be the same in areas of the economy that have not yet reached this level of development, such as in agriculture or small-scale manufacturing.

The qualitative structure offers good descriptive information but fails to assist in the case of statistical generalization as well as causation. Future research can be used to augment these results with large-scale survey research that would provide tests of hypotheses regarding the determinants of BA utilization among a larger sample of Pakistani firms and managers. Longitudinal research could be especially useful in terms of the dynamics of changes in BA usage patterns as the level of organizational analytics develops over time.

This study provides several avenues for future research. First, the governance and compliance aspects of BA application identified here could be subject to specific theoretical and empirical focus, not only in Pakistan, but also in other emerging economies where regulatory frameworks and enterprise ownership formulations define unique analytical requirements. Second, the cultural change enabler position of BA as an agent of transforming organizational norms of authority-based cultures into evidence-based decision cultures is a more systematic topic that requires investigation, such as how the influence of TMs who champion BA use impacts their organizations in the long run. Third, family ownership is a promising but little-studied area of research, given the widespread presence of family-owned businesses in Pakistan and South and Southeast Asia at the TM level.

Supplementary Materials: The following supporting materials are available online. Figure S1: Interview guide used for semi-structured interviews with top managers. Table S1: Summary of first-order categories identified during open coding. Table S2: Cross-case comparison matrix of business analytics use across participating firms.
Acknowledgments: The authors would like to express sincere gratitude to all fifteen top managers who generously gave their time and shared their experiences during the interview process. The authors also extend their appreciation to the anonymous reviewers whose constructive comments significantly improved the quality of this manuscript.
Author Contributions: Zahij Iqbal contributed to the conceptualization, research design, data collection, data analysis, and original draft preparation. Muhammad Hamza Khan contributed to the theoretical framework development, data interpretation, critical review, and editing of the final manuscript. Both authors have read and approved the submitted version.
Conflicts of Interest: This research received no external funding. The authors declare no conflict of interest.

References

[1] Ahmed, W., Ashraf, M.S. and Bhatti, M.I. (2020), "Digital transformation and business analytics adoption in Pakistan: organizational and contextual factors", Journal of Enterprise Information Management, Vol. 33 No. 4, pp. 801-824, doi: 10.1108/JEIM-03-2019-0094.
[2] Ali, M. and Essien, A. (2023), "How can big data analytics improve outbound logistics in the UK retail sector? A qualitative study", Journal of Enterprise Information Management, doi: 10.1108/JEIM-08-2022-0282.
[3] Barney, J. (1991), "Firm resources and sustained competitive advantage", Journal of Management, Vol. 17 No. 1, pp. 99-120.
[4] Bunderson, J.S. and Sutcliffe, K.M. (2002), "Comparing alternative conceptualizations of functional diversity in management teams: process and performance effects", Academy of Management Journal, Vol. 45 No. 5, pp. 875-893.
[5] Carillo, K.D.A. (2017), "Let's stop trying to be 'sexy' – preparing managers for the (big) data-driven business era", Business Process Management Journal, Vol. 23 No. 3, pp. 598-622, doi: 10.1108/BPMJ-09-2016-0188.
[6] Chatterjee, S., Rana, N.P. and Dwivedi, Y.K. (2021), "How does business analytics contribute to organisational performance and business value? A resource-based view", Information Technology and People, Vol. 37 No. 2, doi: 10.1108/ITP-08-2020-0603.
[7] Chen, L. and Nath, R. (2018), "Business analytics maturity of firms: an examination of the relationships between managerial perception of IT, business analytics maturity and success", Information Systems Management, Vol. 35 No. 1, pp. 62-77, doi: 10.1080/10580530.2017.1416948.
[8] Cohen, K.J. and Cyert, R.M. (1973), "Strategy: formulation, implementation, and monitoring", The Journal of Business, Vol. 46 No. 3, pp. 349-367.
[9] Cohen, M.D., March, J.G. and Olsen, J.P. (1972), "A garbage can model of organizational choice", Administrative Science Quarterly, Vol. 17 No. 1, pp. 1-25.
[10] Contreras Pinochet, L.H., Amorim, G.C.B., Lucas Junior, D. and Souza, C.A. (2021), "Consequential factors of big data's analytics capability: how firms use data in the competitive scenario", Journal of Enterprise Information Management, Vol. 34 No. 5, pp. 1406-1428, doi: 10.1108/JEIM-11-2020-0445.
[11] Davenport, T.H. (2018), "From analytics to artificial intelligence", Journal of Business Analytics, Vol. 1 No. 2, pp. 73-80, doi: 10.1080/2573234X.2018.1543535.

[12] Davenport, T.H. and Harris, J. (2017), Competing on Analytics: The New Science of Winning, Harvard Business School Publishing Corporation, Boston, MA.
[13] Edmondson, A.C., Roberto, M.A. and Watkins, M.D. (2003), "A dynamic model of top management team effectiveness: managing unstructured task streams", The Leadership Quarterly, Vol. 14 No. 3, pp. 297-325.
[14] Fereday, J. and Muir-Cochrane, E. (2006), "Demonstrating rigor using thematic analysis: a hybrid approach of inductive and deductive coding and theme development", International Journal of Qualitative Methods, Vol. 5 No. 1, pp. 80-92.
[15] Galletta, A. (2013), Mastering the Semi-Structured Interview and Beyond: From Research Design to Analysis and Publication, New York University Press, New York, NY.
[16] Gioia, D.A., Corley, K.G. and Hamilton, A.L. (2013), "Seeking qualitative rigor in inductive research: notes on the Gioia methodology", Organizational Research Methods, Vol. 16 No. 1, pp. 15-31.
[17] Hambrick, D.C., Humphrey, S.E. and Gupta, A. (2015), "Structural interdependence within top management teams: a key moderator of upper echelons predictions", Strategic Management Journal, Vol. 36 No. 3, pp. 449-461.
[18] Hambrick, D.C. and Mason, P.A. (1984), "Upper echelons: the organization as a reflection of its top managers", The Academy of Management Review, Vol. 9 No. 2, pp. 193-206.
[19] Holsapple, C.W. (2008), "Decisions and knowledge", in Burstein, F. and Holsapple, C.W. (Eds), Handbook on Decision Support Systems, Springer-Verlag, Berlin Heidelberg.
[20] Hutzschenreuter, T. and Kleindienst, I. (2006), "Strategy-process research: what have we learned and what is still to be explored", Journal of Management, Vol. 32 No. 5, pp. 673-720.
[21] Kesavan, S. and Kushwaha, T. (2020), "Field experiment on the profit implications of merchants' discretionary power to override data-driven decision-making tools", Management Science, Vol. 66 No. 11, pp. 5182-5190.
[22] Khan, M. H., & Ahmad, A. (2025). Environmental Attitude and Green Competitive Advantage: Mediating Roles of Green Production Strategy and Environmental Management Accounting in Pakistan's Manufacturing Sector. *Journal of Finance and Accounting Research*, *7*(1), 52-77.
[23] Khan, M. H. (2023). The role of recruitment and selection on organizational performance: An empirical investigation into the impact of recruitment and selection on organizational performance. *Inverge Journal of Social Sciences*, *2*(2), 146-164.
[24] Khan, M. H. (2023). The influence of green HRM practices and green knowledge sharing on green service behaviors: Environmental Sustainability at Work: How Green HRM and Knowledge Transfer Influence Green Service Behaviors. *Inverge Journal of Social Sciences*, *2*(2), 176-193.
[25] Khan, M. H. (2022). The Effectiveness of Training and Development on Positive Career Attitude and Job Outcome. *Journal of Innovative Research in Management Sciences*, 1-14.
[26] Khan, M. H., & Shah, M. (2024). Exploring the Multifaceted Influence of Firm Characteristics on Financial Performance in Dynamic Market Environments.
[27] Khan, M. H., AHMAD, D. A., Munir, Y., & Ahmad, A. (2025). Influence of Religiosity on Perceived Entrepreneurial Motivation and Self-Efficacy: Examining Mediation of Structural and Cognitive Social Capital. *Critical Journal of Social Sciences*, *1*(2), 37-59.
[28] Khwaja, M.G., Mahmood, S. and Aqib, M. (2021), "Predicting the adoption of digital financial services and the moderating role of COVID-19 in the banking sector of Pakistan", Journal of Retailing and Consumer Services, Vol. 61, p. 102549.

[29] Korherr, P., Kanbach, D.K., Kraus, S. and Jones, P. (2023), "The role of management in fostering analytics: the shift from intuition to analytics-based decision-making", Journal of Decision Systems, Vol. 32 No. 3, pp. 600-616.
[30] Kunc, M. and O'Brien, F.A. (2019), "The role of business analytics in supporting strategy processes: opportunities and limitations", Journal of the Operational Research Society, Vol. 70 No. 6, pp. 974-985.
[31] Lepenioti, K., Bousdekis, A., Apostolou, D. and Mentzas, G. (2020), "Prescriptive analytics: literature review and research challenges", International Journal of Information Management, Vol. 50, pp. 57-70.
[33] Luoma, J. (2016), "Model-based organizational decision making: a behavioral lens", European Journal of Operational Research, Vol. 249 No. 3, pp. 816-826.
[34] March, J.G. (1991), "Exploration and exploitation in organizational learning", Organization Science, Vol. 2 No. 1, pp. 71-87.
[35] March, J.G. and Simon, H.A. (1993), Organizations, Blackwell Publishers, Cambridge, MA.
Martinsons, M.G. and Davison, R.M. (2006), "Strategic decision making and support systems: comparing American, Japanese and Chinese management", Decision Support Systems, Vol. 43 No. 1, pp. 284-300.
[36] Min, H. and Lea, B.-R. (2021), "Developing the profiles of business analytics adopters and non-adopters using data mining tools", Journal of Computer Information Systems, Vol. 62 No. 5, pp. 1048-1060.
[37] Noda, T. and Bower, J.L. (1996), "Strategy making as iterated processes of resource allocation", Strategic Management Journal, Vol. 17 No. S1, pp. 159-192.
[38] O'Reilly, C.A. and Tushman, M.L. (2008), "Ambidexterity as a dynamic capability: resolving the innovator's dilemma", Research in Organizational Behavior, Vol. 28, pp. 185-206.
[39] Pauleen, D. and Wang, W. (2017), "Does big data mean big knowledge? KM perspectives on big data and analytics", Journal of Knowledge Management, Vol. 21 No. 1, pp. 1-6.
[40] Phillips-Wren, G., Power, D.J. and Mora, M. (2019), "Cognitive bias, decision styles, and risk attitudes in decision making and DSS", Journal of Decision Systems, Vol. 28 No. 2, pp. 63-66.
[41] Qu, S.Q. and Dumay, J. (2011), "The qualitative research interview", Qualitative Research in Accounting and Management, Vol. 8 No. 3, pp. 238-264.
[42] Rafi, N., Kalyar, M. N., Akhtar, S., & Khan, M. H. (2025). Role of knowledge management capabilities in smart supply chains. In *Smart Supply Chain Management: Design, Methods and Impacts* (pp. 119-134). Singapore: Springer Nature Singapore.
[43] Randall, C. and Dent, E.B. (2019), "Reconciling the historical divide between strategy process and strategy content", Journal of Management History, Vol. 25 No. 3, pp. 401-427.
[44] Roulston, K. (2014), "Analysing interviews", in Flick, U. (Ed.), The SAGE Handbook of Qualitative Data Analysis, SAGE, London, pp. 297-312.
[45] Saldana, J., Leavy, P. and Beretvas, N. (2011), Fundamentals of Qualitative Research, Oxford University Press, Oxford.
[46] Simon, H.A. (1960), The New Science of Management Decision, Harper and Brothers, New York, NY.
[47] Simon, H.A. (1973), "The structure of ill-structured problems", Artificial Intelligence, Vol. 4 Nos 3/4, pp. 181-201.

[48] Sirmon, D.G., Hitt, M.A. and Ireland, R.D. (2007), "Managing firm resources in dynamic environments to create value: looking inside the black box", Academy of Management Review, Vol. 32 No. 1, pp. 273-292.

[49] Spender, J.C. (1996), "Making knowledge the basis of a dynamic theory of the firm", Strategic Management Journal, Vol. 17 No. S2, pp. 45-62.

[50] Teece, D.J. (2007), "Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance", Strategic Management Journal, Vol. 28 No. 13, pp. 1319-1350.

[51] Timmermans, S. and Tavory, I. (2012), "Theory construction in qualitative research: from grounded theory to abductive analysis", Sociological Theory, Vol. 30 No. 3, pp. 167-186.

[52] Venkatesh, V., Morris, M.G., Davis, G.B. and Davis, F.D. (2003), "User acceptance of information technology: toward a unified view", MIS Quarterly, Vol. 27 No. 3, pp. 425-478.

[53] Vidgen, R., Shaw, S. and Grant, D.B. (2017), "Management challenges in creating value from business analytics", European Journal of Operational Research, Vol. 261 No. 2, pp. 626-639.

[54] Volberda, H.W., Khanagha, S., Baden-Fuller, C., Mihalache, O.R. and Birkinshaw, J. (2021), "Strategizing in a digital world: overcoming cognitive barriers, reconfiguring routines and introducing new organizational forms", Long Range Planning, Vol. 54 No. 5, p. 102110.

[55] Vuorinen, T., Hakala, H., Kohtamaki, M. and Uusitalo, K. (2018), "Mapping the landscape of strategy tools: a review on strategy tools published in leading journals within the past 25 years", Long Range Planning, Vol. 51 No. 4, pp. 586-605.

[56] Wamba, S.F., Akter, S., Trinchera, L. and De Bourmont, M. (2019), "Turning information quality into firm performance in the big data economy", Management Decision, Vol. 57 No. 8, pp. 1756-1783.

[57] Wamba, S.F., Gunasekaran, A., Akter, S., Ren, S.J., Dubey, R. and Childe, S.J. (2017), "Big data analytics and firm performance: effects of dynamic capabilities", Journal of Business Research, Vol. 70, pp. 356-365.

[58] Wang, S., Zhang, S. and Shang, G. (2022), "Impact of subsidiary TMT network attention on innovation: the moderating role of subsidiary autonomy", Management and Organization Review, Vol. 18 No. 6, pp. 1077-1115.

[59] Yu, J., Taskin, N., Nguyen, C.P., Li, J. and Pauleen, D.J. (2022), "Investigating the determinants of big data analytics adoption in decision making: an empirical study in New Zealand, China, and Vietnam", Pacific Asia Journal of the Association for Information Systems, Vol. 14 No. 4, pp. 62-99.

[60] Zaman, U., Zahid, H., Habibullah, M.S. and Din, B.H. (2021), "Adoption of big data analytics (BDA) technologies in disaster management: a decomposed theory of planned behavior (DTPB) approach", Cogent Business and Management, Vol. 8 No. 1, p. 1880253.

