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Theme:

**The Role of HR Analytics in Supporting and
Improving Strategic HR Decision-Making: A Case
Study of Sidal Gaz, Algiers**

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Dedication:
To my mother

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I would like to thank my supervisor Sara CHEDRI MAAMAR and the HR Director Nesrine BELOUCIF for their guidance and support.

Abstract

This study examines the role of human resources analytics in supporting and enhancing the quality of strategic HR decision-making within Algerian organizations, with a particular focus on Sidal Gaz, an industrial establishment located in Rghaia, Algiers. The significance of this research stems from the growing gap between the theoretical potential of HR analytics and its limited practical application in developing-country organizational contexts, where traditional intuition-based managerial approaches remain predominant.

The research adopted a qualitative approach based on a single case study methodology. Primary data were collected through semi-structured interviews conducted with three key organizational stakeholders: the HR director, her assistant, and the company's general manager. Interview data were analyzed using NVivo software within a thematic analysis framework structured around five major axes.

The central contribution is the design of an interactive HR dashboard under Power BI, bridging raw data and strategic decision-making across four key dimensions.

The findings demonstrate that the Power BI dashboard — built on a fully reconstructed HR database — substantially improved strategic decision-making across four dimensions: accuracy, speed, objectivity, and strategic alignment. Information retrieval times were compressed from several days or weeks to mere seconds. Decision-making shifted from a reactive, intuition-based approach to proactive, indicator-driven choices aligned with institutional objectives. All three interviewees — the General Manager, the HR Director, and the HR Assistant — converged toward a synergistic model in which data disciplines and enriches professional experience without replacing it.

The study also identifies four interconnected categories of challenges: data quality and availability deficits, human and cultural resistance, technical limitations, and sustainability gaps — several of which are specific to the Algerian organizational context. The study concludes by recommending technical consolidation through HRIS integration, structured development of analytical tool competencies, and a systematic cultural transformation toward data-driven governance.

Keywords: HR analytics, strategic decision-making, Power BI dashboard, key performance indicators, human resource management, Sidal Gaz.

Cette étude vise à examiner le rôle de l'analytique des ressources humaines dans le soutien et l'amélioration de la qualité de la prise de décision stratégique en matière de ressources humaines au sein des organisations algériennes, en se concentrant particulièrement sur l'entreprise Sidal Gaz, établissement industriel situé à Rghaia, Alger. L'importance de cette recherche découle du fossé croissant entre le potentiel théorique de l'analytique RH et son application pratique limitée dans les contextes organisationnels des pays en développement, où les approches managériales traditionnelles fondées sur l'intuition demeurent prédominantes.

La recherche a adopté une approche qualitative reposant sur une méthodologie d'étude de cas unique. Les données primaires ont été collectées au moyen d'entretiens semi-directifs menés auprès de trois parties prenantes organisationnelles clés. Les données issues des entretiens ont été analysées à l'aide du logiciel NVivo dans le cadre d'une analyse thématique structurée autour de cinq axes majeurs.

La contribution centrale est la conception d'un tableau de bord RH interactif sous Power BI, reliant données brutes et décision stratégique selon quatre dimensions clés.

Les résultats démontrent que le tableau de bord Power BI — construit sur une base de données RH entièrement reconstruite — a substantiellement amélioré la prise de décision stratégique selon quatre dimensions : précision, rapidité, objectivité et alignement stratégique. Les délais de récupération des informations ont été compressés de plusieurs jours ou semaines à quelques secondes. La prise de décision est passée d'une approche réactive et fondée sur l'intuition à des choix proactifs, pilotés par des indicateurs et alignés sur les objectifs institutionnels. Les trois interviewés ont convergé vers un modèle synergique dans lequel les données disciplinent et enrichissent l'expérience professionnelle sans la remplacer.

L'étude identifie également quatre catégories interconnectées de défis : déficits de qualité et de disponibilité des données, résistances humaines et culturelles, limitations techniques et lacunes de durabilité — dont plusieurs sont spécifiques au contexte organisationnel algérien. L'étude conclut en recommandant une consolidation technique par l'intégration d'un SIRH, un développement structuré des compétences en outils analytiques, et une transformation culturelle systématique vers une gouvernance fondée sur les données.

Mots-clés : analytique RH, prise de décision stratégique, tableau de bord Power BI, indicateurs clés de performance, gestion des ressources humaines, Sidal Gaz.

ملخص

تهدف هذه الدراسة إلى فحص دور تحليلات الموارد البشرية في دعم وتحسين جودة اتخاذ القرار الاستراتيجي في مجال الموارد البشرية داخل المنظمات الجزائرية، مع التركيز بصفة خاصة على مؤسسة سيدال غاز، المنشأة الصناعية الواقعة في رغبة، الجزائر العاصمة. وتتبع أهمية هذا البحث من الفجوة المتنامية بين الإمكانيات النظرية لتحليلات الموارد البشرية وتطبيقها العملي المحدود في السياقات التنظيمية لدول النامية، حيث لا تزال الأساليب الإدارية التقليدية القائمة على الحدس سائدة.

اعتمد البحث مقارنة نوعية مبنية على منهجية دراسة الحالة الفردية، وجمعت البيانات الأولية عبر مقابلات شبه موجهة أجريت مع ثلاثة أطراف تنظيمية رئيسية: مديرة الموارد البشرية، ومساعدتها، والمدير العام للمؤسسة. وقد خلّلت بيانات المقابلات باستخدام برنامج NVivo في إطار تحليل موضوعاتي منظم حول خمسة محاور كبرى.

يتمثل الإسهام المحوري للدراسة في تصميم لوحة تحكم تفاعلية للموارد البشرية باستخدام Power BI ، تربط البيانات الخام بصنع القرار الاستراتيجي وفق أربعة أبعاد رئيسية.

أثبتت النتائج أن لوحة تحكم Power BI المبنية على قاعدة بيانات موارد بشرية مُعاد بناؤها بالكامل — حسّنت بشكل ملموس اتخاذ القرار الاستراتيجي عبر أربعة أبعاد: الدقة، والسرعة، والموضوعية، والتوافق الاستراتيجي. وقد اختُزلت أوقات استرجاع المعلومات من أيام أو أسابيع إلى ثوانٍ معدودة، كما انتقل أسلوب اتخاذ القرار من نهج تفاعلي قائم على الحدس إلى خيارات استباقية مدفوعة بالمؤشرات ومنسجمة مع الأهداف المؤسسية. وقد توافق المُستجوبون الثلاثة — المدير العام، ومديرة الموارد البشرية، ومساعدة الموارد البشرية — نحو نموذج تآزري تُهدّب فيه البيانات التجربة المهنية وتُثريها دون أن تحلّ محلها.

كما تُحدد الدراسة أربع فئات متشابكة من التحديات: قصور في جودة البيانات وإتاحتها، ومقاومات بشرية وثقافية، وقيود تقنية، وثغرات في الاستدامة — يرتبط بعضها تحديداً بالسياق التنظيمي الجزائري. وتختتم الدراسة بتوصيات تشمل التوطيد التقني عبر دمج نظام معلومات الموارد البشرية، وتطوير الكفاءات في الأدوات التحليلية، والتحول الثقافي المنهجي نحو حوكمة قائمة على البيانات.

الكلمات المفتاحية: تحليلات الموارد البشرية، اتخاذ القرار الاستراتيجي، لوحة تحكم Power BI ، مؤشرات الأداء الرئيسية، إدارة الموارد البشرية، سيدال غاز.

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List of abbreviations

Abbreviation	Full Term
HR	Human Resources
HRM	Human Resource Management
SHRM	Strategic Human Resource Management
HR Analytics	Human Resource Analytics
KPI	Key Performance Indicator
BI	Business Intelligence
HRIS	Human Resource Information System
NVivo	Qualitative Data Analysis Software (QSR International)
Power BI	Microsoft Power Business Intelligence
ROI	Return on Investment
SPA	Société Par Actions (Joint-Stock Company)
PME	Petite et Moyenne Entreprise (Small and Medium Enterprise)
ISO	International Organization for Standardization
QHSE	Quality, Health, Safety and Environment
AI	Artificial Intelligence
ML	Machine Learning
R&D	Research and Development
GM	General Manager
Q&A	Questions and Answers
APA	American Psychological Association

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Introduction

In light of the rapid transformations taking place in today's world, particularly with technological and digital advancements, data has become one of the most important strategic resources upon which organizations rely to achieve excellence and competitiveness **(Elugbaju et al., 2025)**. Managerial decisions are no longer based solely on intuition or experience; instead, they increasingly rely on scientific analysis and accurate data-driven insights **(Okon et al., 2024)**.

In this context, Human Resource Management has undergone a fundamental transformation — from a traditional administrative function focused on routine tasks to a strategic partner contributing to shaping organizational directions and achieving long-term objectives **(Armstrong & Taylor, 2020)**. Human Resource Analytics (HR Analytics) is considered one of the most prominent modern tools that has driven this transformation, as it enables organizations to leverage employee-related data and convert it into valuable insights that support decision-making **(Mohammed, 2019)**.

Despite the growing importance of this field, its application in organizations — especially in developing countries such as Algeria — still faces several challenges related to technological infrastructure, analytical skills, and the culture of data-driven decision-making **(Tuli et al., 2024)**. This raises serious questions about its actual effectiveness in supporting strategic decisions.

1.2. Significance of the Study

This study derives its importance from several key aspects, including:

- Highlighting the increasing role of HR Analytics in improving the quality of strategic decision-making.
- Emphasizing the importance of transitioning from traditional decision-making to data-driven decision-making.
- Contributing to the enrichment of Arabic academic literature in the field of HR Analytics.
- Assisting organizations, particularly Algerian ones, in understanding how to utilize data analytics in Human Resource Management.
- Providing an applied framework linking data analytics tools with decision-making support.

1.3. Objectives of the Study

This study aims to achieve the following objectives:

- To identify the concept of Human Resource Analytics and its importance.
- To highlight the role of HR Analytics in supporting strategic decision making.
- To analyze the relationship between data information, and decision-making within organizations.
- To examine the main data analytics tools used in Human Resource Management.
- To identify the challenges facing the implementation of HR Analytics in organizations.
- To propose a practical model illustrating how data analytics can support decision-making.

Rationale for Choosing the Subject:

The selection of this topic was driven by the growing importance that data analytics has come to assume within organizations, particularly in the context of the accelerating digital transformations that have compelled enterprises to reconsider their management approaches and adopt modern methods of decision-making.

Through our preliminary review of organizational realities, it became evident that many institutions continue to rely on traditional methods in managing human resources, despite the availability of considerable volumes of data that could be more effectively leveraged to support the decision-making process.

Accordingly, our attention was directed toward examining how HR data analytics can be employed as a modern instrument capable of improving the quality of strategic decisions within the organization.

1.4. Research Problem

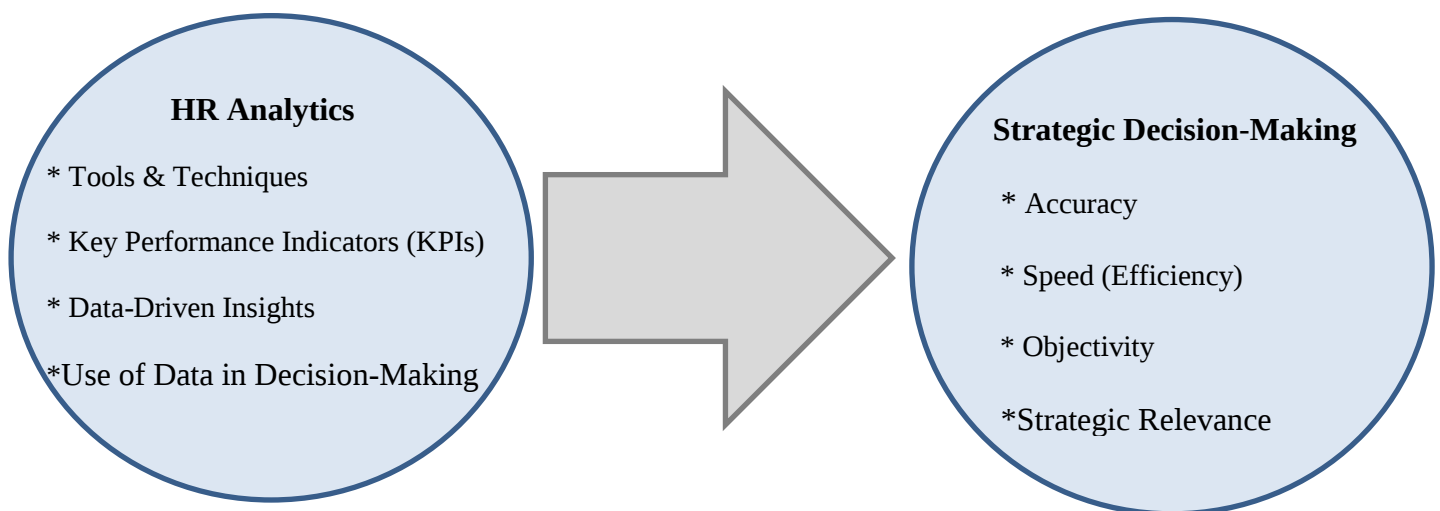
In light of the increasing reliance on data across various fields and the emergence of advanced analytical tools in Human Resource Management the following main research question arises:

How does Human Resource Analytics support and improve the quality of strategic decision-making at Sidal Gaz, Algiers?

From this main question, several sub-questions emerge:

- How is data transformed into information that supports decision-making?
- What specific HR Analytics tools are used at Sidal Gaz, and how do they contribute to enhancing the accuracy and quality of HR decisions?
- What are the main challenges facing the implementation of HR Analytics?
- How do HR professionals at Sidal Gaz integrate HR Analytics into their strategic decision-making practices?

Figure 01: Research Model



Source: Prepared by the researcher, Gacem Mostafa

Chapter One

Theoretical Framework

In today's fast-changing business world relying on data has become essential for making smart decisions. Human Resource Management is no longer just an administrative function it has become a strategic partner that helps shape the future of the organization.

Human Resource Analytics enables organizations to turn workforce data into actionable insights. This chapter discusses HR Analytics, its tools, key performance indicators and its role in supporting better evidence-based decision-making while also highlighting the challenges organizations may face in implementing it.

Section 01: Literature Review:

The authors **Narayana Murty & Khan (2025)** conducted a study that offers a clear perspective on how HR Analytics contributes to strategic decision-making in organizations. It shows that HR is no longer limited to administrative tasks but is increasingly becoming a strategic function that plays a direct role in organizational success.

The authors point out that the use of data, statistical models, and predictive analytics allows organizations to make more informed and evidence-based decisions in key HR areas such as talent acquisition, performance management, employee retention, and workforce planning. As a result, organizations are able to improve both the quality of their decisions and their overall performance.

However, the study also recognizes that adopting HR Analytics is not without challenges. Issues such as limited analytical skills, inadequate data infrastructure, and resistance to change can slow down its implementation. To deal with these obstacles, the authors suggest several practical strategies that can help organizations adopt HR Analytics more effectively and strengthen their decision-making processes.

In terms of methodology, the study relies on a data-driven approach, examining how HR Analytics is applied across different HR functions through statistical analysis and predictive models. It also discusses both the advantages and the challenges of implementation while proposing ways to better integrate HR Analytics into organizational practices. Overall, the study highlights the growing importance of transforming HR into a strategic partner.

The main objective of the study is to explore how HR Analytics can be used in strategic decision-making. It also aims to highlight its benefits, identify the challenges related to its implementation, and suggest effective ways to support evidence-based decision-making in HR.

The authors **Elugbaju, Aderohunmu, Kolade & Faloye (2025)** provide useful insight into how data analytics platforms can be integrated into HRM to support strategic decision-making. The study highlights the idea of operational resilience as a key outcome of this integration, especially in helping organizations adapt to workforce changes and economic uncertainty.

The findings show that successful adoption of analytics in HRM depends largely on factors such as stakeholder engagement, data governance, and effective change management. The authors also provide practical recommendations for HR professionals, IT strategists, and policymakers to help build flexible and data-driven HR systems. At the same time, the study discusses several challenges that organizations may face when implementing analytics, giving a more realistic view of the transition process. It also points out a broader shift in HRM, moving from intuition-based decisions toward more data-driven approaches.

From a methodological point of view, the study is based on a review of existing literature on analytical tools in HRM. This is supported by case studies from different contexts, particularly Nigeria, which add practical insights into how analytics can be implemented. The approach emphasizes operational resilience and highlights the importance of stakeholder involvement, proper data management, and change management in ensuring successful adoption.

The main objective of the study is to explore how analytical tools can be applied in HRM to improve strategic decision-making. It also aims to examine the challenges of implementation, propose a comprehensive model for integrating analytics into HR systems, and stress the importance of key success factors such as stakeholder engagement, data governance, and change management.

The authors **Ngo Ndjama (2025)** explores both the opportunities and challenges of using HR Analytics to improve decision-making within organizations. The study shows that adopting HR Analytics can bring several important benefits, such as better decision-making, stronger alignment with strategic objectives, improved employee experience, and enhanced competitive advantage. It also helps reduce the time needed to make decisions.

At the same time, the study points out that implementing HR Analytics is not always easy. It highlights key challenges, especially those related to data privacy and security, as well as problems with data quality, integrity, and accuracy. In addition, the lack of data literacy and analytical skills among employees, along with weak technological infrastructure, is seen as a major obstacle to effective adoption.

From a methodological perspective, the study is based on a systematic literature review that examines how HR Analytics is used in decision-making processes. It focuses on identifying both the benefits and the challenges of adoption, while also proposing a framework to support its effective integration. The analysis pays particular attention to factors such as data quality, accuracy, integrity, and privacy, and stresses the need to improve employee skills and technological readiness.

The main objective of the study is to understand how HR Analytics can be used to improve decision-making in organizations. It also aims to highlight its benefits, identify the main challenges, and provide practical guidance for successful implementation. In addition, the study emphasizes the importance of addressing data privacy and security issues to ensure effective use of HR Analytics.

The authors **Acharya & Donthu (2024)** examine how HR Analytics can support strategic decision-making in organizations. The findings show that factors such as employee engagement and training play an important role in improving performance, which makes them key elements in effective workforce management. The study also demonstrates that employee turnover can be predicted using performance and engagement data, highlighting the practical value of data-driven insights in understanding and managing workforce trends.

From a methodological perspective, the study relies on advanced analytical techniques such as regression analysis, logistic regression, and k-means clustering. These methods are used to analyze employee data and produce insights that can support better and more informed HR decisions.

The main objective of the study is to apply HR Analytics to strengthen strategic decision-making in Human Resource Management. It also aims to improve workforce management, enhance productivity, and ensure better alignment between HR practices and overall organizational goals.

The authors **Tuli, Sachani & Vennapusa (2024)** explore how HR Analytics can enhance strategic decision-making, particularly in talent management. The findings indicate that applying HR Analytics leads to improved decision-making processes and more effective talent management strategies. The study also stresses the importance of complying with data privacy regulations and allocating resources for HR professional development.

From a methodological standpoint, the research is based on an extensive literature review of HR Analytics techniques and the analysis of multiple case studies in talent management. This combination provides practical insights into how HR Analytics can guide strategic decisions and optimize talent management practices.

The main objective of the study is to assess the impact of HR Analytics on talent management and organizational decision-making. In addition, it seeks to identify obstacles and emerging trends in the implementation of HR Analytics within HR functions, offering guidance for its effective adoption and use.

The authors **Thomas, Di Leo, Javeria & Taj (2024)** investigate the role of HR Analytics in supporting strategic decision-making. The study demonstrates that HR Analytics contributes to improved organizational performance and enhances the quality of decision-making. It also highlights that fostering a data-centric culture is crucial for the successful implementation and utilization of HR Analytics within organizations.

Methodologically, the study examines applications of HR Analytics in decision-making processes and employs predictive analytics to guide decisions. This approach underscores the importance of using data-driven insights to shape HR strategies and overall organizational practices.

The main objective of the study is to explore the role of HR Analytics in strategic decision-making. Additionally, it aims to showcase the practical benefits of implementing data-driven HR processes to optimize performance and decision quality.

The authors **Zaoui, Moussa & Khaldi (2020)** conducted an Algerian study entitled "The Use of Human Resource Information Systems in Decision-Making Related to Human Resources in Algerian Organizations: A Sample of Economic Institutions in Biskra." The study seeks to explore how far Algerian organizations rely on HR information systems to support key HR decisions, including workforce planning, training, recruitment, and performance evaluation.

To achieve this objective, the researchers adopted a descriptive-analytical approach, using several statistical techniques such as means, standard deviations, ANOVA, correlation, and regression analysis in order to better understand the relationship between HRIS and decision-making practices.

The results show that, in reality, the use of HRIS in supporting decision-making remains relatively limited within the studied organizations. More specifically, no significant relationship was found between HRIS and major HR decisions such as planning, recruitment, and performance evaluation. Only a weak positive relationship appeared in the case of training decisions at a significance level of (0.05).

Overall, these findings reflect a situation where many Algerian organizations still depend largely on traditional managerial approaches when making HR decisions. Despite the availability of information systems, their potential is not yet fully utilized to support more strategic, data-driven decision-making.

The authors **Allem & Allem (2025)** conducted an Algerian study titled "Digitalization of Human Resource Management Practices and Their Role in Improving Human Resource Performance in Public Institutions: A Case Study of Algérie Télécom in Tlemcen Province." The study explored how the digital transformation of HR practices influences employee performance. The study examined key HR areas, including planning, recruitment and selection, compensation, performance appraisal, and training.

To achieve this, the researchers used a descriptive-analytical approach complemented by a field study. Data was collected through a questionnaire distributed to 80 employees at Algérie Télécom in Tlemcen. The responses were analyzed using Structural Equation Modeling (Smart PLS) to better understand the relationships between HR digitalization and performance improvement.

The findings revealed a clear positive and statistically significant impact of HR digitalization on employee performance. Among the various dimensions, digital training had the strongest influence, followed by compensation and benefits, then performance appraisal, planning, and finally recruitment. The model used in the study accounted for approximately 67.6% of the variation in HR performance improvement, highlighting the strong effect of digital HR practices.

Critical Review of Previous Studies:

The studies reviewed reveal several important insights regarding the role of HR Analytics in supporting strategic decision-making. These studies show that HR Analytics has increasingly proven its value as a strategic tool that enables organizations to shift from intuition-based decisions toward more evidence-based approaches, improving both the quality and accuracy of HR decisions (**Narayana Murty & Khan, 2025; Thomas et al., 2024**).

These studies also show that the successful implementation of HR Analytics depends heavily on key enabling factors such as data governance, stakeholder engagement, analytical skills, and technological infrastructure (**Elugbaju et al., 2025; Tuli et al., 2024**). Without these foundations, organizations risk facing significant barriers that limit the effectiveness of their analytical initiatives.

Furthermore, these studies show that the Algerian context presents a distinct reality compared to more advanced organizational environments. While global studies highlight the transformative potential of HR Analytics, Algerian organizations still rely largely on traditional decision-making approaches, with limited use of advanced analytical tools (**Zaoui et al., 2020; Allem & Allem, 2025**). This gap reflects the unique organizational, legal, and technological challenges that characterize the Algerian environment.

However, these studies show that most existing research has focused on advanced organizational contexts without sufficiently addressing the specificities of developing countries like Algeria. Moreover, existing studies have often treated HR information systems and data analytics separately, without providing an integrated perspective that links analytical tools to strategic decision-making support. This highlights the need for an applied study that focuses specifically on the Algerian context, as represented by the case of Sidal Gaz, Algiers, in order to demonstrate how HR Analytics can be effectively utilized to support strategic decision-making in such an environment.

Section 02: Conceptual Framework

1. Human Resource Analytics:

Human Resource (HR) analytics has emerged as a critical tool in the modern corporate landscape, enabling organizations to transform raw data into actionable insights. By analyzing employee behaviors preferences, and performance metrics, HR analytics facilitates informed decision-making that enhances both the employee experience and overall organizational performance (**Sambath et al, 2025**).

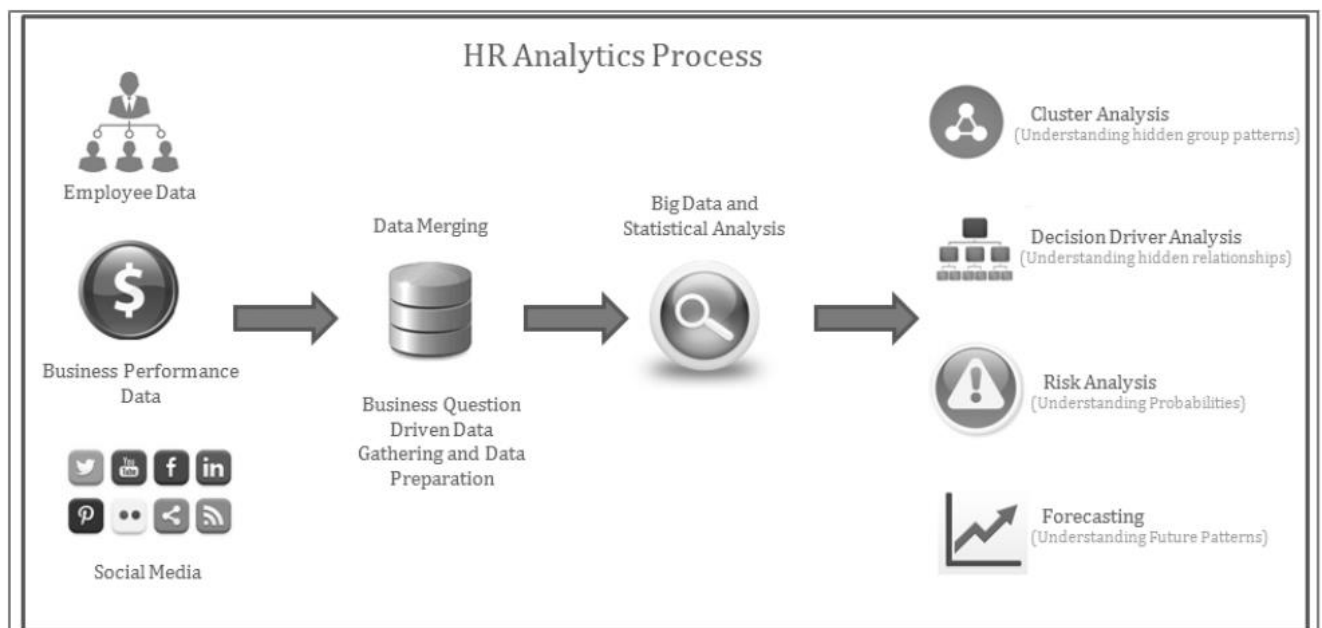
- **The Concept of HR Analytics:**

Employees are generally considered the most valuable asset of any organization and a crucial source of competitive advantage, particularly in today's rapidly changing and uncertain business environment. However, managing a workforce with diverse competencies and ensuring that their performance aligns with organizational strategy remains a complex challenge for organizations. To deal with this complexity, organizations increasingly rely on generating, analyzing, and storing large volumes of data to support more effective decision-making processes. In this regard, Human Resource Management requires appropriate

analytical tools that enable managers to better understand patterns emerging from various HR functions which in turn helps in identifying high-performing employees within large and complex workforce datasets.

Human Resource Analytics can be defined as the application of statistical techniques, research design, and analytical tools to examine employee-related data and transform it into meaningful and actionable insights. By using statistical models, HR analytics makes it possible to uncover hidden patterns in workforce data and to anticipate employee behaviors such as turnover rates training needs, and individual contributions. This predictive capability, often referred to as predictive analytics, enhances the ability of organizations to make more informed, evidence-based, and strategic HR decisions. **(Mohammed, 2019)**

Figure 2: HR Analytics Process



Source: "HR Analytics: A Modern Tool in HR for Predictive Decision Making," by A. Q. Mohammed, 2019, Journal of Management (JOM), 6(3), p. 53. Copyright 2019 by IAEME Publication.

A typical Human Resource (HR) analytics system collects employee data from multiple sources, such as the HR Information System (HRIS), performance records, mobile applications, and social media, and integrates it into a central data repository. Then, big data techniques, statistical analysis, and data mining are applied to uncover hidden patterns, understand relationships between variables, and predict future trends, enabling organizations

to make evidence-based decisions. HR analytics is a relatively recent intervention within the broader field of human resource management. It is also referred to as people analytics, talent analytics, or workforce analytics. Its importance lies in providing statistically reliable data that organizations can use to develop new strategies or enhance the implementation of existing strategies and HR processes. Although organizations increasingly recognize the potential of HR analytics, there is still significant room to explore its applicability across various HR domains and to expand its use to meet organizational needs. Effective HR analytics helps managers perform their tasks more efficiently such as forecasting HR supply and demand, selecting appropriate assessment tools for candidates, identifying training needs, implementing performance-based pay systems, and maintaining accurate employee records for informed decisions regarding rewards and disciplinary actions. Overall, HR analytics provides clear insights and enables managers to make data-driven decisions related to recruitment, employee retention, training, compensation and career planning, ultimately enhancing organizational effectiveness and efficiency. (Mohammed, 2019)

- **Types of HR Analytics:**

HR analytics can be divided into three main types: descriptive, predictive, and optimization analytics:

-Descriptive Analytics:

Descriptive Analysis seeks to answer the question: “What happened?” This type of analysis takes raw historical data and summarizes it to provide a clear picture of past events. By examining these patterns, it helps uncover insights that explain why certain outcomes occurred, allowing organizations to learn from past behaviors and better understand how they may affect future results. (Diez et al., 2019)

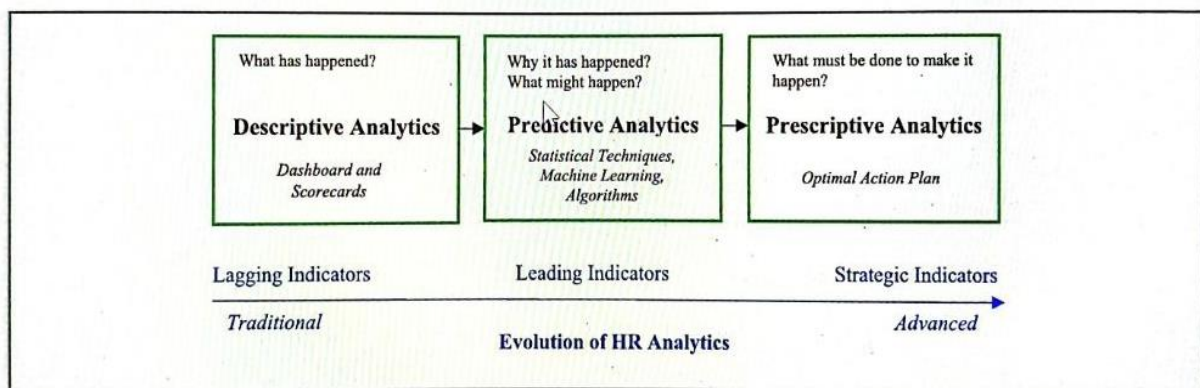
-Predictive Analytics:

The second level aims to forecast future outcomes and employee behavior based on past data. It uses techniques such as data mining, decision trees, pattern recognition, forecasting, root-cause analysis and predictive modeling. This type of analytics allows HR managers to anticipate attrition, estimate employee success probabilities and improve recruitment and selection strategies. (Ngo Ndjama, 2025)

-Optimization Analytics:

The third level focuses on maximizing outcomes using limited resources. Methods include linear programming, simulations, mathematical modeling and scenario analysis to identify the most effective investments in training and other HR initiatives, ultimately enhancing organizational performance and effectiveness. (Mohammed, 2019)

Figure 3 : Evolution of HR Analytics



Source: Adapted from "The Role of HR Analytics in Enhancing Employee Experience and Organizational Performance," by S. Sambath, R. Maharaja, and V. Imayavendan, 2025, International Education & Research Journal, 11(9).

- **HR Analytical Tools:**

HR analytics relies on a variety of tools that serve different purposes.

1. Business Intelligence (BI) platforms, such as SAP, IBM, Oracle, and Microsoft provide integrated HR modules with built-in data analytics capabilities, allowing organizations to collect, analyze, and visualize workforce data.
2. Statistical and programming tools like R-Studio and Python are widely used by HR data specialists to perform advanced statistical analysis, predictive modeling, and data visualization, especially for large datasets.
3. Spreadsheet-based tools, particularly Microsoft Excel, remain a versatile option for data collection, basic analysis, scenario modeling, pivot tables, and charting.

4. Advanced BI software such as Microsoft Power BI enables seamless extraction of data from multiple sources, supports aggregation, visualization, and interactive reporting, making it an effective tool for informed decision-making and strategic HR management (**Kapoor & Sherif, 2012**).

5 **The HR Analytics Dashboard:** The HR analytics dashboard represents a key output of these tools, serving as an interactive and visual platform that consolidates HR data into meaningful Key Performance Indicators (KPIs) and actionable insights. By integrating data from multiple sources and presenting it through clear visual representations, the dashboard enables HR professionals and senior management to monitor workforce dynamics and make informed strategic decisions in real time (**Marler & Boudreau, 2017**). In the context of this research, the dashboard was specifically designed as a mediating tool that bridges HR analytics practices and strategic decision-making quality, constituting the primary technical contribution of this study (**Zeidan & Itani, 2020**).

Table 1: Tools for HR Analytics and Their Features

Tool	Type	Key Features	Suitable For
SPSS	Statistical Analysis	Advanced statistical analysis, user-friendly	Descriptive and Diagnostic Analytics
Tableau	Data Visualization	Interactive dashboards, data blending	Visualizing HR data trends
Python	Predictive Modeling	Extensive libraries for machine learning	Developing predictive models
Workday	HRIS	Integrated HR functions, real-time data	Comprehensive HR data management
Qualtrics	Employee Engagement	Customizable surveys, detailed analytics	Measuring and analyzing engagement

Note. Adapted from "HR analytics: Revolutionizing talent management and strategic decision-making," by F. A. Tuli, M. A. M. Shekhani, and S. C. R. Vennapusa, 2024, Asian Business Review, 14(1). <https://doi.org/10.18034/abr.v14i1.722>

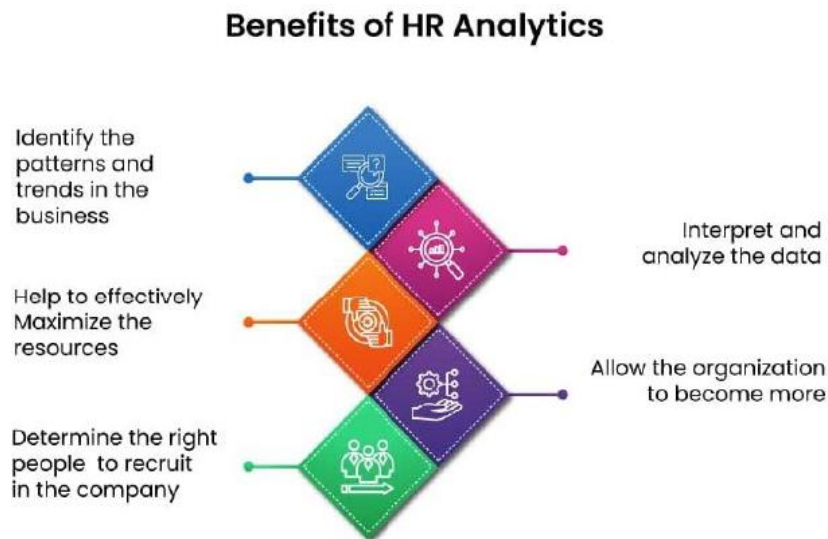
The use of these tools aims to enhance data-driven decision-making in the field of human resources, as well as assist organizations in developing more efficient and effective HR strategies (Basuki, 2023).

Accordingly, research on HR analytics tools is of great importance in developing more advanced and effective analytical applications and systems. It also contributes to improving the performance of these systems and making them more efficient in supporting HR functions. Through this, organizations can maximize the value of their HR data, which positively reflects on improving their overall performance (Arora et al., 2021).

- **Benefits of HR Analytics**

HR analytics provides an extensive array of benefits that fundamentally improve the effectiveness of human resource management. By utilizing data-driven insights, organizations can execute more informed and strategic decisions regarding recruitment, training, and employee development. Furthermore, it enhances talent acquisition by identifying the key traits of successful hires and proactively reduces turnover by detecting early signs of employee disengagement. Additionally HR analytics supports robust workforce planning by forecasting future staffing requirements and identifying critical skill gaps. Ultimately these capabilities empower HR departments to serve as strategic partners, driving productivity and ensuring long-term organizational success (Sivakumar & Alex, 2025).

Figure 4 : Benefits of HR Analytics



Source: Adapted from "The Role in Empowering Strategic Decisions: The Impact of HR Analytics on Talent Management and Organizational Success," by P. Sivakumar and S. Alex, 2025, Journal of Information Systems Engineering and Management, 10(39), p. 3.

- **The Concept of Key Performance Indicators (KPIs) and Their Importance:**

The concept of Key Performance Indicators (KPIs) was first introduced by Peter Drucker. KPIs are a system of measurement that helps organizations track how well they are achieving their strategic and operational goals. They allow companies to monitor employee performance at both individual and group levels as well as the overall performance of the organization almost in real time. (Dvulit et al., 2019)

KPIs are valuable because they show the current state of a metric compared to a target, enabling data-driven decisions and motivating better performance. (Parmenter, 2020)

To use KPIs effectively managers need to follow certain key principles:

1. Measurability – indicators should be expressed in clear numerical terms.
2. Controllability – indicators should be easy to track consistently.
3. Employee engagement – employees should understand the system and be motivated to participate.
4. Achievability and realism – the organization should have the resources to reach the goals.

5. Relevance – indicators should directly reflect what is being measured.
6. Influenceability – management should be able to affect the indicators through actions.
7. Limited number of indicators – ideally, no more than 10–20 KPIs to keep the system manageable and effective. **(Dvulit et al., 2019)**

Using KPIs offers several clear benefits:

- They provide clear, measurable objectives for the organization.
- They allow ongoing monitoring and control of results **(Iveta & Petr, 2021)**
- They enable quick responses to complex or changing situations.
- They support timely adjustment of goals and optimization of plans.
- They help evaluate management performance and departmental effectiveness.
- They identify successful areas of business.
- They motivate employees to perform better
- They offer an objective assessment of individual and team performance.

2. Strategic Decision-Making in Human Resource Management:

- **The Concept of Decision-Making:**

Definition :

Decision-making starts with the existence of alternatives A decision-maker faces a problem because there are several possible options, and they must choose the most suitable one. If no alternatives exist, there is no real decision to be made, since there is nothing to compare or select from. **(Medahi, 2018)**

In this sense, decision-making can be understood as the process of choosing a specific course of action from a set of available alternatives. To do this effectively, the decision-maker needs sufficient knowledge and awareness of these options, along with the ability to clearly identify, analyze, and evaluate them before selecting the most appropriate one. **(Medahi, 2018)**

A decision, therefore, represents a chosen course of action that the decision-maker considers the best available way to achieve desired objectives and solve a given problem. **(Medahi, 2018)**

Decision-making involves having a clear and complete understanding of the available alternatives, and being able to compare them in order to choose the best option for achieving the organization's goals. This process requires making effective use of both financial and human resources within a specific timeframe, while considering the conditions of the internal and external environment. It also includes putting the decision into action and following up on its implementation to ensure that the desired results are actually achieved. (Delfouf, 2021)

- **Importance of Decision-Making:**

The success of any organization largely depends on how capable managers are in making sound decisions and how well they understand decision-making approaches. Effective decisions require clear thinking, proper timing, and continuous follow-up to ensure successful implementation and evaluation.

Decision-making is at the heart of the management process. It is not limited to a single function but is present in all managerial activities. Whether in planning, organizing, or controlling, managers are constantly making decisions, which makes decision-making a continuous and essential part of organizational life. (Medahi, 2018)

- **Types of Decisions in Organizations:**

Igor Ansoff divides organizational decisions into three main types based on the level of management that makes them: strategic, tactical, and operational (executive) decisions. (Azzi & Boubai'a, 2013)

1. Strategic Decisions:

These are made by top management and focus on the big picture where the organization is headed and how it relates to its external environment. They involve setting long-term goals, creating policies, and planning for the future, while also strengthening the organization's position in the market. Strategic decisions are usually long-term, require significant investments, and rely on a lot of information. They help the organization take advantage of opportunities and avoid threats, and because of their importance, they are typically made at the highest level of management. (Azzi & Boubai'a, 2013)

Mintzberg and others defined strategic decisions as important decisions concerning the

actions taken and the resources allocated, or those preceding the process of making a strategic decision. (دحاك ويرقي، 2015).

A strategic decision is a decision that is expected to influence the long-term direction of an organization providing it with an internal or external advantage in achieving its objectives (JOHN1997).

2. Tactical Decisions:

Tactical decisions are made by middle management and focus on how to put the strategic goals into action. They deal with the practical side of things: translating plans into programs, organizing teams, assigning tasks, defining authority setting up communication channels, and making sure resources—both human and financial—are used efficiently to achieve the best performance. (Azzi & Boubai'a, 2013)

3. Operational (Executive) Decisions:

These decisions are handled by front-line or executive managers and are about the daily running of the organization. They are short term routine and often repetitive relying on previous experience rather than extensive analysis Operational decisions need to be made quickly and deal with day-to-day tasks like scheduling employee shifts, managing vacations, coordinating deliveries and transportation, setting prices, and other routine operations that keep the organization running smoothly. (Azzi & Boubai'a, 2013)

Operational decisions primarily influence the short-term management of an organization, guiding the execution of routine business processes to achieve immediate or short-term objectives. (Abahmane & Binkkour, 2008)

- **stages of decision-making:**

1. Recognizing the Problem or Opportunity

The first step is to clearly understand what needs attention This could be a problem that needs solving or an opportunity to take advantage of. At this stage, you gather information look at how the issue affects the organization, and define what you want to achieve.

2. Analyzing the Situation

Once the problem or opportunity is identified, it's important to dig deeper and understand why it exists. This means looking at:

- Internal factors like staff resources, or the organization's structure.
- External factors like competition market trends or regulations.

The goal is to get a clear picture that will help you figure out the best way forward.

3. Creating Possible Options

Next, you brainstorm possible solutions. You want to come up with several realistic alternatives that could help achieve your goals. Creativity and flexibility are key here.

4. Weighing the Options

Now, look at each alternative carefully and compare them. Consider things like:

- How well it solves the problem.
- Costs and resources needed.
- Possible risks.
- How well it fits with the organization's goals.

This helps you make an informed choice instead of guessing.

5. Making the Decision

Choose the option that best balances benefits costs and risks. Make sure it aligns with the organization's overall strategy and longterm goals Sometimes combining parts of different options can work even better.

6. Putting the Decision into Action

Once the decision is made it's time to act:

- Make a clear plan for how to implement it.

- Allocate the resources needed, both people and money.
- Assign responsibilities and set timelines.
- Communicate with everyone involved to ensure understanding and cooperation.

7. Following Up and Evaluating

Finally, check how the decision is working in practice:

- Track progress and compare results with what you expected.
- Make adjustments if things aren't going as planned.
- Learn from the experience to make future decisions even better.

The aim is to make sure the decision actually achieves the results you want and adds real value to the organization. (Assali, 2015)

- **Concept of Strategic Human Resource Management (SHRM):**

Strategic Human Resource Management is considered an advanced extension of traditional human resource management. It focuses on achieving alignment between HR policies and practices and the overall strategic objectives of the organization. Rather than viewing employees from a purely administrative or operational perspective, it considers them as strategic assets that contribute to gaining a competitive advantage.

This concept emerged as a result of the evolution of management literature particularly in distinguishing between personnel management and human resource management, and later moving toward a more comprehensive approach that links HR to the organization's overall strategy. In this context, SHRM acts as a bridge between top-level strategic decisions and the management of human resources.

It also refers to a set of planned policies and practices aimed at guiding and utilizing human resources in a way that supports the achievement of organizational goals. This is achieved through two types of integration:

- **Vertical integration**, which links HR practices with the organization's overall strategy.

- **Horizontal integration** which ensures consistency and alignment among different HR practices.

In addition SHRM expands responsibility beyond the HR department to include line managers which enhances the effectiveness of policy implementation and makes people management an integral part of the strategic process. (Truss & Gratton, 1994)

Therefore, Strategic Human Resource Management can be seen as a comprehensive framework that seeks to align the management of people with the strategic direction of the organization, ensuring effective performance and organizational sustainability.

is the study of human resource systems and their interrelationships with other elements that constitute the organizational system, including the organization's internal and external environments the parties responsible for implementing these systems and the stakeholders who evaluate the organization's performance and effectiveness and determine its long-term sustainability. This management approach focuses on linking HR systems to organizational performance and effectiveness to ensure support for the company's strategic objectives. **(Gelgelo et al., 2023)**

Strategic Human Resource Management (Strategic HRM) is: An approach that defines how an organization's goals can be achieved through employees via integrated HR strategies, policies, and practices. **(Armstrong & Taylor, 2020)**

Table 02: Strategic HR Vs Traditional HR

	Traditional HR	Strategic HR
Responsibility of HR	Staff specialists	Line manager
Focus	Employee relations	Partnership with internal and external customers
Initiatives	Slow, reactive, fragmented	Fast, proactive, integrated
Role of HR	Transactional, change follower, and respondent	Transformational, change leader, and initiator.
Time horizon	Short term	Short, medium, long
Control	Bureaucratic-role, policies, procedure	organic,-flexible, whatever is necessary to succeed
Job design	Tight division of labor, independence, specialization	Broad, flexible, cross training, teams
Key investment	Capital, products	People, knowledge
Accountability	Cost center	Investment center

Source: Adapted from Strategic Human Resource Management: Theory, Practice, and Innovation (p. 31), by S. Bansal, R. Rayat, and K. N. Gangal, 2023, Chyren Publication.

As emphasized by **Rayat and Gangal (2023)**, the transition from traditional to strategic Human Resource Management represents a fundamental shift in organizational logic. While traditional HR focuses on administrative, short-term tasks and cost control, the strategic approach—as illustrated in the table above—treats human capital as a vital investment. This perspective aligns HR functions with the long-term strategic goals of the organization, transforming it from a mere cost center into a key driver of competitive advantage.

Its main objectives: (Armstrong & Taylor, 2020)

-Integration: Vertical alignment of HR strategies with business strategies, and horizontal integration among different HR policies.

-Direction: Ensuring that the needs of the organization and the individual and collective needs of employees are met through practical and coherent policies.

- **Strategic Human Resource Management Elements:**

The fundamental elements that form the strategy of human resource management are:

1 Recruitment and Selection of Staff

Recruiting qualified employees is a highly important task for human resource management, as having competent and skilled staff is a necessary condition for the success of operations. In fact recruitment is a process of aligning the occupational preferences and goals of individuals with the preferences and needs of the company. The aim is not only to find the best employees or applicants for a position but also to succeed in retaining them within the organization over the long term. Recruitment and selection can be internal or external. Internal recruitment involves finding suitable candidates within the organization among existing employees and includes promoting employees to higher positions transferring employees to other roles within the organization and rotating positions of a temporary nature. In contrast, external recruitment involves identifying candidates in the external labor market (**Bardarova et al., 2015**).

2 Training and Development:

Organizations bear a fundamental responsibility to invest in the continuous professional development of their employees, managers, and newly appointed staff, thereby enhancing individual competencies and cultivating future managerial capabilities. Training, as a formal organizational intervention, is specifically oriented toward equipping personnel with the technical skills and task-specific knowledge required to fulfill their professional roles with greater efficiency and effectiveness. From a broader perspective, human resource training constitutes a structured and systematic process designed to enrich employees' knowledge base, refine their competencies, and optimize their performance across individual, departmental, and organizational dimensions (**Grubb, 2007**).

3 Assessment of Employee Capabilities:

Performance assessment represents a formalized mechanism through which organizations evaluate the degree to which individual employees fulfill their designated responsibilities and contribute to broader organizational objectives. The principal aims of such evaluations encompass the provision of constructive and individualized performance feedback, the establishment of objective criteria for promotion and career advancement, the identification of competency gaps necessitating targeted training interventions, and the detection of structural

or procedural impediments that may warrant role redesign or task modification (Armstrong, 2006).

4 Compensation and Benefits (Bardarova et al., 2015).

5 Labor Relations Collective Negotiations and Contribution to Company Performance (Bardarova et al., 2015).

3. The Role of Human Resource Analytics in Supporting Strategic Decision-Making:

- **The Relationship Between Data Analytics and Decision-Making:**

The link between data analytics and decision-making is reflected in a sequence of processes that transform raw data into actionable insights, as illustrated in the following steps:

1. **Data Collection** : Gathering raw data from various sources relevant to the organization or study.
2. **Data Classification** : Organizing the collected data into categories or groups for easier analysis.
3. **Data Arrangement** : Structuring the data logically to identify patterns and relationships.
4. **Data Summarization** : Condensing the data into essential points to highlight trends and insights.
5. **Data Storage** : Maintaining the data securely in an organized manner for future access.
6. **Data Retrieval** : Accessing and extracting the stored data when required for analysis.
7. **Data Distribution** : Sharing the processed information with stakeholders to facilitate informed decision-making. (عبد القادر، 2021)

this sequential process ensures that raw data is transformed into strategic intelligence. By systematically organizing and distributing information, organizations can minimize uncertainty and enhance the precision of their HR interventions. This alignment between data management and decision-making is what constitutes the core value of HR Analytics.

- **The Contribution and Impact of HR Analytics on Strategic Decision-Making**

The transition towards data-driven strategies involves several critical shifts in the decision-making process:

-From Intuition to Evidence-Based Decision-Making:The primary value of HR analytics lies in enabling organizations to shift from intuition-driven judgments to evidence based decision-making. This transition enhances objectivity and effectiveness in managing human capital.

-Enhancing Decision Accuracy and Reliability:HR analytics plays a crucial role in improving the quality of decisions by allowing systematic analysis of both quantitative and qualitative data. This provides HR professionals with deeper insights, enabling them to make more accurate decisions aligned with organizational strategic objectives.

-Reducing Human Bias:HR analytics helps mitigate biases inherent in traditional decision-making processes. Analytical models and algorithms can uncover patterns and trends that may not be visible through subjective evaluations ensuring that decisions are grounded in fair and objective criteria.

-Enabling Proactive Decision-Making:Predictive analytics empowers HR professionals to anticipate future trends rather than merely reacting to events. For instance it can be used to forecast potential skill gaps allowing organizations to take proactive measures such as designing targeted training and development programs.

-Improving Organizational Agility:Analytics equips organizations with the ability to quickly adapt to changes in the work environment and technological advancements. By providing timely and relevant insights it supports rapid and informed responses to market dynamics thereby strengthening competitiveness and sustainability.

-Measuring Return on Investment and Strategic Value:HR analytics enhances the strategic role of HR by enabling organizations to measure the return on investment (ROI) of various initiatives. This allows decision-makers to assess the impact of HR policies on organizational performance and productivity and to demonstrate their strategic value to senior management.

Furthermore, HR analytics plays a vital role in fostering diversity and inclusion by identifying demographic gaps and guiding initiatives that improve creativity and innovation. Its application also extends to monitoring trends in employee engagement and well-being, allowing for timely interventions that boost productivity and the organization's bottom line. Additionally, by integrating data from diverse functions such as recruitment, performance, and turnover, leaders gain critical insights that enable them to identify high-potential employees, ensuring that HR strategies are meticulously aligned with broader business objectives. (Okon et al., 2024 ; Sivakumar & Alex, 2025)

- **Challenges in Implementing HR Analytics:**

Despite the significant role that HR analytics can play in enhancing talent management and improving strategic decision-making, its practical implementation faces several critical challenges. This section highlights the key obstacles organizations may encounter when adopting this analytical approach.

-Data Quality and Availability:

Ensuring data quality and accessibility is one of the most prominent challenges in implementing HR analytics. HR data is often fragmented across multiple systems and formats making it difficult to integrate and analyze effectively. In addition data may be incomplete outdated or inaccurate which can undermine the reliability and validity of analytical insights. Therefore organizations need to invest in robust data governance systems to ensure data integrity and availability.

-Skills and Expertise Gap:

A lack of analytical skills and technical expertise among HR professionals represents a major barrier. Although awareness of the importance of data literacy and analytical capabilities is increasing, many HR practitioners still lack the necessary competencies to effectively use analytical tools and interpret results. Consequently organizations must invest in training and development programs to build analytical capabilities and foster a data-driven culture within HR functions. (Tuli et al., 2024)

Source: Adapted from "HR analytics: Revolutionizing talent management and strategic decision-making," by F. A. Tuli, M. A. M. Shekhani, and S. C. R. Vennapusa, 2024, Asian Business Review, 14(1). <https://doi.org/10.18034/abr.v14i1.722>

-Technology Integration and Compatibility:

Integrating HR analytics with existing HR systems and technological infrastructure can be technically complex. Organizations may need to upgrade or replace legacy systems that are not capable of supporting advanced analytics. Moreover, ensuring compatibility and interoperability among different systems and tools is essential for seamless data integration and effective analysis.

-Privacy and Compliance Concerns:

HR analytics initiatives must comply with strict data privacy and regulatory requirements, particularly concerning the confidentiality and security of employee data. Organizations must ensure that data usage aligns with ethical standards and complies with relevant data protection laws. Building employee trust through transparency in data collection and analysis practices is also crucial for the success of HR analytics initiatives.

-Change Management and Stakeholder Engagement:

The implementation of HR analytics often requires a significant cultural shift within the organization, which may encounter resistance from stakeholders. Leaders and HR professionals may be accustomed to traditional HR practices and skeptical about data-driven decision-making. Therefore effective change management strategies—such as communication, training, and stakeholder engagement—are essential to promote acceptance and support for HR analytics initiatives.

-Measuring ROI and Demonstrating Value:

Measuring the return on investment (ROI) of HR analytics initiatives can be challenging, particularly when trying to link analytical outcomes directly to organizational performance indicators such as productivity, employee engagement, or retention. Unlike other business functions, such as marketing or sales, the financial impact of HR analytics is often less

explicit. As a result, organizations need to develop clear metrics and evaluation frameworks to demonstrate the strategic value of HR analytics.

Overall fully leveraging HR analytics in talent management and strategic decision-making requires overcoming these challenges through a comprehensive approach that includes strengthening infrastructure developing skills enhancing data governance and fostering a data-driven organizational culture.

- **Future Trends in Human Resource Data Analytics:**

-Predictive Modeling and Machine Learning:

Predictive modeling and machine learning algorithms represent the cornerstone of future HR planning and analytics. Advanced statistical methods and artificial intelligence enable organizations to forecast workforce trends with greater accuracy identify high-potential employees, and estimate turnover rates. Machine learning algorithms can process vast amounts of data to uncover previously hidden patterns and insights, thereby supporting more informed decision-making and enabling effective strategic interventions. (Tuli et al., 2024)

-Sentiment Analysis and Employee Experience:

Sentiment analysis has become an essential tool in HR analytics as organizations strive to understand and improve the employee experience. By analyzing employee feedback from surveys, social media and performance evaluations organizations can assess workforce sentiment and identify areas for improvement. Sentiment analysis tools help HR professionals monitor employee morale detect early signs of dissatisfaction, and proactively address concerns to enhance engagement and retention.

-People Analytics for Strategic Workforce Planning:

Organizations are increasingly adopting proactive workforce planning rather than reactive approaches. People analytics enables alignment of talent strategies with broader organizational goals by analyzing workforce demographics, skills gaps and future business requirements. These insights allow HR professionals to identify critical talent pipelines

develop succession plans and optimize workforce deployment to support organizational growth and foster innovation.

-Employee Well-being and Organizational Resilience:

HR analytics will continue to emphasize employee well-being and resilience within the workplace. With growing awareness of the importance of mental health and work-life balance analytics play a crucial role in monitoring and improving well-being indicators. Analyzing data on stress levels, workloads, and burnout risks allows organizations to design targeted interventions that enhance employee resilience and reduce disengagement and turnover.

-Ethical AI and Data Privacy:

As HR analytics becomes more sophisticated, ethical considerations and data privacy must be prioritized. Ethical AI standards and data privacy regulations will significantly shape the future of HR analytics. Organizations must ensure the transparent fair and accountable use of employee data, while HR professionals must adhere to ethical guidelines to build trust and comply with legal requirement(Tuli et al., 2024)

Chapter Two

Methodological Framework

This chapter presents the methodological framework adopted in this study, including the data collection and processing methods. It also provides an overview of the company **Sidal Gaz**, which constitutes the field of the study.

Section 01: Company Presentation (Sidal Gaz)

1. Company History

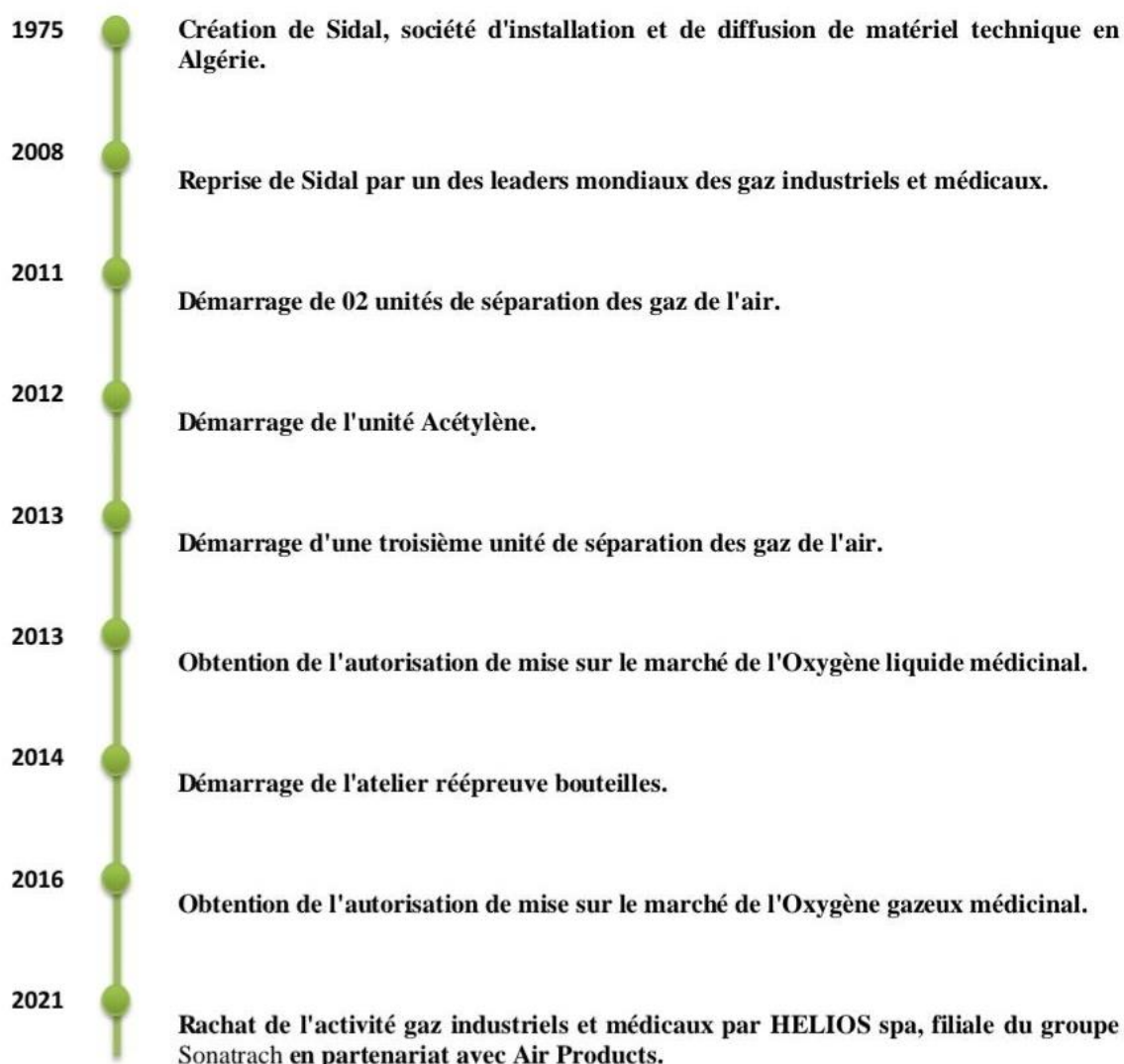
Sidal Gaz is an Algerian industrial company founded in 1974, specializing in the production, filling, and marketing of industrial and medical gases. The company commenced its actual commercial operations in the Algerian market in 1975, making it one of the earliest national enterprises to operate in this specialized industrial sector.

Over the course of five decades, Sidal Gaz has succeeded in establishing itself as a leading actor in the Algerian gas industry. This positioning has been achieved through sustained investment in modern production technologies, the expansion of its operational infrastructure, and a consistent capacity to adapt to the evolving demands of both the industrial and healthcare sectors. The company's longevity and market resilience reflect a well-structured organizational model underpinned by sound management practices and a clear strategic vision.

In terms of geographical presence, the company operates a main production and filling unit located in Reghaia, in the Algiers region, which serves as its industrial and administrative headquarters. In addition to this central facility, Sidal Gaz maintains two commercial agencies — one in Oran and one in Constantine — along with a storage depot in Constantine, thereby ensuring nationwide distribution coverage across the western, central, and eastern regions of Algeria.

From a legal and corporate standpoint, Sidal Gaz is constituted as a joint-stock company (Société Par Actions — SPA), a legal form that reflects a structured governance framework and significant capital base. Its workforce is estimated at between 50 and 99 permanent employees, placing it within the category of medium-sized enterprises (PME) under Algerian industrial classification standards.

Figure 5: History of Sidal Gaz



Source: Sidal Gaz (n.d.), *Historique*, <https://sidalgas.dz/paragraphs/historique>

2. Company Activities and Achievements

Core Activities:

The primary activities of Sidal Gaz encompass the full value chain of gas production and distribution. These include the industrial production of gases through air separation and chemical processes, the pressurized filling of cylinders and containers, storage under controlled conditions, and the commercial distribution of products to end-users across multiple sectors.

The company's product portfolio is broad and technically diversified, comprising:

- **Oxygen (O₂):** Used extensively in healthcare, metallurgy, and water treatment.
- **Nitrogen (N₂):** Applied in food preservation, electronics manufacturing, and chemical processes.
- **Argon (Ar):** Primarily used in welding and metal fabrication as a shielding gas.
- **Carbon Dioxide (CO₂):** Used in food and beverage industries, as well as fire suppression systems.
- **Acetylene (C₂H₂):** A key gas in oxy-fuel cutting and welding operations.
- **Rare gases and special gas mixtures:** Tailored for scientific research and precision industrial applications.

These products serve a wide range of client sectors, including heavy industry, public and private healthcare institutions (hospitals and clinics), agri-food industries, and academic and scientific research centers.

Key Achievements :

Among the most significant achievements of Sidal Gaz over its operational history are:

- Consolidating a strategic market position in Algeria's industrial and medical gas sector, in a market characterized by high technical barriers to entry.
- Developing and maintaining a modern industrial infrastructure at its Reghaia production plant, equipped to meet growing domestic demand.
- Establishing a multi-regional distribution network that ensures product availability and logistical continuity across the national territory.
- Achieving compliance with national standards and international norms, particularly those governing pharmaceutical-grade gases, which require rigorous quality control and traceability protocols.
- Guaranteeing the supply of medical-grade gases at purity levels exceeding 99.5%, in accordance with pharmacopoeia requirements applicable to medical oxygen and other therapeutic gases used in clinical settings.

3. Values, Mission, and Objectives

Organizational Values:

The corporate culture of Sidal Gaz is grounded in a set of foundational values that guide both its internal management and its external relations with clients, partners, and regulatory authorities:

- **Safety:** The absolute priority given to protecting personnel, infrastructure, and end-users, given the inherently hazardous nature of compressed and liquefied gases.
- **Quality:** An unwavering commitment to delivering products and services that conform to the highest technical and regulatory standards.
- **Reliability:** The consistent fulfillment of contractual and operational commitments toward clients and business partners.
- **Respect and Integrity:** The adoption of transparent governance practices and strict professional ethics throughout all organizational levels.
- **Environmental Responsibility:** A proactive approach to minimizing the ecological footprint of production and distribution activities, in line with sustainable development principles.
- **Continuous Improvement:** An institutionalized commitment to ongoing performance enhancement through process optimization, employee development, and technological upgrading.

Institutional Mission:

The institutional mission of Sidal Gaz is defined by its commitment to supplying high-quality industrial and medical gases that meet the technical, safety, and regulatory requirements of the Algerian market. This mission is carried out while ensuring the protection of human life and property, respecting applicable environmental legislation, and delivering innovative and sustainable solutions adapted to the specific needs of each client sector.

Strategic Objectives:

In pursuit of its long-term development, Sidal Gaz has articulated the following strategic objectives:

- Strengthening and expanding its market share within the national industrial and medical gas sector.
- Achieving and sustaining high levels of customer satisfaction through service quality and product reliability.

- Continuously developing and innovating its product range in response to emerging technological and market trends.
- Improving operational efficiency and overall performance across all production and distribution functions.
- Maintaining full compliance with applicable regulatory, pharmacopoeia, and quality management standards.
- Investing in the development of human capital as a strategic lever for organizational performance and competitive advantage.

4. Human Resources Department

Organizational Role:

The Human Resources (HR) department at Sidal Gaz occupies a central position within the company's organizational structure. As a strategic support function, it is responsible for managing the company's most critical asset — its workforce — in a manner that aligns individual competencies with organizational goals.

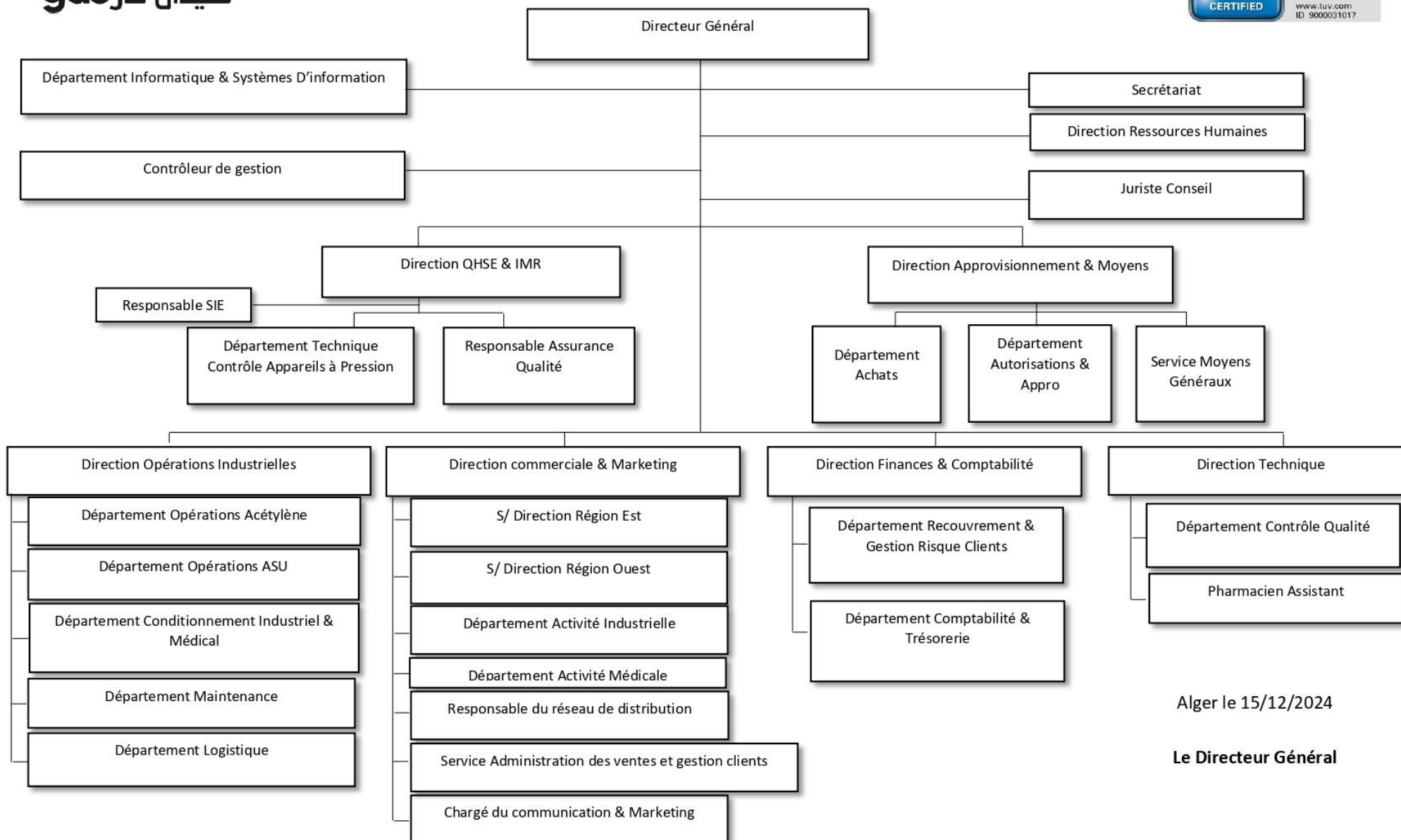
Core Functions and Responsibilities:

The HR department fulfills a broad range of administrative, developmental, and regulatory functions, which can be categorized as follows:

- **Administrative Personnel Management:** This encompasses the maintenance of employee records, management of employment contracts, tracking of attendance and leave, and the handling of all administrative procedures related to the employment relationship.
- **Recruitment and Onboarding:** The department is responsible for identifying staffing needs, conducting recruitment processes in accordance with applicable labor law, and ensuring the structured integration of newly hired employees into the organization.
- **Training and Competency Development:** A key function of the HR department is the design and implementation of training plans aimed at developing employees' technical and behavioral competencies, thereby enhancing both individual performance and overall organizational capability.

- **Career Path Management:** The department oversees the management of internal mobility, promotions, and professional development pathways, ensuring alignment between employee aspirations and the company's human capital strategy.
- **Payroll Administration:** The HR department is responsible for the accurate and timely preparation of payroll, including the calculation of salaries, bonuses, social security contributions, and any other compensation components governed by collective agreements or individual contracts.
- **Labor Law Compliance:** The department ensures that all HR practices and employment conditions conform to the provisions of Algerian labor legislation, including Law No. 90-11 on employment relations and its subsequent amendments.
- **Performance Management and Employee Motivation:** The HR department also plays a role in designing and implementing performance evaluation systems, as well as developing incentive mechanisms aimed at enhancing employee engagement, productivity, and organizational commitment.

Figure 06: Organizational Chart of Sidal Gaz SPA



Alger le 15/12/2024

Le Directeur Général

The organizational chart of Sidal Gaz SPA reveals a multi-level hierarchical structure headed by the General Manager, from whom a set of advisory and supervisory units branch directly, including the Department of Information Technology and Information Systems, the Management Controller, the General Secretariat, the Human Resources Directorate, and the Legal Advisor. The operational structure is organized into six principal directorates: QHSE and Integrated Risk Management, Supply and Means, Industrial Operations, Commercial and Marketing, Finance and Accounting, and Technical. Notably, the Human Resources Directorate occupies a strategic position in direct subordination to the General Manager, reflecting the institutional importance attributed to human capital management within the organization's governance architecture. This chart was issued in its fourth revision on 07/10/2024, and the organization operates under a certified management system conforming to international standards ISO 9001, ISO 14001, and ISO 45001.

Section 02: Methodological Framework of the Study

In the course of conducting this study, we adopted a scientific methodology aimed at understanding the role of HR data analytics in supporting strategic decision-making within the organization. Throughout this chapter, we present the various stages followed in this research, beginning with the selection of the topic, moving through the definition of the methodology, and concluding with a presentation of the data collection and analysis tools employed.

1. Topic Selection

The Researcher's Perspective:

At the outset of this work, our interest was broadly oriented toward the subject of digital transformation in general, with particular focus on the extent to which modern technologies influence organizational performance and improve management practices. As students specializing in Human Resources Management, our interest was gradually directed toward examining how these digital transformations manifest specifically within the HR function.

As we deepened our engagement with the fieldwork, we observed that the HR function within organizations still relies, in certain cases, on traditional methods for collecting and processing

data — despite the availability of substantial volumes of information that could be more effectively exploited to support decision-making.

This observation reinforced our interest in the field of HR Analytics, recognized as one of the contemporary orientations that seeks to transform data into a strategic instrument for supporting organizational decisions, in alignment with our specialization in Human Resources Management and our academic and professional objectives.

2. Research Methods and Tools

Research Approach

This study adopts a **qualitative research approach**, which enables the understanding and analysis of phenomena through an examination of the perspectives and experiences of organizational actors.

1. Case Study Method

We employed the case study method by focusing on **Sidal Gaz** as the applied model for this research. This choice enabled us to engage closely with the actual reality of the organization, understand how HR data is managed internally, and assess the extent to which it is utilized in support of strategic decision-making.

2. Stages of the Applied Study

Stage One: Diagnosis of the Data Situation

At the outset of the fieldwork within the organization, we sought to understand how HR data was being managed. Through an initial assessment, it became apparent that the organization relied heavily on paper-based records for storing employee information. The majority of data was preserved in traditional files, which impeded accessibility and hindered its exploitation for analytical purposes or decision support. The existing digital database was highly limited, confined to basic information such as name, date of birth, and date of employment.

This stage made it clear that such a management model does not permit the effective utilization of data, nor does it provide an integrated and analyzable information base —

thereby highlighting the need to reorganize this data and transition it toward a more exploitable digital format.

Figure 07 : personnel data base (Excel) (Before)

N°	Nom	Prénom	Date Naissance	Fonction	Date recrutement
1	LAHZAOUILA	Asma	10/8/1991	DELEGUE COMMERCIAL	25/09/16
2	GACEM	BAHIA	1/30/1995	CHARGE ADMINISTRATIONS DES VENTES	09/10/23
3	BAGHALI	BELKACEM	9/16/1982	SOUS DIRECTEUR REGION EST	06/05/18
4	BEKKARI	ABDELMOUNEIM	4/5/1981	SOUS DIRECTEUR REGION OUEST	01/03/22
5	ABED	BOUALEM	7/5/1983	CONDUCTEUR UNITÉ DE PRODUCTION	20/07/10
6	AMRANI	SAID	6/1/1964	RESPONSABLE ADMINISTRATIF ET FINANCE	12/06/89
7	GHEZZALI	OUAHIBA	10/10/1981	RESP DEPARTEMENT AUTOR & APPROVISIONNEMENT	01/09/09
8	GUITOUNI	ZAHR	1/1/1980	CHAUFFEUR	13/09/08
9	HADJIAIDJI	NACER	6/3/1961	CHAUFFEUR	01/09/84
10	LABBASSEN	KHALED	12/29/1980	RESPONSABLE DEPARTEMENT MAINTENANCE	01/04/09
11	KACEL	MOHAMED	3/3/1977	RESP DEPARTEMENT OPERATION ACETYLENE	02/05/10
12	IEM	HAKIMA	4/21/1965	AGENT D'ENTRETIEN	08/04/06
13	MEKDOUD	ABDELAZIZ	1/4/1974	AIDE OPERATEUR	13/09/08
14	MOCKBEL	RIAD	1/29/1982	DIRECTEUR DES OPERATIONS ISDUSTRIELLES	25/04/10
15	OUZNAOUI	BOUDJEMA	6/30/1974	CARISTE	19/02/05
16	ROUANE	FERHAT	12/21/1980	AIDE OPERATEUR	08/02/04
17	TAHIR	AICHA	11/15/1978	GESTIONNAIRE DE STOCKS	02/09/02
18	OTMANI	NAAMANE	1/26/1981	CONDUCTEUR UNITÉ DE PRODUCTION	01/12/11
19	ZEMMAR	DIAMEL	4/9/1978	RESPONSABLE DEPARTEMENT ASU	01/12/11
20	BELGHALI	MOHAMED	1/6/1981	LOGISTICCIEN	01/07/12
21	DIABELLA	MOHAMED	10/27/1974	RESPONSABLE DEPARTEMENT LOGISTIQUE	02/09/12
22	BENMAAMER	MESSAOUD	5/19/1987	RESP.OPERATIONNEL CONDITIONNEM	04/11/12
23	BENFARDJALLAH	AHMED	1/24/1982	RESP DEPARTEMENT TECHN.CONTROL APP.A PRESS	14/10/12
24	MEKDOUD	ABDELAZIZ	1/4/1974	AIDE OPERATEUR	13/09/08
25	MOCKBEL	RIAD	1/29/1982	DIRECTEUR DES OPERATIONS ISDUSTRIELLES	25/04/10

Source: Human Resources Department of Sidal Gaz

Stage Two: Reconstruction of the Database

Following the diagnostic phase, we proceeded to rebuild the database by collecting all available data — whether in paper or digital form — and reorganizing it into a unified database. In this context, we designed a new database comprising **18 variables**, as opposed to the previously limited dataset, supplemented by analytically oriented information that allows for a deeper understanding of the HR situation within the organization.

Stage Three: Data Cleaning

After constructing the database, we worked to improve its quality through a **data cleaning process**, which involved treating missing values, eliminating duplicates, and correcting errors. This stage was essential to ensure the accuracy and reliability of results during the analysis phase.

Figure 08: Processing HR data on Excel (After)

Fonction	Date naissance	Date recrutement	Situation familiale	Sexe	Type contrat	Statut	Salaire	Département	Ancienneté	Performance
CONDUCTEUR UNITÉ DE PRODUCTION	9/11/63	30/3/2010	Marié	Homme	CDI	Actif	807500	Département des Opérations Industrielles et Production	7	1
RESPONSABLE ADMINISTRATIF ET FINANCIER	8/2/64	14/2/1993	Marié	Homme	CDI	Actif	102750	Département Finance et Comptabilité	16	1
RESP. DÉPARTEMENT ACHAT & APPROVISIONNEMENT	3/10/60	3/10/2003	Célibataire	Femme	CDI	Actif	129570	Département Approvisionnement & Moyens Généraux	13	1
CHÂUFFEUR	1/1/60	30/3/2009	Marié	Homme	CDI	Actif	183070	Département Approvisionnement & Moyens Généraux	21	1
CHÂUFFEUR	26/1/61	3/1/2004	Marié	Homme	CDI	Actif	20450	Département Approvisionnement & Moyens Généraux	16	1
RESPONSABLE DÉPARTEMENT MAINTENANCE	13/9/1960	4/2/2003	Marié	Homme	CDI	Actif	75430	Département Technique	12	1
RESP. DÉPARTEMENT OPERATION ACETYLENE	3/1/57	5/3/2010	Marié	Homme	CDI	Actif	112305	Département Technique	15	1
AGENT D'ENTRETIEN	6/2/1965	4/6/2006	Marié	Femme	CDI	Actif	67742	Département Approvisionnement & Moyens Généraux	24	1
AIDE OPERATEUR	4/11/74	9/12/2009	Marié	Homme	CDI	Actif	26590	Département des Opérations Industrielles et Production	3	1
DIRECTEUR DES OPERATIONS INDUSTRIELLES	12/9/63	4/2/2010	Marié	Homme	CDI	Actif	160480	Département des Opérations Industrielles et Production	16	1
CARISTE	16/10/57	27/8/2005	Marié	Homme	CDI	Actif	112305	Département Logistique et Stocks	14	1
AIDE OPERATEUR	13/1/1960	2/6/2004	Marié	Homme	CDI	Actif	75430	Département des Opérations Industrielles et Production	14	1
GESTIONNAIRE DE STOCKS	1/10/57	9/3/2002	Marié	Femme	CDI	En congé	118900	Département Logistique et Stocks	16	1
CONDUCTEUR UNITÉ DE PRODUCTION	15/10/60	12/1/2011	Marié	Homme	CDI	Actif	75430	Département des Opérations Industrielles et Production	11	1
RESPONSABLE DÉPARTEMENT ASU	3/10/70	12/1/2011	Marié	Homme	CDI	Actif	110365	Département Technique	4	1
LOGISTICIEN	1/1/1961	3/1/2005	Marié	Homme	CDI	En congé	105600	Département Commercial Marketing et Distribution	5	1
RESPONSABLE DÉPARTEMENT LOGISTIQUE	16/3/1974	30/3/2005	Marié	Homme	CDI	Actif	75430	Département Logistique et Stocks	3	1
RESP. OPERATEUR L. CONDITIONNEMENT	9/1/1967	1/10/2002	Marié	Homme	CDI	Actif	101750	Département des Opérations Industrielles et Production	16	1
RESP. DÉPARTEMENT TECH. CONTROL. APP. PRESS	14/4/1962	1/10/1992	Marié	Homme	CDI	Actif	112305	Département Technique	15	1
DIRECTEUR GENERAL	4/1/1952	1/10/1992	Marié	Homme	CDI	Actif	302200	Département Générale	1	1
RESPONSABLE DISTR. JALOUSIE DISTRIBUTION	13/12/60	27/1/2004	Marié	Homme	CDI	Actif	75430	Département Commercial Marketing et Distribution	4	1
RESPONSABLE SERVICE ADMINISTRATIF VENTE SET GESTION CLIENTS	3/10/71	4/1/2004	Marié	Homme	CDI	Actif	87742	Département Commercial Marketing et Distribution	14	1
CONDUCTEUR UNITÉ DE PRODUCTION	1/1/1960	11/2/2004	Marié	Homme	CDI	Actif	75430	Département des Opérations Industrielles et Production	7	1
CONDUCTEUR UNITÉ DE PRODUCTION	1/1/1966	13/2/2004	Marié	Homme	CDI	Actif	112305	Département des Opérations Industrielles et Production	11	1
RESPONSABLE DÉPARTEMENT CONTRÔLE QUALITE	1/10/1967	1/10/2005	Marié	Homme	CDI	Actif	75430	Département Qualité	9	1
RESPONSABLE ASSURANCE QUALITE	1/1/1965	1/10/2006	Marié	Homme	CDI	Actif	75430	Département Qualité	4	1
RESPONSABLE NATIONAL ACTIVITE INDUSTRIELLE	1/1/1961	1/1/2006	Marié	Homme	CDI	Actif	87742	Département des Opérations Industrielles et Production	16	1
CONDUCTEUR UNITÉ DE PRODUCTION	10/1/1962	1/10/2006	Marié	Homme	CDI	Actif	160480	Département des Opérations Industrielles et Production	2	1
CONDUCTEUR UNITÉ DE PRODUCTION	1/1/1965	1/10/2011	Marié	Homme	CDI	Actif	67100	Département des Opérations Industrielles et Production	17	1
MANAGÉRIAL	16/1/1974	27/1/2011	Marié	Homme	CDI	Actif	54177	Département Logistique et Stocks	2	1
MANAGÉRIAL EFFECTIF	12/5/1970	1/10/2007	Marié	Homme	CDI	Actif	124500	Département Technique	14	1

Source: Author's own elaboration based on internal data of Sidal Gaz

Stage Four: Data Analysis Using Power BI

Once the database was prepared, we used **Power BI** to analyze the data and extract HR-related indicators pertaining to the organization. This analysis enabled us to identify general data trends and provide a clearer picture of the HR situation within the institution.

Figure 09 : Importing and preparing data in Power BI

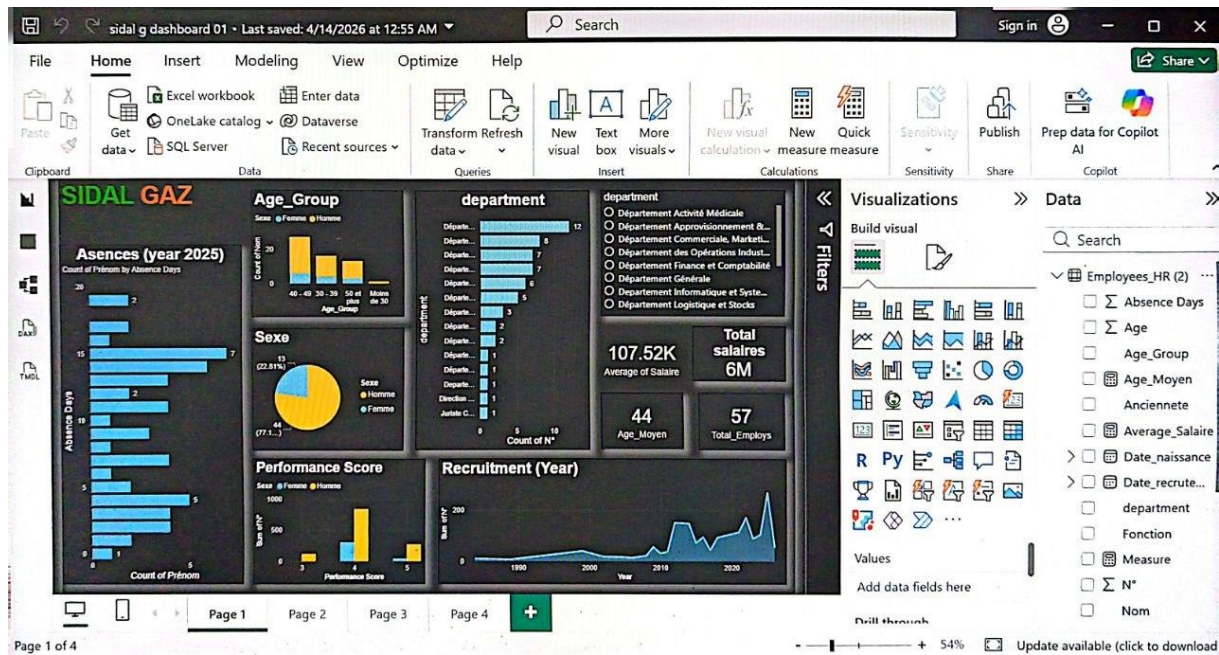
Source: Author's own elaboration using Power BI

Stage Five: Dashboard Design

Building on the results of the analysis, we designed an **interactive dashboard using Power BI**, with the objective of representing data visually in a format that is easy to read and interpret. This dashboard contributed to:

- Facilitating the reading of data
- Presenting indicators in a clear and accessible manner
- Supporting the decision-making process, including strategic decision-making

Figure 10 : HR (Dashboard) - SIDAL GAZ



Source: Author's own elaboration using Power BI

Stage Six: Exploitation of the Dashboard

We utilized the dashboard outputs to extract preliminary indicators that assist in understanding the HR situation within the organization. These indicators constitute the analytical foundation relied upon in **Chapter Three**, dedicated to results and discussion.

3. Data Collection Tools

- We relied on **semi-structured interviews** as the primary instrument for gathering qualitative information from decision-makers within the organization. This tool enabled us to obtain in-depth data regarding the actual use of data in the decision-making process.
- **Documentary Analysis**

Documentary analysis was adopted as data collection tool to build the empirical foundation of this study. The process was carried out in three deliberate phases:

Phase 1 — Identification and Access:

Relevant institutional documents were identified in collaboration with the HR Director. These included internal attendance records generated by the ZK Time Tiko system, payroll summaries, employee personal files, and periodic HR reports submitted to General Management.

Phase 2 Systematic Review:

Each document was reviewed using a structured reading grid to extract quantitative indicators (headcount, absence rates, payroll evolution, seniority distribution) and qualitative elements (language used in reports, frequency of updates, completeness of data fields). Special attention was given to identifying gaps—such as missing records, damaged paper files, and inconsistencies between paper archives and digital entries—as these gaps constitute analytically significant findings in themselves.

Phase 3 — Triangulation:

Findings from the documentary analysis were compared with interview data to verify consistency and identify contradictions, ensuring that conclusions were not drawn from a single source.

- **Observation**

A non-participant (indirect) observation method was used in this study. The researcher was present within the HR department at Sidal Gaz during the field visit for data collection on April 21, 2026, without intervening in, influencing, or participating in any work activities.

This type of observation was deliberately chosen to preserve the naturalness of workplace behavior. By remaining in the background, the researcher was able to observe the following dimensions:

- **Workflow and Data Access Practices:** How HR staff actually accessed and consulted data (paper files versus digital systems) during a typical working session, including the time required to locate specific documents.
- **Dashboard Interaction Behavior:** How the HR Director and HR Assistant navigated the dashboard, which indicators they consulted first, how they interpreted visual outputs, and whether they cross-checked dashboard data with paper archives.

- **Interpersonal Decision-Making Dynamics:** Informal interactions between the HR Director and the assistant during data retrieval tasks, revealing how reliance on experience versus data manifested in practice.
- **Physical Work Environment:** The volume and organization of paper archives, the condition of files (damaged, missing, or incomplete), and the spatial setup of digital workstations—all of which provided contextual evidence supporting the interview findings.

Observational notes were recorded in a structured field journal immediately after each observation session and were later used alongside interview transcripts and documentary analysis results.

4. Study Sample

This study employed a **census approach**, whereby all parties directly concerned with the subject of the research within the organization were targeted — without resorting to partial sampling from the research population.

The interviews encompassed all decision-makers related to the HR domain within the organization, namely: the **HR Director**, her **assistant**, and the **General Director** of the institution. This approach ensured comprehensive coverage of all relevant perspectives, thereby enhancing the accuracy, reliability, and analytical depth of the collected data.

N°	Job Title	Educational Level	Experience	Date	Duration	Mode
01	General Manager (Director General)	State Engineer in Chemical Engineering, MBA	More than 20 years	21/04/2026	55 min	In-person
02	Human Resources Director (DRH)	Master's in Human Resource Management	12 years (1 year in current institution)	21/04/2026	1h 38min	In-person
03	Assistant HR Manager (HR Department Assistant)	Master's in Human Resource Management	5 years	21/04/2026	40 min	In-person

Source: Prepared by the researcher, Gacem Mostafa, based on field interviews conducted at Sidal Gaz (April 2026)

5 Epistemological Position:

This research adopts an Interpretivist epistemological position. Since the study follows a qualitative approach to explore the role of HR analytics in strategic decision-making, it seeks to understand the phenomenon through the subjective experiences and perspectives of the participants within Sidal Gaz. Instead of looking for universal laws, this position allows the researcher to interpret the complex meanings behind how human resource data is utilized in real-world organizational contexts.

6. Interview Analysis

Following the collection of field data, the interviews were transcribed and analyzed using **NVivo software**, through the application of **Thematic Analysis**, which involved:

- Coding the data
- Classifying responses
- Extracting key thematic axes

7. Interview Guide

We developed an **interview guide** comprising open-ended key questions linked to the study's thematic axes, following the semi-structured interview approach (**Blanchet & Gotman, 2007**). This guide was used as a directional instrument during the conduct of interviews to ensure the comprehensiveness of the data collected.

The five thematic axes are linked to the two study variables: **HR Data Analytics** (independent variable) and **Strategic Decision-Making** (dependent variable).

The interviews were conducted **in-person** within the organization's premises.

-This guide has been included in the appendices of the thesis.

Chapter Three:

Presentation and Discussion of Results

This chapter presents the empirical core of the study. It is organized into two complementary sections that together answer the main research question — How does HR Analytics support and improve the quality of strategic decision-making at Sidal Gaz, Algiers? — and its four subsidiary questions. Section One presents the results obtained from the thematic analysis of three semi-structured interviews conducted with the HR Director, the General Manager, and the HR Assistant, as processed through NVivo software. Section Two then discusses and interprets these results in light of the study's research questions and the theoretical framework established in Chapter One.

Section 01: Presentation of Results:

1. Analytical Framework: NVivo Thematic Coding Matrix

The first step in the analysis was the systematic thematic coding of all three interview transcripts within NVivo. The coding process was structured around five major thematic nodes that directly correspond to the interview guide axes. Each node was subdivided into specific analytical sub-nodes, producing a total of 21 coding categories. The matrix below presents the frequency of coded references for each interviewee within each node.

Table 4 — NVivo Thematic Coding Matrix: Frequency of References per Interviewee

Theme / Node	HR Director (A)	Gen. Manager (B)	HR Asst. (C)	Total
1. Institutional & Organizational Context				
<i>Description of Organization & Departments</i>	3	1	1	5
<i>Decision-Making Levels &</i>	2	2	1	5

<i>Participants</i>				
2. HR Data Analytics Practices				
<i>Data Sources Used</i>	2	1	1	4
<i>Types of Data Analyzed</i>	1	1	1	3
<i>The Analytical Dashboard</i>	2	1	1	4
<i>Data Reliability and Quality</i>	1	1	1	3
3. Comparative Analysis: Before & After Dashboard				
<i>Data Management Before Dashboard</i>	1	2	2	5
<i>Transformation After Dashboard Adoption</i>	1	3	1	5
4. Impact on Strategic Decision-Making				
<i>Information Clarity & Decision Accuracy</i>	1	1	1	3
<i>Speed & Efficiency in Decision-Making</i>	1	1	1	3
<i>Enhancing Decision Objectivity</i>	1	1	1	3
<i>Performance Indicators & Strategic Alignment</i>	2	1	1	4

5. Challenges and Barriers				
<i>Data Quality & Availability Problems</i>	2	0	1	3
<i>Human & Cultural Challenges</i>	2	1	1	4
<i>Technical Challenges</i>	1	1	1	3
<i>Sustainability & Competency Challenges</i>	2	1	0	3

Source: Prepared by the researcher, Gacem Mostafa

Reading across the matrix, several patterns emerge. The node 'Transformation After Dashboard Adoption' generated the highest concentration of references from the General Manager (3), reflecting the strategic weight he assigns to this development. The HR Director produced the densest coding in the 'Challenges and Barriers' cluster, consistent with her daily operational exposure to implementation obstacles. The HR Assistant showed a relatively balanced distribution across all themes, suggesting an integrated view of both operational and strategic realities. Overall, the themes of comparative analysis (before/after) and impact on decision-making attracted the highest aggregate reference counts — confirming their centrality to the study's research questions.

2. Word Frequency Analysis

A word frequency query was executed across the aggregated corpus of all three transcripts using NVivo's text-mining function. Morphological variants were collapsed into conceptual clusters (e.g., 'decide', 'decision', 'decisions' counted together). The table below presents the fifteen most salient clusters, ranked by raw occurrence count.

Table 5 — Word Frequency Query Results: Top Conceptual Clusters Across All Interviews (NVivo Output)

Rank	Conceptual Cluster	Count	Weighted %	Variant Forms Included
1	data	116	4.20%	data
2	decisions	111	4.02%	decision, decisions
3	managing	47	1.70%	manage, managed, management, manager
4	making	42	1.52%	make, makes, making
5	institution	42	1.52%	institution, institutional, institutions
6	dashboard	38	1.38%	dashboard, dashboards
7	experience	37	1.34%	experience
8	information	32	1.16%	information, informational
9	department	28	1.01%	department, departments
10	using / tools	27 / 25	0.98% / 0.90%	used, uses, using / tool, tools
11	strategic	25	0.90%	strategic, strategically
12	adoption	22	0.80%	adopt, adopted, adopting, adoption
13	personal / objectivity	20 / 20	0.72% each	person, personal / objective, objectivity
14	system(s)	18	0.65%	system, systems

15	level(s) / indicators / helped / general	17 each	0.62% each	Multiple variants
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Source: Prepared by the researcher, Gacem Mostafa

The two most frequent clusters — '**data**' (116 occurrences, 4.20%) and '**decisions**' (111 occurrences, 4.02%) — confirm that the entire interview corpus revolves around the relationship between data and decision-making, which is precisely the study's central research question. The third-ranked cluster, '**managing/management**' (47 occurrences), situates this relationship within an organizational governance context. Notably, '**dashboard**' (38 occurrences) and '**experience**' (37 occurrences) appear in close proximity in the ranking — a co-occurrence that reflects the tension between the new analytical tool and the long-standing reliance on personal experience that runs through all five interview themes. The parallel frequency of '**personal**' and '**objectivity**' (both 20 occurrences) is particularly revealing: it captures the core epistemological challenge that this study addresses — how to reconcile subjective professional experience with objective data-driven analysis.

Figure 11 : Word Frequency Cloud — NVivo Output Across All Three Interviews



Source: Prepared by the researcher, Gacem Mostafa

The word frequency cloud presented above offers a visual representation of the dominant conceptual clusters identified across the three interview transcripts. The prominence of **decisions**, **managing**, and **data** at the centre of the cloud corroborates the quantitative findings reported in Table (2), confirming that the discourse of all three participants revolves fundamentally around the relationship between data availability and decision-making quality. Secondary clusters — notably **information**, **institution**, **dashboard**, **experience**, and **strategic** — reflect the principal thematic axes structuring the analytical framework of this chapter. The visual contrast between high-frequency terms rendered in larger, darker typography and peripheral terms of lower recurrence provides an intuitive map of the conceptual priorities that animate the Sidal Gaz case.

3. Theme 1 — Institutional and Organizational Context

All three interviewees described an organization that operates in Algeria's industrial gas sector under a hierarchical yet consultative management model. The General Manager oversees three interconnected levels of responsibility — strategic, operational, and representational — and adopts a consultative approach before committing to major decisions. The HR Department functions as a core support unit managing recruitment, payroll, attendance, performance evaluation, and legal compliance.

Decision-making is distributed according to importance: routine operational decisions are handled within the HR Department, while significant structural or strategic decisions require the involvement of General Management. The HR Director articulated the underlying principle clearly: decisions rest on both regulatory frameworks and empirical information — the more precise the data, the more accurate the decision. This distributed architecture creates both an opportunity and a structural need for coherent, real-time information flows, which is exactly the gap that the HR analytics dashboard was designed to address.

4. Theme 2 — HR Data Analytics Practices at Sidal Gaz

4.1 Data Sources and Types of Information Used

Prior to the study's intervention, the organization's HR data infrastructure was fragmented across three main sources: paper employee archives, an attendance system based on ZK Technology, and ad-hoc Excel spreadsheets with no standardized template. The types of data routinely collected included attendance and absence records, payroll data, and basic personal

information (name, date of birth, date of employment). Crucially, career path data was described by the HR Director as either entirely absent or damaged, with retrieval requiring several days of manual file sifting.

At the level of General Management, data access was even more constrained. The General Manager received only aggregate figures — total headcount, payroll totals, and general absence rates — through periodic narrative reports that he described as 'mostly descriptive in nature, lacking quantitative depth.' He noted a recurring discrepancy between verbal briefings and written reports, which added a layer of uncertainty to his strategic planning. This structural data deficit at the apex of the organization represents the most consequential dimension of the pre-analytics situation.

4.2 The HR Analytics Dashboard as a Central Tool

The primary applied contribution of this study was the design and deployment of an interactive Power BI dashboard, built upon a fully reconstructed database of 18 human variables. This dashboard functions as the mediating instrument between raw HR data and strategic decision-making across four dimensions: accuracy, speed, objectivity, and strategic alignment. The key indicators integrated into the dashboard include absence rates and their temporal distribution, employee performance scores, HR distribution by department and seniority segment, age and educational structure of the workforce, and wage bill evolution. KPIs were identified by the HR Director as the 'cornerstones of the dashboard.'

This is further confirmed by the General Manager himself, who described his experience with the dashboard as follows: "I describe it as a step toward the managerial maturity we needed. For the first time, as General Manager, I have a tool that gives me immediate access to HR indicators in a clear visual manner without having to wait for manually prepared reports" (General Manager, Sidal Gaz, 21/04/2026).

4.3 Data Reliability Assessment

All three interviewees expressed reservations about the reliability of the pre-existing HR data. The HR Assistant described it as 'not highly reliable' and sometimes insufficient. The HR Director pointed to damaged archives and the absence of a unified data entry protocol as

compounding sources of inaccuracy. The General Manager offered the most direct assessment:

"HR data is the weakest link in the institution's management information system. Over fifteen years of management, I have learned that good decisions are built on good information, and that gaps in information inevitably lead to gaps in decisions." — **General Manager (B)**

This acknowledgment from the institutional apex validates the study's core intervention logic: an analytics infrastructure is not merely a technological enhancement but a governance necessity.

5. Theme 3 — Comparative Analysis: Before and After the Dashboard

5.1 Data Management Before the Dashboard

All three participants described the pre-dashboard period in consistent terms of opacity, slowness, and decision uncertainty. The prevailing approach combined paper archives — described as 'easily damaged,' 'requiring high concentration to navigate,' and subject to loss — with unsystematized Excel spreadsheets. The HR Director summarized the situation as one in which the department had no reliable picture of staff turnover rates or wage bill evolution. The decision-making process during this period was characterized as 'very slow and imprecise, built on intuition and past experience due to the absence of reliable data.'

The General Manager provided the most concrete illustration of the consequences: he recalled a decision regarding the internal restructuring of departments that had to be postponed for months because the competency distribution and workload data required to support it could not be assembled quickly enough — a delay he described as 'costly from an organizational standpoint.' Similarly, strategic recruitment planning was hampered by the absence of clear age distribution data showing which employees were approaching retirement.

5.2 Transformation After Dashboard Adoption

The post-dashboard period was described in markedly contrasting terms across all three interviews.

The HR Director captured this shift in concrete terms:

"The dashboard represented a qualitative leap in our approach to data analysis. We went from confusion to clarity — we now know exactly the staff turnover rate and the evolution of the wage bill." (HR Director, Sidal Gaz, 21/04/2026)

The HR Director characterized the transition as 'a qualitative leap — from confusion to clarity,' and noted that the dashboard had converted 'abstract language into the language of numbers.' The General Manager described it as 'a step toward the managerial maturity we needed,' and highlighted a fundamental change in the nature of his discussions with the HR Department:

"They have become analytical discussions focused on interpreting indicators and drawing strategic conclusions, rather than debates about the accuracy of numbers and how they were collected." — **General Manager (B)**

The following table summarizes the most concretely measurable transformation — the change in information access time reported by each participant:

Table 6 — Comparison of Information Access Times Before and After Dashboard Adoption

Interviewee & Role	Access Time — BEFORE Dashboard	Access Time — AFTER Dashboard
HR Director (A)	Hours to several days — manual archive search required	Under 1 minute with a single click
General Manager (B)	3 days to 2 weeks depending on report complexity	Instant access to all key indicators
HR Assistant (C)	1 hour to half a day or more per data request	A few minutes at most

Source: Prepared by the researcher, Gacem Mostafa

These figures illustrate a transformation of several orders of magnitude. The shift from days or weeks to minutes or seconds represents not merely a time saving but a qualitative change in the decision-making architecture — enabling real-time deliberation within meetings rather than deferred decision cycles pending data collection.

6. Theme 4 — Impact of HR Analytics on Strategic Decision-Making Quality

6.1 Decision Accuracy and Information Clarity

All three interviewees confirmed improvements in decision accuracy attributable to the dashboard. The HR Director provided a concrete example: the dashboard directly guided decisions related to the training program currently being planned, enabling the team to align training interventions with empirically identified competency gaps rather than anecdotal observations. The HR Assistant similarly reported that certain decisions — including the reorganization of training opportunities — were adjusted after reviewing dashboard data.

The General Manager nuanced his response by noting that the dashboard had not yet led to reversed decisions, given its short operational life, but confirmed that it had 'added new dimensions to my strategic thinking' — dimensions he had previously sensed intuitively but lacked the quantitative evidence to substantiate or communicate to others. This distinction between changed decisions and enriched strategic thinking captures an important dimension of analytics value that is often overlooked in quantitative impact assessments.

6.2 Speed and Efficiency in Decision-Making

The speed dimension produced the most quantifiable findings of the study. As illustrated in Table 6, information retrieval times were compressed dramatically across all three levels of the organization. The General Manager's shift from a three-day to two-week waiting period for analytical reports to instant dashboard access fundamentally altered the rhythm of strategic deliberation. The HR Director confirmed that 'with a single click, data on various individuals within the institution can now be gathered,' and the HR Assistant reported that 'a few minutes is now enough to find any information we need.'

Beyond raw time savings, participants noted a qualitative change in the decision-making process itself. The General Manager observed that he could now 'hold data-grounded discussions in the meeting itself' rather than postponing decisions pending data preparation —

a shift that reduces both decision latency and the risk of decisions made under informational pressure.

6.3 Objectivity in Decision-Making

The objectivity dimension generated the most epistemologically nuanced findings. All three interviewees affirmed that data availability enhanced the objectivity of their decisions; however, each qualified this affirmation with a sophisticated account of the relationship between data and experience. The General Manager articulated a 'confirmation bias liberation' dynamic: when data is clear and comprehensive, 'it becomes difficult to ignore — even when it contradicts our expectations.

He elaborated on the precise limits of experience when confronted with complex data:

"When decision variables multiply and become intertwined, experience alone becomes insufficient — and may even be misleading — because it amplifies what we have lived through at the expense of what we have not yet seen. Accurate data does not negate experience; it corrects and deepens it." (General Manager, Sidal Gaz, 21/04/2026)

The HR Director introduced a complementary framework: 'numbers tell us what happened, but experience tells us why it happened.' She illustrated this with a scenario where the dashboard suggested a promotion for an employee while experiential judgment indicated behavioral unreadiness — a conflict she resolved by combining both signals: promote the employee while providing targeted training. The HR Assistant, with shorter organizational experience, described leaning more toward data as an 'objective reference point' while acknowledging that experience 'adds another dimension that data alone cannot reach.'

Across all three accounts, a consistent meta-framework emerges: data does not replace judgment but disciplines it, reducing the risk of unconscious bias while preserving the interpretive depth that professional experience provides.

6.4 Performance Indicators and Strategic Alignment

The strategic alignment dimension produced some of the richest findings of the study. The HR Director described a qualitative shift from reactive to proactive decision-making: 'Previous decisions were purely reactive, whereas now every decision taken by the HR

Department is closely tied to a strategic objective. The dashboards have given us the opportunity to identify the various gaps that may affect the achievement of our goals, guiding us to address deviations and take the necessary corrective measures.'

The General Manager's contribution was the most strategically elaborate. He framed the dashboard's value through the foundational strategic question it enables: 'When we set a strategic objective — such as developing a new production line — the fundamental first question is: Do we have the human competencies necessary to achieve it? Well-analyzed HR data is what answers this question accurately and makes the strategy realistic and executable.' His specific focus on age distribution and seniority concentration data reflects a forward-looking approach to succession planning that purely operational data management systems cannot support. He articulated the broader transformation as one that 'shifts management from merely managing the present to genuinely leading the future.'

7. Theme 5 — Challenges and Obstacles in HR Analytics Adoption

7.1 Data Quality and Availability Problems

The most frequently cited practical challenge across all three interviews was the incompleteness and inconsistency of the underlying HR data. The HR Director emphasized the cascading effects of damaged archives: not only do they render certain data points unrecoverable, but they also generate a 'constant state of doubt about data credibility' among users of the system. Human errors during data entry were identified as an additional source of risk, mitigated by a procedural control requiring all data to be entered and then verified by a second person before being accepted into the dashboard.

7.2 Human and Cultural Challenges

Organizational resistance to data-driven decision-making was identified by all three participants, though framed differently by each. The General Manager identified the deepest challenge as cultural: 'instilling in all officials the conviction that documenting and regularly updating information is not an administrative burden, but an investment in decision quality.'

The HR Director identified two more specific cultural phenomena. First, the tendency of experienced staff to distrust dashboard outputs — preferring their own judgment over what

they perceive as impersonal numbers. Second, a 'surveillance fear' dynamic in which some employees view data collection as a punitive monitoring tool, leading them to conceal or alter original data — which directly compromises the integrity of the analytics system. The General Manager proposed a gradual persuasion strategy: positioning data as amplifying rather than supplanting experience, so that veteran staff do not feel their authority is being challenged.

7.3 Technical Challenges

Technical difficulties were reported at all three organizational levels, though their nature differed. At the operational level, the HR Assistant cited difficulties using systems and insufficient training, addressed through progressive self-learning and external support requests. At the departmental level, the HR Director identified fear of data entry errors as the primary concern, mitigated by the dual-verification procedure described above. At the strategic level, the General Manager identified the most structurally consequential limitation: the absence of an integrated HR Information System that automatically feeds the dashboard with live, continuously updated data.

He stated this explicitly:

"The fundamental technical difficulty we face is the absence of an integrated HR information system that automatically feeds the dashboard with live, up-to-date data. Relying on manual data entry perpetuates the risks of error." (General Manager, Sidal Gaz, 21/04/2026)

and means the dashboard's analytical output is only as current as the most recent manual update.

7.4 Sustainability and Competency Challenges

Beyond immediate implementation challenges, both the HR Director and General Manager raised concerns about long-term sustainability. The absence of staff trained specifically in HR analytics tools was identified as a significant competency gap. The General Manager elevated this to a strategic priority: 'ensuring the continuity and development of work with these tools' is, in his view, the second major challenge after data culture development. The HR Director noted 'difficulty adapting to modern software and tools' as an ongoing barrier, suggesting that the competency gap is not static but requires continuous investment in capacity building.

Section 02: Discussion of Results:

The following discussion interprets the empirical findings of this study in light of the existing theoretical and empirical literature on HR analytics and strategic decision-making. Rather than treating prior research as a validation endpoint, the discussion positions it as the analytical framework through which the Sidal Gaz findings are examined, extended, and — where relevant — qualified.

1. Main Research Question: HR Analytics and Strategic Decision Quality

The relationship between HR analytics adoption and improved decision outcomes has been extensively documented in the international literature. Marler and Boudreau (2017) established that organizations with structured data governance frameworks demonstrate measurably better HR decision outcomes, arguing that analytics shifts human resource management from an intuition-driven practice to an evidence-based discipline. Building on this foundation, Elugbaju et al. (2025) demonstrated that modern analytics platforms enhance the interpretive accessibility of HR information across hierarchical levels, enabling each tier of management to engage with data in ways that are relevant to its specific decision-making responsibilities.

The findings at Sidal Gaz both confirm and deepen these contributions. The Power BI dashboard developed for this study operationalized the analytics function across four interdependent dimensions — accuracy, speed, objectivity, and strategic alignment — by converting fragmented and narratively encoded HR data into structured, visually accessible, and strategically interpretable information. What the Sidal Gaz case adds to the existing literature is a demonstration that meaningful analytics capacity can be built even from a severely fragmented data foundation — a starting condition not adequately addressed in studies conducted in more digitally mature organizational environments.

Convergent evidence from all three hierarchical levels reinforces this conclusion. At the strategic apex, the General Manager gained instant access to indicators that had previously required weeks to compile, enabling real-time analytical deliberation and forward-looking succession planning. At the departmental level, the HR Director reported a shift from reactive,

intuition-based decisions to proactive, indicator-driven choices aligned with institutional objectives. At the operational level, the HR Assistant confirmed enhanced objectivity and decisional speed. Taken together, these accounts confirm that HR analytics functions as a structural upgrade to the decision-making architecture of the organization — not by replacing human judgment, but by informing, disciplining, and accelerating it.

2. Data Transformation into Decision-Supporting Information

The question of how raw data becomes decision-supporting information is central to the HR analytics literature. Diez, Bussin, and Lee (2019) proposed a framework in which this transformation is conceived as a multi-stage process: raw data acquires strategic value only through structured analytical processing and contextual interpretation — a process that is simultaneously technical, cognitive, and organizational. Their framework implies that the quality of the transformation depends not merely on the tools used, but on the degree to which the resulting information is interpretable by, and relevant to, the specific roles and responsibilities of its intended users.

The five-stage transformation documented at Sidal Gaz operationalizes and extends this framework in a concrete institutional setting. In the first stage, raw data was recovered and reconstructed from damaged paper archives and inconsistent Excel files into a unified database of 18 variables. In the second stage, this data was cleaned and standardized using Power Query. In the third stage, the cleaned data was imported into Power BI and structured into analytical dimensions. In the fourth stage, visual dashboards were designed to present key indicators in an immediately interpretable format. In the fifth stage, these indicators were accessed and discussed by decision-makers at different hierarchical levels during management meetings and daily operations.

The critical insight emerging from the interviews at Sidal Gaz — and one that enriches the Diez et al. (2019) framework — is that the transformation is not merely technical but epistemological. The HR Director's account of the shift 'from confusion to clarity' and 'from abstract language to the language of numbers' illustrates precisely the cognitive dimension that Diez et al. identified theoretically: data becomes decision-supporting information only when it is structured in a way that resonates with the decision-maker's interpretive context.

The Sidal Gaz case gives this insight empirical texture and institutional grounding that the existing literature has not yet fully developed.

3. HR Analytics Tools and Their Contribution to Decision Quality

The contribution of specific analytics tools to HR decision quality has been examined from multiple angles in the literature. Tuli, Sachani, and Vennapusa (2024) demonstrated that structured analytics platforms improve talent management decisions by providing evidence-based insights that reduce reliance on unverified intuition. Dvulit, Zaverbnyy, and Tyliipska (2019) showed that KPI-based HR management enables alignment between human capital decisions and long-term strategic objectives, arguing that the value of analytics lies not in the volume of data it generates but in the strategic relevance of the indicators it foregrounds.

The findings at Sidal Gaz confirm these contributions while adding an important contextual dimension. Prior to the study's intervention, the tools in use were limited to ZK Technology for attendance recording and uncoordinated Excel spreadsheets for data storage — a configuration that generated data without enabling analysis. The introduction of Power BI, integrated with a reconstructed database of 18 HR variables and incorporating KPIs related to absence rates, performance scores, workforce demographics, seniority distribution, and wage bill evolution, transformed this configuration fundamentally.

The contribution of these tools to decision quality operated at three levels that map directly onto the Tuli et al. (2024) and Dvulit et al. (2019) frameworks. At the descriptive level, the dashboard provided clear visual representations of the current HR situation that had previously been either unavailable or requiring days to compile — validating Tuli et al.'s emphasis on interpretive accessibility. At the quasi-predictive level, trend indicators enabled the General Manager to anticipate future competency succession risks — validating Dvulit et al.'s argument about strategic alignment. At the operational level, the HR Assistant's enhanced ability to provide objective, data-grounded proposals to superiors illustrates the cross-hierarchical value that both frameworks identify as central to analytics-driven HR management.

4. Challenges Facing HR Analytics Implementation

The challenges of implementing HR analytics in organizations with underdeveloped data infrastructures have been systematically examined in the literature. Zaoui, Moussa, and Khaldi (2020) documented the specific barriers facing HR information system adoption in Algerian organizations, identifying paper-based archival practices, limited digitalization infrastructure, and hierarchical organizational cultures as the primary structural obstacles. Their analysis positions Algeria as a context in which the preconditions for analytics adoption — data quality, digital literacy, and institutional commitment — are frequently absent or unevenly developed.

The findings at Sidal Gaz corroborate and extend this analysis across four interconnected challenge categories. The first — data quality and availability — directly reflects the conditions Zaoui et al. (2020) described: damaged archives, inconsistent data entry practices, and the absence of an integrated HRIS created a fragile data foundation that required substantial reconstruction before any analytics could be built upon it. The second — human and cultural resistance — manifests the hierarchical conservatism that Zaoui et al. identified, expressed at Sidal Gaz through the valorization of personal experience over data-driven evidence and the perception of data as a surveillance mechanism.

The third challenge — technical limitations including insufficient training and the absence of automated data feeds — reflects a systemic gap between the analytics ambition and the operational infrastructure available to sustain it. The fourth — sustainability — points to the most strategically significant finding: the risk that the benefits demonstrated by the study remain dependent on the research intervention rather than becoming institutionally self-sustaining.

Where the present study adds to Zaoui et al. (2020) is in the identification of the 'surveillance fear' dynamic as a distinct and analytically significant challenge. Beyond generic resistance to change, some employees actively distorted their data entries out of concern that accurate records would be used for disciplinary purposes — a behavior that directly undermines data integrity and, by extension, the reliability of any analytics built upon it. This finding introduces a data ethics dimension that the existing Algerian HR literature has not yet fully addressed.

5. Integration of HR Analytics into Strategic Decision-Making Practices

The process by which HR analytics becomes embedded in organizational decision-making practices has been theorized by Ngo Ndjama (2025), who proposed a model of progressive adoption in which data evolves from a reporting tool to a deliberative resource — one that structures and informs professional judgment without mechanically determining it. This model implies that integration is a developmental process, shaped by organizational hierarchy, individual receptiveness, and the maturity of the analytics infrastructure.

The findings at Sidal Gaz provide a detailed empirical instantiation of this model. The mode of integration differs by hierarchical level in ways that are consistent with Ngo Ndjama's framework. The General Manager uses the dashboard primarily as a strategic scanning tool — accessing age distribution and absence data to inform medium-term workforce planning and succession strategy. He has not yet reversed a specific decision based on dashboard data, but reports that the indicators have enriched his strategic thinking in ways that were previously unsupported by quantitative evidence — precisely the early-stage adoption dynamic that Ngo Ndjama describes.

The HR Director has achieved the deepest integration: she uses KPI dashboards and recruitment and absenteeism indicators as reference points for both routine and complex decisions, and explicitly reports that previous decisions were purely reactive while current decisions are tied to strategic objectives — a transition that maps directly onto the intermediate stage of Ngo Ndjama's adoption continuum. The HR Assistant's use of the dashboard primarily to accelerate data retrieval and provide more objective proposals reflects the operational integration stage that Ngo Ndjama identifies as the entry point for analytics adoption.

The most theoretically significant finding in this section — and one that extends rather than merely confirms Ngo Ndjama's model — is the convergent articulation, by all three participants, of a synergistic rather than substitutive relationship between data and experience. Data disciplines experience by reducing confirmation bias and providing objective anchoring, while experience disciplines data by providing the interpretive context needed to read indicators accurately. This reciprocal dynamic, absent from Ngo Ndjama's framework, represents an original contribution of the present study to the understanding of how HR analytics is integrated into professional judgment in practice.

6. Situating the Findings in the Algerian Organizational Context

Zaoui, Moussa, and Khaldi (2020) positioned Algeria as a context in which the structural preconditions for data-driven HR management — integrated information systems, digital literacy, and a culture of evidence-based decision-making — remain nascent relative to international benchmarks. Their analysis implies that the benefits of HR analytics, well-documented in Western and East Asian organizational contexts, cannot be assumed to transfer straightforwardly to Algerian institutions without substantial contextual adaptation.

The Sidal Gaz case both validates and qualifies this position. It validates the diagnosis: the data infrastructure deficits, cultural conservatism, and competency gaps documented in this study are consistent with the systemic conditions Zaoui et al. (2020) described. It qualifies the implied pessimism: the study demonstrates that a management team that is intellectually receptive to analytics-driven governance can achieve meaningful results even from a severely fragmented starting point, provided adequate methodological investment is made.

The resource investment required — including database reconstruction, data cleaning, platform design, and user training — is non-trivial and underlines a finding with direct policy implications: external research support cannot substitute for institutional commitment to sustainable data governance. The General Manager's identification of data culture development and long-term tool sustainability as the two primary strategic challenges facing the institution points to precisely the organizational dimensions that determine whether the benefits documented in this study endure beyond the research intervention itself — and whether the Sidal Gaz experience can serve as a replicable model for comparable Algerian industrial organizations..

7. General Synthesis

The overarching finding of this study may be stated as follows: HR Analytics, as implemented through the Power BI dashboard at Sidal Gaz, functions not as a replacement for managerial experience and judgment but as a disciplining and enriching structure that makes the exercise of that judgment more informed, faster, more objective, and more strategically coherent. The General Manager's formulation captures this synthesis most precisely:

"Accurate data does not negate experience; it corrects and deepens it." —
General Manager (B)

This synthesis resolves the tension between data-maximalist and experience-preservationist positions that surfaces in both the theoretical literature and the empirical accounts of this study. The most organizationally productive relationship between data and experience is synergistic: data provides the empirical anchoring that prevents experience from becoming self-confirming bias, while experience provides the interpretive depth that prevents data from being read in ways that are technically accurate but contextually naive.

The path forward for Sidal Gaz involves three interdependent axes of development. The first is technical consolidation — migrating from manual data entry and reconstruction to an integrated HRIS that automatically and continuously populates the analytics dashboard. The second is competency development — systematically training HR and management staff in analytics tools, statistical reasoning, and data governance practices. The third is cultural transformation — institutionalizing data-literacy as a professional expectation and normalizing data-informed deliberation as the default mode of strategic management. Together, these axes define the maturation trajectory of HR analytics adoption: from the interventionist, research-enabled deployment documented in this study toward a self-sustaining, organizationally embedded analytics culture.

Conclusion

This study set out to investigate how Human Resource Analytics (HR Analytics) supports and improves the quality of strategic decision-making, using Sidal Gaz, Algiers, as a case study. Conducted through a qualitative approach and grounded in a six-stage applied methodology — ranging from initial data diagnosis through database reconstruction, data cleaning, Power BI analysis, dashboard design, and dashboard exploitation — the research has produced findings that are both theoretically coherent and practically significant.

The empirical investigation confirmed that HR Analytics, as operationalized through the Power BI dashboard developed for this study, substantively supports strategic decision-making across four interdependent dimensions: accuracy, speed, objectivity, and strategic alignment. Prior to the analytics intervention, Sidal Gaz's HR data infrastructure was characterized by fragmented paper archives, limited digital databases, and ad-hoc Excel spreadsheets — a situation that rendered data retrieval slow, unreliable, and strategically unusable. Decision-making at all organizational levels was therefore predominantly reactive, intuition-based, and informationally constrained. The General Manager himself identified HR data as 'the weakest link in the institution's management information system.'

Following the implementation of the Power BI dashboard — built upon a reconstructed database of 18 human variables — the transformation was measurable and significant. Information retrieval times were compressed from days or weeks to seconds. Decision discussions shifted from debates about data accuracy to analytical deliberations focused on interpreting indicators. The HR Director reported a qualitative shift from reactive, intuition-based choices to proactive, indicator-driven decisions explicitly aligned with institutional objectives. Across all three hierarchical levels — the General Manager, the HR Director, and the HR Assistant — a consistent meta-framework emerged: data does not replace managerial judgment but disciplines and enriches it. The General Manager's formulation encapsulates this synthesis most precisely: 'Accurate data does not negate experience; it corrects and deepens it.' This synergistic relationship between data-driven analysis and professional experience constitutes the study's most theoretically significant finding.

Regarding the research questions, the main question — How does HR Analytics support and improve the quality of strategic decision-making at Sidal Gaz? — received a multi-dimensional affirmative answer. The dashboard functioned as a structural upgrade to the

organization's decision-making architecture, not by replacing human judgment but by making its exercise more informed, faster, more objective, and more strategically coherent. The sub-questions were addressed in turn: the study revealed a five-stage data transformation process from raw recovery through visualization and strategic interpretation; Power BI — integrated with KPIs on absence, performance, demographics, seniority, and payroll — operated simultaneously at descriptive, quasi-predictive, and strategic alignment levels; four interconnected categories of challenges were identified — data quality and availability deficits, human and cultural resistance, technical limitations, and sustainability gaps, several of which are specific to the Algerian institutional context; and an emerging but still partial integration of analytics into decision-making practices was documented, varying by hierarchical level and following a progressive trajectory from data as a reporting tool toward data as a deliberative resource.

This study makes several contributions at different levels. At the theoretical level, it contextualizes global HR Analytics frameworks within the Algerian industrial setting, demonstrating that meaningful analytics capacity can be built from a severely fragmented data foundation. At the methodological level, it proposes and tests an applied six-stage HR analytics methodology adaptable to organizations with limited initial data infrastructure. At the empirical level, it provides rich qualitative evidence — triangulated across three organizational levels — of the mechanisms through which HR Analytics improves decision quality, with particular attention to the data-experience complementarity dynamic. At the practical level, it delivers a functional Power BI dashboard and a reconstructed HR database that constitute immediately usable tools for the organization's ongoing strategic management.

Several limitations must nonetheless be acknowledged. The study is based on a single-organization case study, which limits statistical generalizability to other Algerian or international contexts. The qualitative approach, while appropriate for the exploratory objectives, does not allow quantitative measurement of the precise impact of the dashboard on organizational performance outcomes. The dashboard's short operational life at the time of data collection means that its long-term effects on decision quality could not be assessed. Finally, the reliance on manual data entry — in the absence of an integrated HRIS — introduces ongoing vulnerabilities in data reliability that the study could document but not resolve.

On the basis of the findings, the following recommendations are addressed to Sidal Gaz and, by extension, to comparable Algerian industrial organizations:

- **Technical consolidation:** Migrate from manual data entry and periodic reconstruction to an integrated Human Resource Information System (HRIS) that automatically and continuously feeds the analytics dashboard with live data, eliminating manual bottlenecks and associated error risks.
- **Competency development:** Design and implement a structured training program in HR analytics tools, statistical reasoning, and data governance for HR professionals and relevant management staff, ensuring that the analytical capacity demonstrated in this study does not remain contingent on external research support.
- **Cultural transformation:** Institutionalize data literacy as a professional expectation at all organizational levels, and reframe data collection as an investment in decision quality rather than an administrative burden or a surveillance mechanism — addressing the two principal cultural barriers identified in the study.
- **Dual-verification protocol:** Generalize the data entry dual-verification procedure identified during the study to all HR data entry operations, as a standard quality control measure that mitigates the risk of input errors without requiring technological upgrades.
- **Strategic review integration:** Formally incorporate dashboard indicators into periodic strategic review meetings, ensuring that HR analytics outputs are systematically linked to organizational planning cycles rather than used on an ad-hoc basis.

This study also opens several productive avenues for future research. A longitudinal study of Sidal Gaz would allow assessment of whether the benefits documented here are sustained and deepened over time, and whether the cultural and technical challenges identified are progressively resolved. A multi-case comparative study across several Algerian industrial organizations would enable more robust conclusions about the sector-level and national-level determinants of HR Analytics adoption. Quantitative research designs measuring the correlation between HR Analytics implementation and specific organizational performance indicators — such as turnover rates, training effectiveness, or recruitment time — would complement the qualitative insights produced here. Finally, research specifically focused on the ‘surveillance fear’ dynamic identified in this study — its prevalence, its organizational

drivers, and effective institutional responses — would contribute to both the HR analytics and the organizational behavior literatures.

In conclusion, this study demonstrates that HR Analytics is not a luxury reserved for large, technologically advanced organizations. It is, rather, a governance necessity — accessible even to medium-sized industrial enterprises operating in challenging data environments — that fundamentally transforms the quality, speed, and strategic coherence of human resource decision-making. The path from fragmented archives to analytical governance is demanding but navigable, and the case of Sidal Gaz illustrates both its challenges and its rewards.

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APPENDICES

Appendix A — Individual Semi-Structured Interview

Individual Semi-Structured Interview Guide

The Role of HR Data Analytics in Supporting Strategic HR Decision-Making

Case Study: Sidal Gaz – Algeria

Date:		Start Time:	
End Time:		Interviewee:	
Job Title:		Researcher:	
Directorate:		Contact Mode:	In-person / Remote

- ☐ Research Ethics Notice
- ✓ The information collected will be used exclusively for academic research purposes.
 - ✓ Your identity will remain strictly confidential and will not be disclosed in any research document.

PART ONE: Objectives and Introduction

1.1 Researcher Introduction

The researcher introduces themselves, their academic background, and the purpose of the study.

1.2 Research Presentation

The researcher presents the research topic, the adopted methodology (qualitative approach), and the main objectives.

1.3 Interviewee Introduction – Professional Profile

Job Title	
Total Years of Experience	
Years in Current Position	
Educational Level	
Prior experience with data analytics in other organizations?	Yes / No
Role in decision-making	

PART TWO: Interview Themes

Opening Question

Before we begin, could you give me a general overview of your professional career within the organization and the nature of your daily work in the field of human resources?

Note: These themes may vary depending on the interviewee's profile and position.

Theme 1: Functional and Organizational Context

How does your department operate, and what are your main responsibilities?

What decision-making tasks are associated with your position?

How is the decision-making process carried out within your department? Who is involved?

Theme 2: HR Data and Tools Used

What are the main sources of HR data you rely on?

What types of data are used (performance, absences, salaries, etc.) and how is it accessed?

Regarding digital tools in use:

Do you currently use digital tools to manage HR data? Since when?

We understand that the organization uses the ZKTEKOAT system for attendance recording — how do you utilize the data from this system in your work?

Are there other digital tools you use? How effective are they in supporting HR management?

Do you consider this data to be reliable and sufficient? What leads you to that assessment?

Theme 3: HR Management Before and After Dashboard Adoption

Introductory Note: As part of this study, the researcher developed an analytical HR data dashboard for your organization. We will now discuss two periods: before and after the use of this tool.

Before the Dashboard:

How was HR data managed before this tool was adopted?

What difficulties did you encounter when dealing with paper archives or traditional tools?

How did the absence of digital analysis affect the decision-making process during that period?

After Dashboard Adoption:

How would you describe your experience using the dashboard to analyze HR data?

What are the most important indicators you rely on through this dashboard?

How has this tool helped you better understand the HR situation within the organization?

Theme 4: Impact of HR Data Analytics on Strategic Decision-Making**A. Decision Accuracy**

Have you ever changed a decision after reviewing data from the dashboard? Please give a concrete example.

How do you compare a decision based on accurate data versus one based solely on personal experience?

B. Speed and Efficiency in Decision-Making

Has the dashboard helped you speed up the decision-making process? How so?

How long did it take you to access a specific piece of information before and after using the tool?

C. Decision Objectivity

How does data availability affect the level of objectivity in your decisions?

Has it ever happened that you postponed a decision due to insufficient data? Tell me about that.

How do you handle a conflict between what the data indicates and what personal experience suggests?

D. Strategic Alignment of Decisions

How does HR data help you align your decisions with the organization's strategic objectives?

Have you noticed a difference in the degree of alignment between decisions and the organization's strategic direction since adopting digital analytics?

Theme 5: Challenges and Obstacles

What are the main challenges you face in using HR data?

What organizational or cultural barriers limit the adoption of data-driven decisions?

Do you face technical difficulties? How do you handle them?

Note: This guide is based on open-ended main questions, supplemented by follow-up probing questions as the interview progresses, with the aim of deepening and clarifying responses.

Appendix B — Field Observation Grid (Sidal Gaz)

HR Analytics Research | Data Collection Tool
Case Study: Sidal Gaz — HR Data Management & Strategic Decision Support

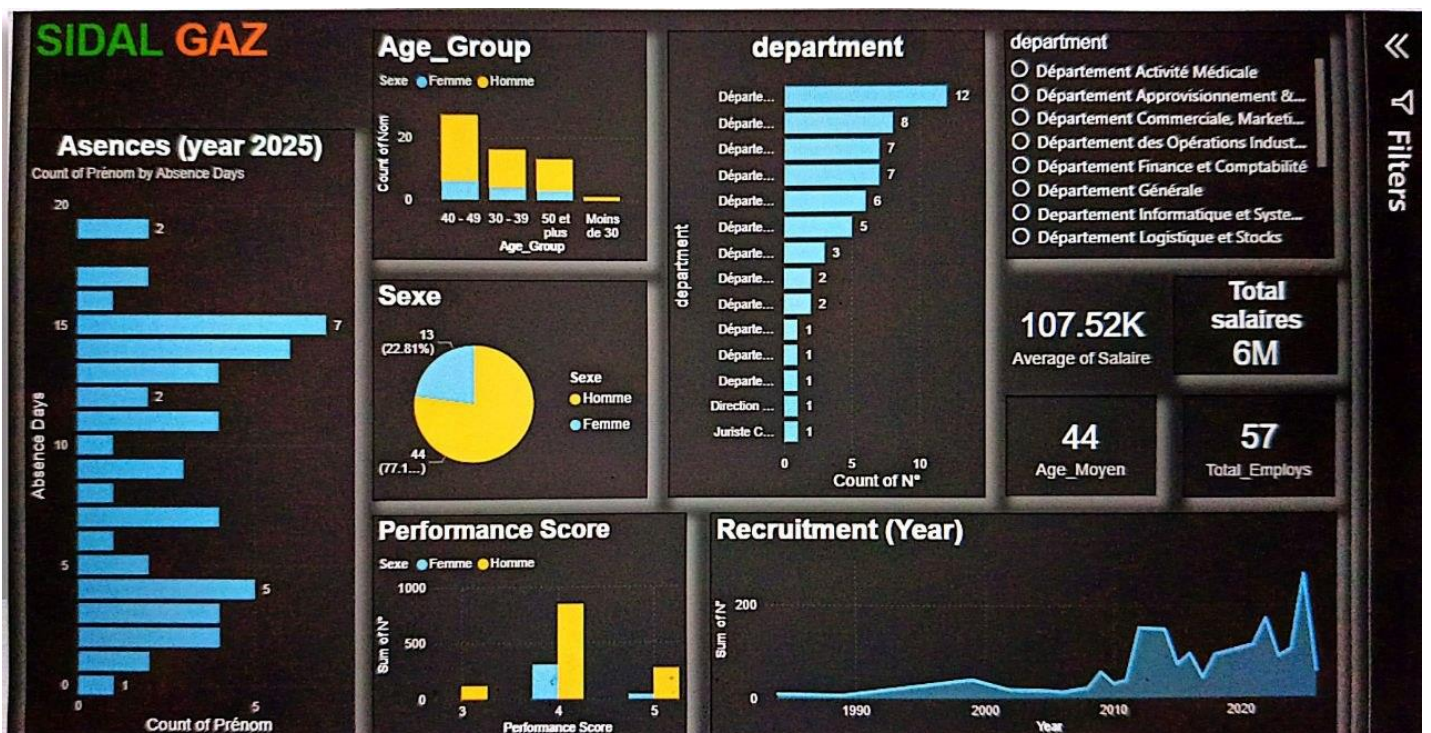
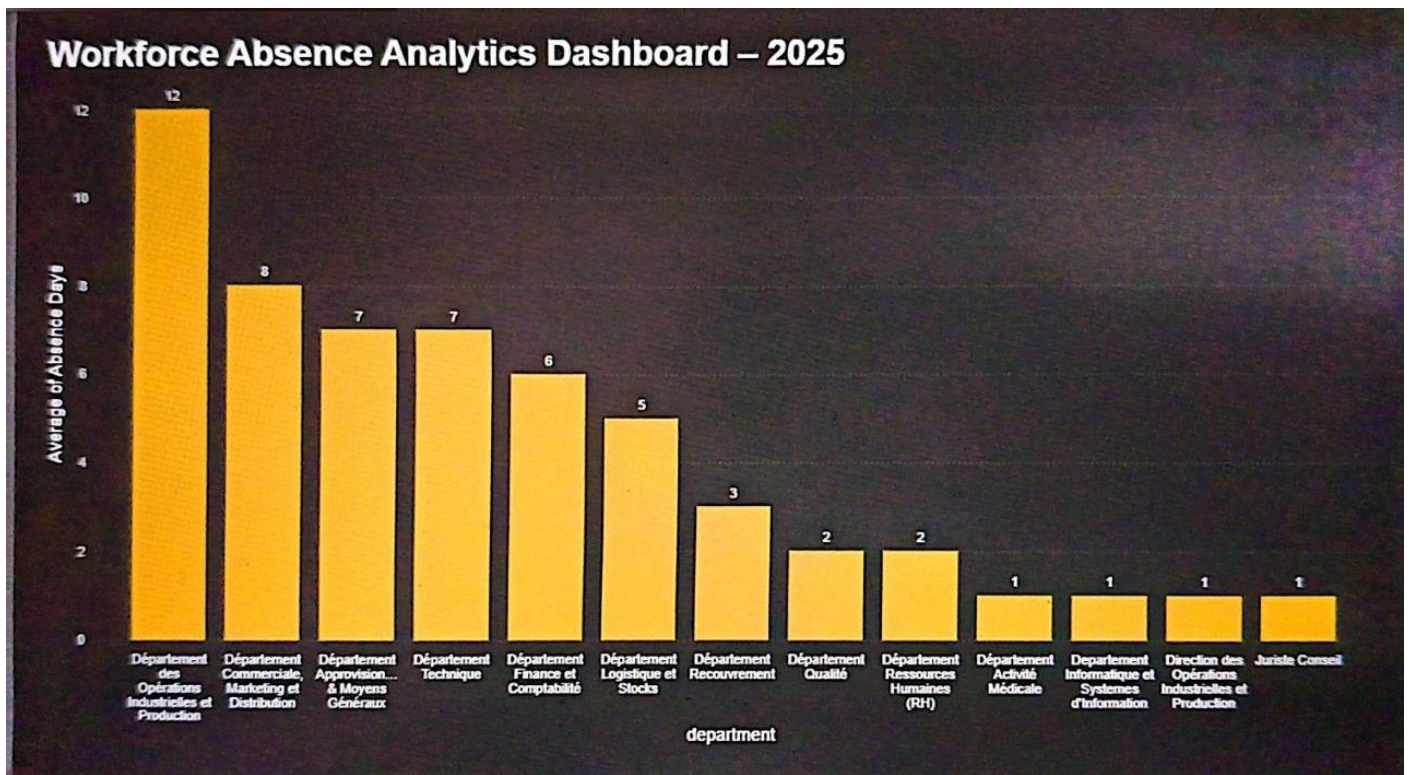
Observer: Gacem Mostafa | **Company:** Sidal Gaz | **Period:** March 15 – April 30, 2026 | **Type:** Direct non-participatory observation

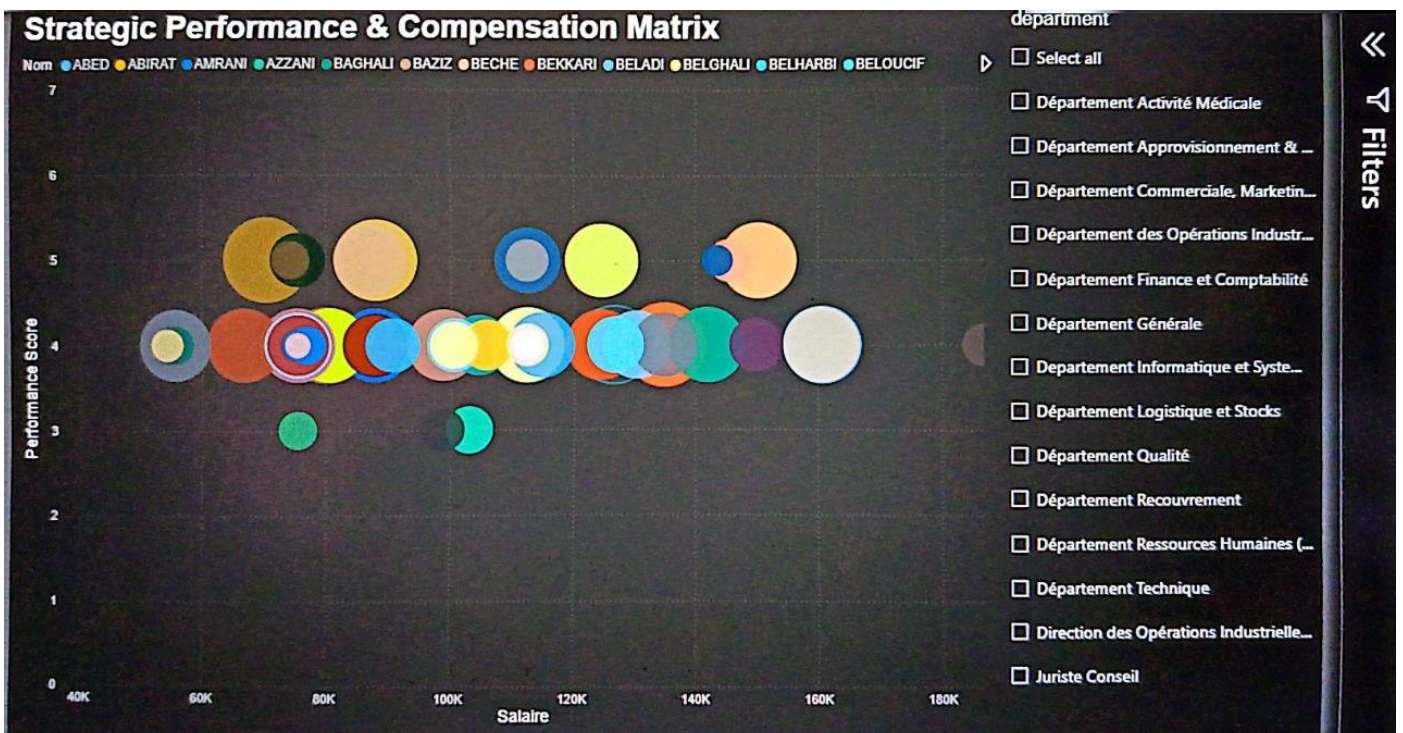
Objective: To observe and document how HR data is practically managed and utilized within Sidal Gaz, in order to complement and validate findings obtained through documentary analysis.

Observation Axis	Elements Observed	Notes / Findings	Link to Research Objective
HR Data Management	How HR data is collected, stored, and updated internally	HR data is collected mainly through paper forms and transferred manually to Excel spreadsheets. No integrated HRIS is in use. Files are stored on shared local drives without standardized naming, making retrieval slow and error-prone.	Identifies the current limitations in HR data infrastructure that justify the need for an HR analytics dashboard.
Decision-Making Process	How managers use HR data to make strategic decisions	Managerial decisions (promotions, workforce planning, training) rely largely on direct supervisor judgment. HR analytics tools are not yet systematically integrated into decision-making at all levels.	Highlights the gap between available HR data and its actual use in strategic decision support — a core research problem.
Dashboard Usage	How the HR dashboard is consulted in daily operations	No formal dashboard exists. Key indicators (absenteeism, turnover, headcount) are tracked in separate Excel files and consulted on an ad hoc basis rather than through a unified visual tool.	Directly motivates the construction of the HR dashboard proposed in this research as a practical solution.
Inter-departmental Communication	Flow of HR information between departments	HR data is shared via email and printed reports. There is no real-time data sharing. Finance and Operations request HR data periodically, but the lack of integration creates delays	Reveals organizational communication barriers that an integrated HR analytics

Observation Axis	Elements Observed	Notes / Findings	Link to Research Objective
		and inconsistencies.	system could address.
Employee Performance Tracking	Methods used to monitor and evaluate employee performance	Annual performance evaluations use standardized paper forms, archived physically. No digital performance tracking system exists, limiting trend analysis and real-time decision-making based on performance data.	Underscores the absence of performance analytics — a key HR analytics component addressed in the proposed dashboard.
Tools & Technology	Software and digital tools used for HR analytics	Microsoft Excel is the primary tool. No dedicated HR analytics software (SAP HR, Workday, Power BI) was observed. The proposed dashboard directly addresses this technological gap.	Confirms the technological gap and validates the relevance of the HR analytics dashboard as a research contribution.

Appendix C — Power BI HR Dashboard Outputs





Appendix D — NVivo Analysis Outputs (Coding Matrix & Word Frequency

NVivo
sidal gaz interview.nvp

Quick Access

IMPORT

Data

Files

File Classifications

Externals

ORGANIZE

Coding

Codes

Sentiment

Relationships

Relationship Types

Cases

Notes

Memos

Framework Matrices

Annotations

Codes

Name	Files	Referen	Created on	Created by	Modified on	Modified by
Impact of HR Analytics on Strategic Decision-	0	0	4/29/2026 12:4	GACEM MOS	4/29/2026 12:4	GACEM MOS
Speed and Efficiency in Decision-Making	3	3	4/29/2026 12:4	GACEM MOST	4/29/2026 7:08	GACEM MOST
Performance Indicators and Strategic Align	3	4	4/29/2026 12:4	GACEM MOST	4/29/2026 7:06	GACEM MOST
Improving Information Clarity and Decision	3	3	4/29/2026 12:4	GACEM MOST	4/29/2026 7:04	GACEM MOST
Enhancing Decision Objectivity	3	3	4/29/2026 12:4	GACEM MOST	4/29/2026 7:05	GACEM MOST
HR Data Analytics Practices	0	0	4/29/2026 12:3	GACEM MOS	4/29/2026 12:3	GACEM MOS
Types of Data Analyzed	3	3	4/29/2026 12:3	GACEM MOST	4/29/2026 7:00	GACEM MOST
The Analytical Dashboard	3	4	4/29/2026 12:3	GACEM MOST	4/29/2026 7:02	GACEM MOST
Data Sources Used	3	4	4/29/2026 12:3	GACEM MOST	4/29/2026 6:59	GACEM MOST
Data Reliability and Quality	3	3	4/29/2026 12:3	GACEM MOST	4/29/2026 7:03	GACEM MOST
Comparative Analysis Before and After the Das	0	0	4/29/2026 12:4	GACEM MOS	4/29/2026 12:4	GACEM MOS
Transformation After Dashboard Adoption	3	5	4/29/2026 12:4	GACEM MOST	4/29/2026 7:11	GACEM MOST
Data Management Before the Dashboard	3	5	4/29/2026 12:4	GACEM MOST	4/29/2026 7:10	GACEM MOST
Challenges and Barriers to HR Analytics	0	0	4/29/2026 12:4	GACEM MOS	4/29/2026 12:4	GACEM MOS
Technical Challenges	3	3	4/29/2026 12:4	GACEM MOST	4/29/2026 7:12	GACEM MOST
Sustainability and Competency Challenges	2	3	4/29/2026 12:5	GACEM MOST	4/29/2026 5:56	GACEM MOST
Human and Cultural Challenges	3	4	4/29/2026 12:4	GACEM MOST	4/29/2026 7:14	GACEM MOST
Data Quality and Availability Problems	2	3	4/29/2026 12:5	GACEM MOST	4/29/2026 7:15	GACEM MOST

GACEM MOSTAFA 21 Items

NVivo
sidal gaz interview.nvp

Quick Access

IMPORT

Data

Files

File Classifications

Externals

ORGANIZE

Coding

Codes

Sentiment

Relationships

Relationship Types

Cases

Cases

Case Classifications

Notes

Memos

Cases

Name	Files	References	Modified on	Modified by	Classification
DRH	1	6	4/29/2026 9:14 PM	GACEM MOSTAFA	Interviewee Profile
GM	1	7	4/29/2026 9:14 PM	GACEM MOSTAFA	Interviewee Profile
HR_Assistant	1	5	4/29/2026 9:15 PM	GACEM MOSTAFA	Interviewee Profile

GACEM MOSTAFA 3 Items

The screenshot shows the NVivo Matrix view. The left sidebar contains the project name 'sidal gaz interview.nvp' and a 'Quick Access' menu with options like Sentiment, Relationships, and Relationship Types. The main window displays the 'Matrix' tab with a search for 'text excerpt'. The 'Query Results' section shows a list of items with their counts. The 'Matrix Criteria' section shows the search criteria. The 'Matrix' table displays the results for the search.

	A DRH	B GM	C HR Assistant
1. Challenges and Barriers to HR Analytics	0	0	0
2. Data Quality and Availability Problems	2	0	1
3. Human and Cultural Challenges	2	1	1
4. Sustainability and Competency Challenges	2	1	0
5. Technical Challenges	1	1	1
6. Comparative Analysis	0	0	0
7. Data Management Before	1	2	2
8. Transformation After Data	1	3	1
9. HR Data Analytics Practices	0	0	0
10. Data Reliability and Quality	1	1	1
11. Data Sources Used	2	1	1
12. The Analytical Dashboard	2	1	1
13. Types of Data Analyzed	1	1	1
14. Impact of HR Analytics	0	0	0
15. Enhancing Decision Making	1	1	1
16. Improving Information	1	1	1
17. Performance Indicators	2	1	1
18. Speed and Efficiency	1	1	1
19. Institutional and Organizational	0	0	0

At the bottom, it shows 'GACEM MOSTAFA 6 Items Cell content: Coding references count % Unfiltered'.

The screenshot shows the NVivo Coding view. The left sidebar is the same as the Matrix view. The main window displays the 'Coding' tab with a search for 'text excerpt'. The 'Query Results' section shows a list of items with their counts. The 'Coding Criteria' section shows the search criteria. The 'Coding' table displays the results for the search.

Reference 1 - 0.90% Coverage

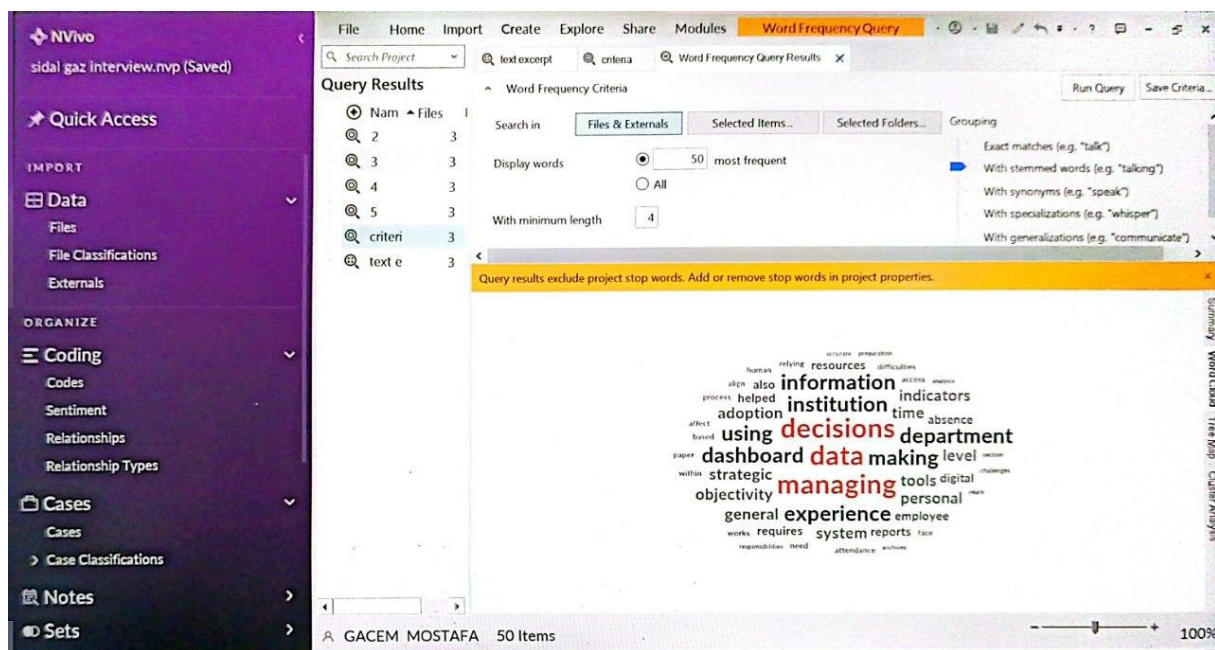
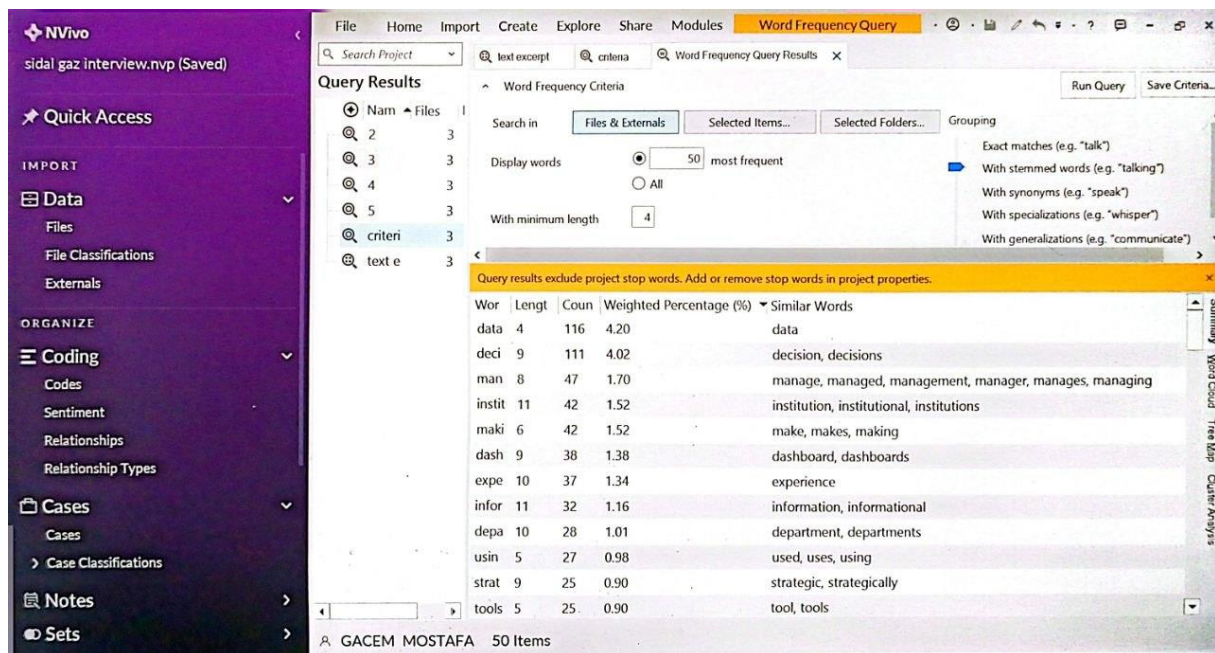
Paper archives are in themselves a problem — they are easily damaged or lost, and sorting through them takes a great deal of time and effort, affecting the department's activity and decision-making.

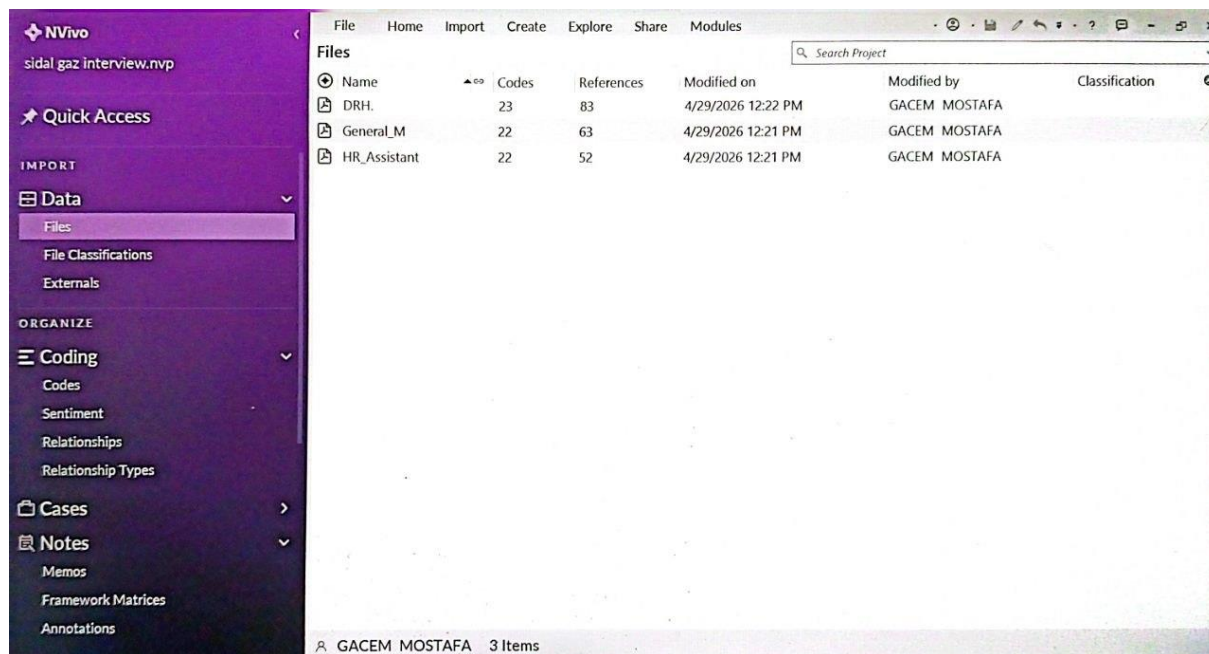
Reference 2 - 0.99% Coverage

Human errors that may occur when entering data. • Lack of data due to damage to some documents, which leads to errors. • The challenge of maintaining a balance between experience and data to ensure fair decisionmaking.

Reference 3 - 0.22% Coverage

At the bottom, it shows 'GACEM MOSTAFA 6 Items Files: 3 References: 13 % Unfiltered'.





Appendix E — Verbatim table

Institution: Sidal Gaz | Date: 21 April 2026 | Researcher: GACEM Mostafa

For each interview question, the table provides a unified synthesis of the three interviewees' responses, followed by each individual verbatim extract attributed to its source.

Interview Question	Synthesised Responses of the Three Interviewees
AXIS 1: PROFESSIONAL AND ORGANIZATIONAL CONTEXT	
How does your department operate? What are your main responsibilities?	The three interviewees converge on a clear division of roles: General Management sets strategy and monitors performance; the HR department manages the full employee lifecycle; and the HR Assistant supports data collection and report preparation. [General Manager] <i>"The General Management oversees all departments comprehensively. I set the general strategic direction, monitor operational performance, and represent the institution with partners and regulatory bodies."</i> [HR Director] <i>"The HR department works to provide the institution with human resources at the right time, manages career paths through annual performance evaluations, recruits and retains competencies, prepares payrolls, and ensures compliance with Algerian legislation."</i> [HR Assistant] <i>"The HR department manages everything related to employees from recruitment through career development. Tasks are divided among administrative management, attendance monitoring, payroll preparation, and performance evaluation."</i>
What decision-making tasks are associated with your position?	All three interviewees describe a hierarchical decision architecture: routine operational decisions are handled at department level, while strategic decisions escalate to General Management. [General Manager] <i>"Decisions span three levels: major strategic decisions (investment, expansion, partnerships); organizational decisions (restructuring, appointing officials); and urgent decisions exceeding the authority of other departments."</i> [HR Director] <i>"Routine decisions — leave approval, attendance monitoring, payroll review — are made daily. Complex strategic</i>

Interview Question	Synthesised Responses of the Three Interviewees
	decisions, such as workforce planning and adopting new technologies, are made in coordination with the General Manager." [HR Assistant] "My role is more closely tied to supporting the decision-making process — I contribute to data collection and report preparation, and participate in making proposals based on this data."
How is the decision-making process carried out? Who participates?	The three interviewees consistently describe a consultative, bottom-up process where data and expertise from multiple levels feed into final decisions made at the appropriate hierarchical level. [General Manager] "Before any strategic decision, I listen to the viewpoints of relevant officials, ask them to present their data and proposals, then conduct my own assessment before making the final decision." [HR Director] "Decisions combine the legal-administrative and technical dimensions. Department heads participate in routine decisions; the General Manager participates in major strategic decisions. Decisions are based on personal experience and on data — the more accurate the information, the more precise the decisions." [HR Assistant] "The process is participatory. It begins with gathering information, which is then discussed within the department, especially with the HR Manager. For strategic decisions, General Management is involved."
AXIS 2: HR DATA AND TOOLS USED	
What are the main sources of HR data you rely on?	All three interviewees identify the same fragmented data infrastructure: paper archives, inconsistent Excel spreadsheets, and an attendance system — with no integrated digital HR system. [General Manager] "Historically, HR information came through periodic reports — mostly narrative and descriptive, lacking

Interview Question	Synthesised Responses of the Three Interviewees
	quantitative depth. I sometimes noticed a discrepancy between verbal reports and written documents." [HR Director] <i>"The institution relies on paper archives, attendance records, and Excel spreadsheets used on an ad-hoc and inconsistent basis — there is no single standardised template followed."</i> [HR Assistant] <i>"We rely on employee files, the attendance system, payroll data, and performance reports as the essential foundation for understanding the institutional situation."</i>
Are you currently using digital tools to manage HR data?	The three interviewees agree that digital tool adoption has been limited and inconsistent. The ZK Time Tiko attendance system is the only shared digital tool, while Excel usage remains uncoordinated. [General Manager] <i>"Prior to this study, digital tools in HR had limited impact. I had raised the issue in management meetings, but costs and lack of clear priority kept delaying the project."</i> [HR Director] <i>"We use the ZK Time Tiko system to record attendance. Excel is also used, but each employee uses their own method — there is no standardised template."</i> [HR Assistant] <i>"The institution relies on Excel, with each employee preparing spreadsheets in their own way. There is also a digital attendance registration system using ZK technology."</i>
Do you consider this data reliable and sufficient?	All three interviewees express clear reservations about data reliability. The General Manager's assessment is the most direct, describing HR data as a systemic weakness. [General Manager] <i>"HR data is the weakest link in the institution's management information system. Over fifteen years of management, I have learned that gaps in information inevitably lead to gaps in decisions."</i> [HR Director] <i>"Paper archives are easily damaged or lost, and sorting through them takes a great deal of time. A simple mistake caused by distraction can lead to problems and wrong decisions."</i> [HR Assistant] <i>"In general, the data is not highly reliable,</i>

Interview Question	Synthesised Responses of the Three Interviewees
	<i>especially that extracted from digital systems. In some cases it may be insufficient or in need of updating."</i>
AXIS 3: HR MANAGEMENT BEFORE AND AFTER ADOPTING THE DASHBOARD	
How was HR data managed before adopting the dashboard?	The three interviewees unanimously describe a traditional, paper-based system characterised by inefficiency, time loss, and vulnerability to errors. [General Manager] <i>"It was managed in the traditional way prevalent in many Algerian institutions — a mix of paper archives and some scattered Excel spreadsheets."</i> [HR Director] <i>"Each employee still has their own paper file. Searching for a single document requires considerable effort and wastes a great deal of time, as it entails going through one file after another."</i> [HR Assistant] <i>"Data was managed in a traditional manner relying on paper files and Excel, making quick information access difficult and increasing the possibility of errors."</i>
What difficulties did you face when dealing with paper archives?	The interviewees' accounts converge on three core difficulties: time loss, vulnerability of documents to damage and loss, and the inevitable human error under fatigue. [General Manager] <i>"The most significant difficulty was the slowness of information response. When I urgently needed data, the HR department would need days to prepare it — which forced decisions under incomplete information."</i> [HR Director] <i>"Paper archives are easily damaged or lost. Searching requires high concentration, but fatigue and the sheer volume of paperwork can cause an employee's concentration to wane, negatively affecting work outcomes."</i> [HR Assistant] <i>"The main difficulties were: difficulty accessing information quickly, significant time consumption, and the possibility of errors during manual data handling."</i>
How would you describe	All three interviewees describe the dashboard as a qualitative

Interview Question	Synthesised Responses of the Three Interviewees
your experience using the dashboard?	turning point. Their accounts converge on greater clarity, speed, and a shift toward evidence-based discussion. [General Manager] <i>"A step toward the managerial maturity we needed. For the first time, discussions with the HR department have become analytical — focused on interpreting indicators and drawing strategic conclusions, rather than debating the accuracy of numbers."</i> [HR Director] <i>"The dashboard represented a qualitative leap. We went from confusion to clarity — we now know exactly the staff turnover rate and the evolution of the wage bill. It converted abstract files into the language of numbers."</i> [HR Assistant] <i>"Our experience was positive — information became organized and easy to access, and we now have a clearer view of the HR situation, enabling more precise decisions."</i>
What are the most important indicators you rely on through this dashboard?	The three interviewees prioritise complementary indicators: the General Manager focuses on strategic risk indicators (age, seniority), while HR operational staff focus on absenteeism, performance, and turnover. [General Manager] <i>"I pay particular attention to age distribution and seniority indicators — they alert me to risks of losing competencies in the medium term — and to absence indicators, given their direct impact on productivity."</i> [HR Director] <i>"KPI (Key Performance Indicators) are the cornerstones of the dashboard, in addition to recruitment and absenteeism indicators that allow us to determine the staff turnover rate."</i> [HR Assistant] <i>"The most important indicators are: the absence rate, employee performance levels, and HR distribution across the institution."</i>
AXIS 4: IMPACT OF HR ANALYTICS ON STRATEGIC DECISION-MAKING	
Have you ever changed a decision after reviewing	The HR Director and HR Assistant confirm concrete decision adjustments (notably in training planning), while the General

Interview Question	Synthesised Responses of the Three Interviewees
data from the dashboard?	Manager notes that the tool's recency limits direct assessment — though it has already enriched strategic thinking. [General Manager] <i>"No — the dashboard is still relatively new. However, the indicators accessed have added new dimensions to my strategic thinking that I previously lacked sufficient quantitative evidence to substantiate."</i> [HR Director] <i>"Yes — the dashboard guided us prior to making decisions related to the training programme currently being planned. The data revealed what experience alone could not confirm."</i> [HR Assistant] <i>"Yes, we adjusted certain decisions after reviewing the data — for example, reorganizing training opportunities and restructuring the training programme."</i>
How do you compare a decision based on data versus one based solely on personal experience?	All three interviewees agree that data-based decisions are more objective. However, the General Manager and HR Director emphasise that experience remains essential as a complement to — not a replacement for — data. [General Manager] <i>"When decision variables multiply and become intertwined, experience alone becomes insufficient — and may even be misleading. Accurate data does not negate experience; it corrects and deepens it."</i> [HR Director] <i>"Decisions based on personal experience tend to be subjective. In contrast, decisions based on accurate data are characterised by complete impartiality and objectivity."</i> [HR Assistant] <i>"Given my relatively short experience, I lean more toward data. However, observing my manager's working style showed me that experience adds a dimension that data alone cannot reach."</i>
Has the dashboard helped you speed up the decision-making process?	All three interviewees confirm a dramatic reduction in information retrieval time — from days or hours to minutes — enabling faster and more confident decision-making. [General Manager] <i>"I used to postpone decisions while waiting</i>

Interview Question	Synthesised Responses of the Three Interviewees
	<i>for data. Today I can view key indicators instantly and hold data-grounded discussions in the meeting itself."</i> [HR Director] <i>"Before the tool, it would take hours and sometimes days to find information. Now, one minute is enough to find any information we need."</i> [HR Assistant] <i>"Before the dashboard, collecting information ranged from one hour to half a day or more. After adoption, it usually takes no more than a few minutes."</i>
How does data availability affect the level of objectivity in your decisions?	The three interviewees converge on the view that data availability is a direct driver of objectivity, reducing the influence of personal bias and preconceived notions in the decision-making process. [General Manager] <i>"Accurate data frees management from the unconscious tendency to seek information confirming existing inclinations. When data is clear and comprehensive, it is difficult to ignore — even when it contradicts expectations."</i> [HR Director] <i>"Decisions based on dashboard results are distinguished by objectivity and credibility — not influenced by personal ideas or preconceived notions, giving them a high degree of accuracy."</i> [HR Assistant] <i>"Data availability has helped make decisions more objective and reduces biases, providing a more reliable reference point especially for someone in my position."</i>
How do you handle a conflict between data and personal experience?	All three interviewees advocate for a balanced approach that combines data and experience rather than choosing one over the other. The HR Director offers the most nuanced response, describing a complementary integration. [General Manager] <i>"When data and experience conflict, I ask: has the context changed since this experience was formed? Most often yes, and in that case the data becomes more credible. But sometimes data is incomplete, and experience becomes the guide to interpretation."</i> [HR Director] <i>"Numbers tell us what happened, but experience tells us why it happened. I may combine both: promote the</i>

Interview Question	Synthesised Responses of the Three Interviewees
	employee as data suggests, while providing training to address what experience signals about behavioural readiness." [HR Assistant] "In cases of conflict between data and experience, we try to combine both, while giving greater importance to the data as the more objective reference."
How does HR data help you align decisions with the institution's strategic objectives?	The three interviewees agree that HR data is a prerequisite for realistic strategic planning, enabling the institution to match its human capital capacity with its strategic ambitions. [General Manager] "When we set a strategic objective — such as developing a new production line — the first question is: 'Do we have the human competencies necessary to achieve it?' Well-analyzed HR data is what answers this accurately." [HR Director] "HR data helps achieve the institution's objectives — the decisions resulting from HR data gradually contribute to achieving the institution's goals." [HR Assistant] "Data helps align decisions with the institution's objectives, especially with regard to its continuity and long-term sustainability."
Do you notice greater strategic alignment after adopting digital analysis?	The HR Director confirms a clear shift from reactive to proactive decision-making. The General Manager and HR Assistant acknowledge visible improvement while noting the tool's recency requires more time for full assessment. [General Manager] "It is still too early to assess definitively. However, the potential is clearly tangible and it is something I am willing to bet on for the institution's future." [HR Director] "Previous decisions were purely reactive, whereas now every decision taken by the HR department is closely tied to a strategic objective. The dashboard has given us the opportunity to identify gaps that may affect the achievement of our goals." [HR Assistant] "We have noticed greater alignment in decisions after adopting digital analysis, particularly in areas related to workforce continuity."

Interview Question	Synthesised Responses of the Three Interviewees
AXIS 5: CHALLENGES AND OBSTACLES	
What are the main challenges you face when using HR data?	The interviewees identify challenges at three levels: cultural (resistance to data culture), technical (manual data entry errors, missing records), and human (insufficient training and adaptation difficulties). [General Manager] <i>"The greatest challenges are cultural — building a data culture and instilling in all officials the conviction that documenting information is an investment in decision quality. The second challenge is the sustainability of these tools."</i> [HR Director] <i>"Human errors in data entry; lack of data due to document damage; the challenge of balancing experience and data for fair decision-making; and difficulty adapting to modern software."</i> [HR Assistant] <i>"Lack of some data and failure to update it; limitations of some tools; and sometimes difficulties using the systems due to a lack of sufficient training."</i>
What organisational or cultural barriers limit the adoption of data-driven decisions?	All three interviewees identify resistance to change as the central cultural barrier, manifesting as distrust of data by experienced staff and, at operational level, fear that data may be used punitively. [General Manager] <i>"Officials with long experience may resist numbers dictating decisions in a domain they have managed confidently for years. A gradual approach is needed to show that data amplifies — not challenges — their experience."</i> [HR Director] <i>"Some employees do not trust dashboard results; distrust of figures due to loss of previous information creates constant doubt; employees also view data as a punitive tool and hide original data."</i> [HR Assistant] <i>"Reliance on traditional methods and a weak culture of data-driven decision-making are the main obstacles within the institution."</i>
Do you face technical	The three interviewees point to the same root technical problem:

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difficulties? How do you deal with them?	the absence of an integrated automated HR system. Their coping strategies include double verification, progressive learning, and specialist consultation. [General Manager] <i>"The fundamental technical difficulty is the absence of an integrated HR information system that automatically feeds the dashboard with live data. Relying on manual data entry perpetuates the risks of error."</i> [HR Director] <i>"The fear of making errors while entering data was our greatest difficulty. This was resolved by having data reviewed by two people to verify accuracy, and by consulting specialists when needed."</i> [HR Assistant] <i>"We sometimes face difficulties using the systems due to a lack of training. These are addressed through progressive learning and requesting support from specialists."</i>

Source: Compiled by the researcher from semi-structured interviews conducted at Sidal Gaz, 21 April 2026.