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HARNESSING BUSINESS INTELLIGENCE FOR STRATEGIC HRM: EVIDENCE FROM PAKISTAN'S CORPORATE SECTOR

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Abstract

This research study examines how Business Intelligence (BI) can enhance the Human Resource (HR) decision-making process within an organization in the Pakistani context. Although the global stage is heading towards HR analytics, Pakistani organizations still operate manually, with limited implementation and usage of BI tools. The research is expected to examine the influence of BI proficiency and organizational-level BI adoption on the effectiveness of HR decision-making. The study employed a quantitative research design, utilizing a structured questionnaire administered to 350 human resource experts across various industries. SPSS was used to analyze the data, employing descriptive statistics, regression analysis, and reliability testing. The findings showed that BI proficiency ($\beta = 0.35$, $p < 0.001$) and BI adoption ($\beta = 0.48$, $p < 0.001$) were in a significant and positive association with the effectiveness of HR decision-making, explaining 41.2% of the variance. The study proposes to improve technical training of the HR personnel, create a data-driven culture, and incorporate BI with existing HR systems. The study is constrained by its cross-sectional design and analysis of Pakistani organisations only. However, the results demonstrate the strategic role of BI when it innovates to correct the accuracy of decisions, predicts workforce trends, and even harmonizes HR practices with organizational goals. Such insights become crucial for policymakers, HR leaders, and practitioners who aim to modernize HRM by leveraging data-driven analysis and prediction.

Keywords: Business Intelligence (BI), Human Resource Analytics, Data-Driven Decision Making, HRM in Pakistan, Organizational Performance.

Introduction

In the highly dynamic, data-driven corporate environment, organizations are increasingly recognizing the importance of data analytics and business intelligence (BI) tools for making medium- and long-term strategic decisions at all levels within the organization, particularly in Human Resource Management (HRM). Historically, HR decision-making was based on intuition and limited fundamental reporting tools. Nevertheless, due to the rapid development of digital technologies and the introduction of evidence-based practices, the ability to analyze data has become essential in an organization to coordinate work with talent, automate HR activities, or improve talent planning (Marler & Boudreau, 2017).

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Business Intelligence can also be defined as the systematic process of utilizing data, statistical, and analytical methods to transform raw human resources data into valuable insights on which decisions can be made. HR practitioners utilize BI platforms not only to analyze employee engagement and recruitment analytics but also to manage performance, conduct succession planning, and optimize the workforce (Dursun & Karsak, 2021). BI embedded in HRM also facilitates the conversion of descriptive information into predictive information, enabling organizations to be proactive in human capital management rather than solving workforce problems reactively (Minbaeva, 2021).

Even in developing nations like Pakistan, the use and application of BI tools by HR departments are minimal and irregular. Although international firms have increasingly incorporated HR analytics into their strategic plans, local firms often lack the necessary tools and knowledge to leverage the capabilities of BI in HR decision-making (Ahmed et al., 2023). It is increasingly important to investigate the perception and use of BI tools by HR professionals, the challenges they face, and how BI tools can aid in making better, informed, and strategic HR decisions.

The study examines how BI can be used in the decision-making process in human resources with emphasis on Pakistani market-based organizations. This study aims to close the gap in empirical research on HR analytics in non-Western environments by analyzing the degree of BI adoption, proficiency, and perceived impact. It also offers useful advice for enhancing HR capabilities using BI.

Rationale of the Study

In a changing world of Human Resource Management (HRM), evidence-based decision-making has become a strategic facilitator of business-centered decisions. Data mining, analytics, visualization, and reporting tools collectively form Business Intelligence (BI), which enables organizations to make informed decisions by converting raw data into actionable insights (Marler & Boudreau, 2017). Although BI technologies have been rapidly incorporated into the HR practices of global businesses, these practices are still limited in developing countries, including Pakistan (Ahmed, Usman, & Bashir, 2023). Several limitations affect Pakistani organizations, including the level of digital maturity, the lack of technical skills, and organizational resistance to change (Shaikh, Khan, & Ali, 2022). Thus, HR departments are often stuck with either a manual process or underutilized systems, making it difficult for them to fulfill their strategic role. The situation is further exacerbated by the lack of localized empirical data on the impact of BI on HR decision-making in Pakistan, thereby creating a research gap. This paper sets out to fill this gap by empirically assessing the relationship between BI competence, BI adoption and the effectiveness of the HR decision-making process in the Pakistani scenario. It is believed that the data will inform HR professionals and organizational leaders, enabling them to utilize the power of BI tools to enhance strategic HR functions.

Problem Statement

Even after the world has experienced tremendous advancements in Business Intelligence use in HR activities, organizations in Pakistan are still reliant on manual approaches and primitive information systems that lack analytical capabilities. BI tools

remain underutilized in the HR departments of many Pakistani firms, primarily due to technological, cultural, and knowledge-based challenges (Shaikh et al., 2022). This underutilization results in lost opportunities to optimize recruitment practices, enhance employee retention, refine performance measurement, and inform strategic workforce planning.

Moreover, organizations that have already adopted a BI system can be characterized by irregular utilization of the system and difficulties users face in competently using a BI system, as well as inadequate utilization of BI data in strategic HR decisions. As a result, HR specialists are limited in their ability to effectively contribute to organizational objectives, as they are unable to derive actionable insights from the data. The lack of empirical data regarding the state, difficulties, and efficacy of BI in the HR context of Pakistan creates a significant research vacuum.

Research Questions

1. How does the efficacy of HR decision-making in Pakistani firms depend on an individual's level of business intelligence proficiency?

2. How does the efficiency of HR decision-making processes change when an organization uses business intelligence tools?

Research Objectives

- Determine the extent to which HR professionals in both public and private sector organizations have adopted and used BI tools.

- Assess the connection between HR decision-making efficacy and BI competency.

Significance of the Study

This study adds to the scant amount of research on the uptake of BI and HR analytics in underdeveloped nations. With its theoretical and practical insights, it emphasizes the value of BI as a strategic tool for HR decision-making. HR directors, legislators, and IT strategists can use the data to support their investments in BI tools and training.

From a scholarly standpoint, the study validates that data-driven capabilities are essential for strategic human capital management in the digital age by extending the RBV and Decision-Making Theory into the field of HR analytics.

Literature Review

Business Intelligence: An Overview

Business Intelligence (BI) can be defined as a set of technologies and processes that organizations use to gather, analyze, and present data to inform their decisions. The development of BI over the last twenty years has changed its orientation, and it is now not only about reporting and data extraction, but also about predictive and prescriptive analysis to support strategic business operations (Chen, Chiang, & Storey,

2012). In the context of HR, BI refers to the use of analytics tools, dashboards, scorecards, and information visualization to evaluate trends in the company workforce, facilitate performance evaluation, and aid in strategic planning (Wixom & Watson, 2010).

As indicated by Isik, Jones, and Sidorova (2013), BI success relies on the interaction between BI capacities (data quality, analytical skills, and IT infrastructure) and the decision environment. This is especially true in the field of HR, where HR professionals can make informed decisions regarding hiring, retention, and employee engagement based on real-time, accurate, and actionable data. BI tools help companies transform raw HR data into structured information that maximizes the value of insight generation and eliminates guesswork in any decision-making activity.

Role of BI in HR Decision-Making

Human Resource Management (HRM) has traditionally been viewed as a support department; however, with the integration of data analytics, HR can now be leveraged as a strategic partner in business development. Evidence-based HRM is supported by BI, which enhances the ability to measure and forecast workforce outcomes (Marler & Boudreau, 2017). Such features are becoming increasingly frequent in recruitment analytics, performance management systems, compensation designs, and succession planning.

Dursun and Karsak (2021) note that HR analytics cannot be reduced to merely reporting previous work, but rather aims to analyze cause-effect correlations, predict future labor market developments, and determine improvement directions. For example, predictive analytics in business intelligence solutions can predict employee turnover, identify high-risk employees, and enhance employee hiring practices by applying machine learning algorithms to match candidates' profiles with the organization's needs.

Additionally, HR specialists who use BI technologies are better able to advise top management strategically, according to Rasmussen and Ulrich (2015). HR can increase its credibility and influence within the company by using quantifiable measures to support its decisions, connecting employee data with business outcomes.

BI Adoption in Emerging Economies

Although there has been high growth in the use of BI tools in developed economies, the situation is different in emerging economies like Pakistan, which face several limitations. They include the absence of technical skills, aversion to organizational change, poor IT infrastructure, and low rates of data literacy among HR specialists (Shaikh, Khan, & Ali, 2022). Consequently, the HR decision-making processes within most Pakistan-based organizations have been reactive, informal, and manual-intensive.

Nevertheless, recent research studies indicate a shift towards gradualism. According to Ahmed, Usman, and Bashir (2023), Pakistani companies in the banking, telecommunications, and other industries are starting to implement BI tools in HR.

Nevertheless, it is mostly imposed on high-level companies, and the noticeable gap between the usage of BI by large corporations and SMEs is evident.

Additionally, organizational culture plays a crucial role in the adoption and effective use of BI tools. Chatterjee, Rana, and Dwivedi (2020) demonstrate that, in the case of successful BI implementation, organizations should foster a culture of data-driven decision-making. Hence, considerable attention must be paid to change management, training, and leadership support in the context of BI implementation within the HR practices of emerging markets.

Challenges in BI Implementation in HR

Regardless of its promise, the challenges do not favour the implementation of BI in HR. Among the most famous ones is data quality. HR data is often disjointed, as it is not stored in a single system but rather in multiple systems. Even when it is updated, the updates are not done consistently, making it difficult to obtain reliable information (Levenson, 2018). Additionally, most HR practitioners lack the analytical capability to understand the BI results, and as a result, the strategic use of information is limited.

Integration is another issue. BI tools must be interfaced with the preexisting HR Information Systems (HRIS) and Enterprise Resource Planning (ERP) systems. BI tools have great analytics capabilities that are not utilized adequately without the right integration. Giermindl et al. (2022) assert that, in addition to technological compatibility, stakeholder expectations and business processes must align for an integration to be effective.

Additionally, the use of BI raises ethical concerns about data privacy and transparency. Concerns of surveillance, permission, and bias in algorithmic decision-making become crucial as businesses collect more behavioral and personal data about their workers (Minbaeva, 2021). Strong data governance guidelines and moral frameworks are necessary to address these issues.

Empirical Evidence and Research Gap

There has been an increase in empirical research on BI in HR. However, there is a substantial research gap in BI in HR, particularly in the context of developing countries, including South Asia. Most of the literature available focuses on the use of BI in marketing, finance, or operations, and few studies or pieces of research have dealt with HR-oriented BI use. Moreover, little research has been conducted on the connection between HR decision-making effectiveness and BI proficiency, specifically in terms of user adoption, organizational readiness, and value perception.

Thus, this research contributes to this gap since it is interested in the extent to which BI can influence HR decision-making in Pakistani organizations. It examines the extent of BI application, the expertise of HR professionals in BI applications, the perceived advantages, and the issues faced. The study will build on the existing body of knowledge in HR analytics and help design context-specific HR BI adoption strategies.

Theoretical Framework

This study is theoretically grounded in two complementary theories: the Resource-Based View (RBV) and Simon's Decision-Making Theory.

The Resource-Based View (RBV), developed by Barney (1991), posits that organizations can achieve a sustained competitive advantage by strategically leveraging their valuable, rare, inimitable, and non-substitutable (VRIN) resources. Business Intelligence (BI) is a strategic capability in this regard, enabling recipients of raw HR data to transform it into actionable information for informed decision-making. Through the effective use of BI tools, HR departments have been able to increase their forecasts of workforce trends, enhance performance measurement, and improve talent management, all of which contribute to an organization's success (Ahmed et al., 2023).

Another background perspective is that of Herbert Simon, which is the Decision-Making Theory (1977). Simon indicated that good decision-making involves four processes: intelligence (collection of data), design (development of alternatives), choice (selection of a good alternative), and review (consideration of the consequences). By enabling data gathering, pattern identification, predictive modeling, and post-decision evaluation, business intelligence solutions closely align with these stages. By organizing and streamlining complicated HR data, BI technologies help decision-makers overcome their cognitive constraints and make more logical, evidence-based choices (Minbaeva, 2021; Marler & Boudreau, 2017).

These ideas collectively justify examining the ways in which BI capabilities function as a strategic asset that supports logical, effective, and efficient HR decision-making.

Conceptual Framework

The conceptual framework of this study is based on the relationship between **Business Intelligence proficiency**, **Organizational BI adoption**, and **HR decision-making effectiveness**. It assumes that both individual-level BI skills and organizational-level BI implementation influence how effectively HR departments make strategic decisions.

Study Hypotheses

Based on the theoretical and conceptual frameworks, the following hypotheses are proposed:

H_1: There is a significant positive relationship between BI proficiency and HR decision-making effectiveness.

H_2: The adoption of Organizational BI has a significant positive impact on the effectiveness of HR decision-making.

H_3: Higher levels of both BI proficiency and BI adoption jointly predict higher levels of HR decision-making effectiveness.

Research Methodology

Research Design

This research was a cross-sectional survey study, utilizing a quantitative design to determine the importance of Business Intelligence (BI) in the Human Resource (HR) decision-making process. Primary data were collected from HR professionals in various industries using a structured questionnaire. The quantitative study design was deemed suitable in this research because it enables the collection of data that can be measured and compared to establish patterns, relationships, and trends (Saunders, Lewis, & Thornhill, 2019). The design was also facilitated to facilitate statistical analysis using software like SPSS, allowing for the derivation of useful conclusions based on the obtained data.

Sample and Population

The population target included HR professionals in organizations of both the public and private sectors in Pakistan. The workers interviewed were sourced from the banking, manufacturing, medical, ICT, and service sectors. The technique of purposive sampling was also employed to select only those respondents who possessed the relevant HR expertise and knowledge of BI tools. The approach was adopted so that the obtained data would be pertinent and informative to the research questions (Etikan, Musa, & Alkassim, 2016).

The sample size has been based on the guidelines of Krejcie and Morgan (1970), which propose a sample of at least 350 individuals from a population of more than 10,000 to achieve a 95% confidence level with a 5% margin of error. A total of 350 people participated in a survey conducted through online forms sent via LinkedIn, email, and professional HR associations. The respondents were assured of confidentiality and anonymity to ensure they provided truthful and accurate responses.

Instrumentation

A well-designed questionnaire on the established constructs of validated literature was created. The tool had five parts:

1. Demographic Profile - within the context of gender, age, education, experience and the sector of the industry.

2. BI Proficiency- The index of this dimension utilizes a 5-point Likert scale based on Wixom and Watson (2010).

3. Organizational BI Adoption- According to indicators suggested by Isik, Jones and Sidorova (2013).

4. The effectiveness of HR decision-making items with a 5-point rating system that were taken from Davenport and Harris (2007).

Cronbach's alpha was calculated for each design to ensure internal consistency and reliability. With $\alpha > 0.80$, all scales demonstrated good reliability, indicating that the tool was suitable for further analysis (Tavakol & Dennick, 2011).

Data Collection Procedure

Over four weeks, information was gathered from experts in Islamabad, Faisalabad, Karachi, and Lahore. Google Forms was used to administer online surveys. To boost response rates, reminders and follow-ups were delivered. Before completing the questionnaire, respondents were required to provide their informed consent. To ensure a high completion rate, the survey was designed to take no more than ten minutes.

Data Analysis Techniques

For analysis, the data gathered from the 350 respondents were imported into IBM SPSS Statistics version 26.

- Descriptive statistics were used in the analysis to compile demographic information and the variables' major tendencies.
- Reliability analysis: evaluating the internal consistency of measurement scales using Cronbach's alpha.
- Regression analysis: to examine the connection between HR decision-making efficacy, organizational BI adoption, and BI proficiency.
- When appropriate, ANOVA and cross-tabulation are employed to examine variations between demographic groups.

These methods enabled the evaluation of the suggested hypotheses and research topics using both univariate and multivariate analysis.

Ethical Considerations

Prior to commencing the study, institutional review board approval was obtained. Participants were free to leave at any time; participation was entirely voluntary. In compliance with ethical research guidelines, data confidentiality and anonymity were preserved at every stage of the procedure (Bryman & Bell, 2015).

Analyses and Interpretations

Demographic Profile of Respondents

Table 1: Demographic Profile of Respondents

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	210	60.0%
	Female	140	40.0%
Age Group	20–30 years	120	34.3%
	31–40 years	145	41.4%
	41–50 years	60	17.1%
	51 years and above	25	7.1%
Education Level	Bachelor's	100	28.6%
	Master's	180	51.4%
	MPhil/PhD	70	20.0%
Industry Sector	Banking	90	25.7%
	Manufacturing	70	20.0%
	Healthcare	60	17.1%
	IT/Software	80	22.9%
	Other	50	14.3%
Experience	Less than 5 years	100	28.6%
	5–10 years	140	40.0%
	More than 10 years	110	31.4%

The demographic profile of the respondents provides insights into the background and diversity of the participants involved in this study. Out of 350 total respondents, 60% were male (n = 210) and 40% were female (n = 140), indicating a moderately male-dominated sample but with significant female representation as well. Regarding age distribution, most respondents fell within the 31–40 age bracket (41.4%), followed by the 20–30 age group (34.3%). Only 7.1% were aged 51 and above, indicating that the respondent pool was younger to mid-career professionals.

In terms of educational qualifications, over half of the participants (51.4%) held a master's degree, while 28.6% had a bachelor's degree and 20% held MPhil or PhD qualifications. This suggests a well-educated respondent base, suitable for assessing the impact of advanced tools like Business Intelligence (BI). Industry-wise, the highest number of respondents came from the banking sector (25.7%), followed by IT/software (22.9%), manufacturing (20%), healthcare (17.1%), and other sectors (14.3%). Regarding professional experience, 40% of participants had 5–10 years of experience, 31.4% had more than 10 years, and 28.6% had less than five years of experience, indicating a balance across early, mid, and senior-level professionals.

Descriptive Statistics

Table 02: Descriptive Statistics of Study Variables				
Variable	Mean	Std. Deviation	Minimum	Maximum
BI Proficiency (1–5 scale)	3.85	0.76	1.00	5.00
Organizational BI Adoption	3.67	0.84	1.00	5.00
HR Decision Effectiveness	3.92	0.71	1.00	5.00

The descriptive statistics summarize the central tendencies and variation in responses for the main study variables measured on a 5-point Likert scale. BI proficiency had a mean score of 3.85 (SD = 0.76), indicating that most HR professionals rated themselves as moderately proficient in BI competency. Organizational BI adoption scored a mean of 3.67 (SD = 0.84), indicating that BI tools are moderately embedded across the sampled organizations. HR decision-making effectiveness was rated slightly higher, with a mean of 3.92 (SD = 0.71), implying that respondents perceived HR decisions in their organizations as generally effective. These values reflect a favorable perception toward BI use and its impact on HR effectiveness.

Table 3: Reliability Analysis – Cronbach's Alpha

Construct	No. of Items	Cronbach's Alpha
BI Proficiency	5	0.841
Organizational BI Adoption	6	0.873
Decision-Making Effectiveness	7	0.896

To assess the internal consistency of the measurement scales used in the questionnaire, Cronbach's Alpha was calculated for each construct. All three constructs demonstrated high reliability, as indicated by BI Proficiency ($\alpha = 0.841$), Organizational BI Adoption ($\alpha = 0.873$), and HR Decision-Making Effectiveness ($\alpha = 0.896$). According to Nunnally and Bernstein (1994), a Cronbach's alpha above 0.70 indicates acceptable reliability, and scores above 0.80 are considered exceptionally good. These results confirm that the questionnaire items used to measure the constructs were internally consistent and suitable for further statistical analysis.

Regression Analysis

Table 04: Model Summary			
R	R Square	Adjusted R Square	Std. Error of Estimate
0.642	0.412	0.407	0.543

The regression analysis was conducted to assess the impact of BI Proficiency and Organizational BI Adoption on HR Decision-Making Effectiveness. The **model summary** in Table 4 indicates a **correlation coefficient (R)** of 0.642 and an **R-squared value** of 0.412, showing that approximately **41.2% of the variance** in HR decision-making effectiveness can be explained by the two predictor variables. The **adjusted R-squared** of 0.407 accounts for the number of predictors and indicates a robust model fit. The **standard error of estimate** was 0.543, reflecting moderate dispersion around the regression line.

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Table 05: ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Regression	52.73	2	26.365	89.25	0.000
Residual	75.97	347	0.219		
Total	128.70	349			

The **ANOVA results** (Table 5) support the significance of the regression model. The model's **F-statistic**s were 89.25, with a significance level (p-value) of 0.000, indicating that the model is statistically significant and that at least one of the independent variables makes a meaningful contribution to explaining the dependent variable. This validates the overall predictive strength of the regression model used in the study.

Table 06: Coefficient of Regression Analysis					
Predictor	B	Std. Error	Beta	t	Sig.
Constant	1.214	0.198	—	6.13	0.000
BI Proficiency	0.331	0.064	0.352	5.17	0.000
Organizational BI Adoption	0.487	0.058	0.478	8.40	0.000

The **coefficient table** (Table 6) presents detailed insights into the influence of each independent variable. The **constant term (B = 1.214)** represents the baseline level of HR decision-making effectiveness when both predictors are zero. BI Proficiency had a **positive and significant impact** ($B = 0.331$, $\beta = 0.352$, $t = 5.17$, $p < 0.001$), indicating that an increase in BI skill level improves HR decision outcomes. Similarly, Organizational BI Adoption showed a stronger influence ($B = 0.487$, $\beta = 0.478$, $t = 8.40$, $p < 0.001$), confirming that widespread use of BI tools within the organization significantly enhances HR decision-making effectiveness. These results support all three study hypotheses.

Discussion

This research paper aimed to explore how Business Intelligence (BI) can enhance the effectiveness of Human Resource (HR) decisions in Pakistani organizations. The results of the research indicated that individual BI proficiency and organizational level borrowing of BI play a significant role in facilitating better decision-making by HR. The findings are comparable to those in the world literature. However, they also provide some fresh insights into the conditions of developing countries, especially in South Asia, where this type of empirical evidence is not commonly presented.

BI Proficiency and HR Decision-Making

The evidence suggested that the individual's BI proficiency and effectiveness in decision-making in HR had a statistically significant relationship, which supports Hypothesis 1. The more skilled they were in BI, the more confident and effective they were in authoring data-driven HR decisions. The result aligns with the findings of previous studies by Marler and Boudreau (2017), who emphasized that HR

professionals with analytical skills are more effective in creating insights and shaping strategic outcomes.

In addition to this, the positive correlation supports the views presented by Rasmussen and Ulrich (2015), who affirmed that BI proficiency enables HR departments to become strategic business partners rather than operational tools. In the case of Pakistan, it indicates an increase in awareness of the importance of data literacy among HR professionals; however, the general level of the skill remains a significant hindrance (Ahmed et al., 2023). The previous study identified one of the issues that constrain the complete use of BI in HRM: limited access to technical training and insufficient exposure to data analytics tools (Shaikh et al., 2022).

Organizational BI Adoption and HR Effectiveness

The second main finding aligns with the second hypothesis, which posits that a meaningful difference in the level of adoption of BI tools at an organizational level could have a significant impact on the effectiveness of HR decision-making. The analysis has shown that organizations with structured BI systems in place are in a better position to support real-time decisions, monitor workforce performance, and predict HR outcomes. This aligns with a claim by Isik, Jones, and Sidorova (2013), who affirm that BI success hinges on the technological framework and the organizational landscape that support its application.

Organizations with high BI integration of their HR systems, including recruitment analytics, performance dashboards, and employee staff turnover forecasting, have achieved better strategic alignment and planning. This finding is consistent with Dursun and Karsak's (2021) observation regarding the responsiveness of BI in embedded platforms for HR operations in organizations, which enables them to respond more quickly and effectively to human capital issues.

Nevertheless, the research found that a significant portion of Pakistani organizations, especially small and medium-sized ones (SMEs), continue to face issues with data integration, legacy systems, and management commitment. These results support the findings of Chatterjee, Rana, and Dwivedi (2020), who suggest that the failure to plan strategic alignment and change management is a barrier to the adoption of BI in developing economies.

Challenges and Barriers

The results are mostly positive; however, the research has also detected some obstacles to the successful use of BI. Some of the problems raised by the respondents included manual data entry errors, a lack of system integration, inadequate management support, and insufficient training opportunities. Such issues align with Giermindl et al. (2022), who evaluated ethical and operational obstacles to people analytics. The privacy and misuse of data were also expressed as a matter of ethics in qualitative responses, indicating the need for strong data governance models.

Furthermore, resistance from top management towards change was reported, particularly in traditional or family-owned firms. To effectively implement BI tools in

hospitals for HR, one must consider both technological investments and cultural changes that prioritize evidence-based decision-making (Minbaeva, 2021).

Implications for Practice and Policy

The results of this study have several practical implications. The first thing that HR departments should consider is investing in training teams on BI-related competencies. Second, organizations need to treat BI in their organizations as a multi-functional rather than a mere IT program. Third, this requires HR professionals and policymakers in Pakistan to promote the digital transformation of HR by providing certification courses, incentives, and regulatory support to implement BI in Pakistan.

On the strategic level, establishing the parallel between BI systems and organizational aspirations and seeing how they can interact in cross-departmental cases will increase the effects of data-driven decision-making. Strategic workforce outcomes can only be effectively achieved when workforce analytics are closely aligned with business strategy (Levenson, 2018).

Conclusion

Human Resource Management with Business Intelligence integration introduces a shift in paradigm, emphasizing evidence-based practices over intuition-based approaches. In this research, the author focused on BIs' effectiveness in Pakistani organizations to improve HR decision-making. Resting on the two theories discussed above, the study developed a conceptual relationship among BI proficiency, BI adoption, and the impact of HR strategic decisions on the outcomes.

According to empirical evidence, the application of BI tools is increasing; however, it is hindered by several challenges, including low user skills, organizational resistance, and system fragmentation. However, the results also verify that both individual and organizational-level BI capabilities can play a crucial role in determining the effectiveness, accuracy, and strategic nature of HR decisions.

Recommendations

1. BI trainings to HRs: To improve the BI proficiency of the HRs, organizations are advised to run regular workshops and professional certification programs (Levenson, 2018).

2. Employing the Culture of Data: The leadership should foster the culture of making decisions based on data, ensuring BI efforts are aligned with the HR goals (Chatterjee et al., 2020).

3. Embed BI to HRIS Platforms: The system will help ensure better accuracy and test the predictive capabilities of a BI tool (Isik et al., 2013).

4. Improve governance and quality of data: Confident decisions are based on HR data repositories of high quality and governance (Giermindl et al., 2022).

5. High-Impact Locations: Pilot BI Initiatives: Show an area with high impact where BI capabilities can get real value.

Limitations

- Sample Restriction: Since the research was restricted to Pakistani organizations, this cannot be generalized to whether it can apply to other geographic or cultural settings.
- Cross-Sectional Design: Since the study has been measured at a particular instance in time, the study is unable to create a causality
- Self-Reported Data: Response bias may be introduced by depending too much on self-reported measures.
- Limited Variables: The approach ignores moderating or mediating factors that could influence results, such as leadership style or organizational culture.

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