

The Influence of Automated Human Resource Processes on the Performance of the Human Resource Department at Mopani Copper Mines Plc

Gift H. Nachibanga^a, Janis Kabwe^b, Karen Tabalasa^c

gnachis@gmail.com

Student, University of Lusaka, Lusaka 10101, Zambia.

Abstract

An essential element of any organization is the management of its Human Resources (HR). Recently, Mopani Copper Mines PLC (MCM) adopted and implemented automated HR processes into its already existing Human Resource Information System in order to enhance the performance of the company's operations. This study thus aimed to investigate the influence of automated HR processes on the performance of the HR department. This cross-sectional case study included seventy-one participants who were purposively selected based on their knowledge about automated HR processes. The data collected were successfully analysed using descriptive statistics, correlations, and regression analyses. The findings in this study indicated that cost saving, improved decision-making processes, and time saving were the major contributions brought by the introduction of automated HR processes. Furthermore, the results demonstrated that these automated processes had a significant influence on all the performance parameters, with a statistical significance of $p < 0.03$. Hence, automation of HR processes not only streamlined operations but also substantially improved the efficiency and effectiveness of the HR department. Automated Human Resource processes have a considerable influence on the performance of the HR department. Therefore, if organizations aim to reduce their operational costs, minimize the time spent on certain tasks, enhance their HR processes, improve decision-making, and facilitate better information transmission, they should consider adopting automated Human Resource processes.

Key words: Information System; Human Resource Information System; Artificial Intelligence; Human Resource Process Automation and Performance

1. Introduction

An essential element of any organisation is the management of its Human Resources (HR) (Bal, et al., 2012). Like many HR departments in Zambia, the HR Department of Mopani Copper Mines (MCM) is responsible for a variety of duties, including recruiting new employees, providing them with training, ensuring that regional labour regulations are followed, managing leave, paying salaries and benefits, and many more (Atoko, et al, 2019). Most recently, MCM had implemented Automated HR Processes (AHRP) to its already existing Human Resource Information System (HRIS) in order to improve and enhance the performance of the HR department and ultimately the company's operations. These automated processes only form a segment of the HRIS that the company had adopted to carry out all HR functions. Hence, these automated processes include, but not limited to, payroll management, recruitment management, performance management, time management as well as HR data analytics and reports.

Further, extant literature suggests that modern businesses have incorporated automated HRIS into their daily operations. For instance, owing to the increasing effects of globalization and technology, during the past few decades, many firms have embraced the use of digital Information System in a variety of HR tasks (Bal, et al., 2012). Similarly, HR departments in the modern workplace, prioritize information sharing in their day-to-day workforce management (Troshani, et al., 2011). However, accepting modern technologies is always changing, and hence, the HR Department has also enhanced the management of information systems to improve service delivery and organisational operations.

1.1. Background of the Study

HRIS is a form of HR software that provides a centralised repository of employee master data that the HRM group needs for completing core HR processes thus enhancing organisational efficiency (Abuhantash, 2023). The idea of adopting HRIS in organisations stems from advancements in technology hence HR officials are constantly expected to improve their operations and adapt to the constantly changing business environment. Moreover, studies have also shown that there is a positive association between the use of HRIS by organisations and their organisational performance. At global level, a systematic literature review study that was conducted by Abuhantash (2023) discovered that organisations that adopted HRIS in their HR operations reported improved organisational effectiveness, efficiency and performance, generally.

HRIS software is increasingly being used by many organisations that place a high priority on obtaining, storage and analysing data related to their human resources. The majority of HR roles have changed quickly by incorporating information technologies like electronic-recruitment, electronic-learning, electronic-selection, and other parts to replace the traditional ones, especially in this era of digital information, communication, and technology (Lina, 2019). HRIS is therefore a tool for exchanging helpful information about management tasks linked to retention and recruitment tactics that may be coordinated with the overarching business goals. Additionally, an organisation can determine the expenditures associated with each employee and how that affects the company as a whole by employing HR applications (Lina, 2019).

Globalisation has broadened HR's opportunities, perspectives, and use of innovation since it makes it necessary to incorporate a framework that addresses the capacities of human assets. This has resulted in the prominent demand of HRIS. These findings lead to the presentation of global HRIS in numerous international associations, introducing diverse HRIS opportunities, advantages, and challenges (Opiyo, 2015). By institutionalizing the most of an organisation's HR forms, enhancing the quality and swiftness of the data that is available, and enhancing the processing efficiency of the HR officials tasked with managing the HR function, HRIS gives HR a chance to become a more proficient and competitive function (Opiyo, 2015). When properly organised, the framework addresses employee data in line with the general business strategy or mission of the organisation, keeping in mind all organisations are affected by contemporary technological trends equally because we live in a global village (Troshani et al 2011).

Based on the benefits from the employment of HRIS, a number of organisations have migrated from the manual methods of conducting HR functions to more electronic systems. Qureshi, et al. (2013) reported that approximately 87.3% of companies in India use automated HRIS in their human resource operations. It has also been reported that the IBM company (a global organisation providing services such as software development, hardware, research, business and management consulting) reduced its costs by \$1.2 million annually year on printing and postage costs as a after implementing automated HR processes. Moreover, Toshiba America Medical Systems, Inc. (TAMS) equally implemented an HRIS in its operations and by focusing on employee management. The organization's efficiency rates increased to 70%, and by assessing the program's effectiveness, it was able to reap the rewards of the system (Wojcik, 2004).

The main objective of this study was to analyse the influence that the identified automated HR systems have on the performance of the HR Department and this reviewed literature provided a benchmark onto which research questions were concentrated for purposes of confirming any form of similarities or differences in the findings. For instance, based on the discoveries by Abuhantash (2023), the findings of this study determined whether MCM HR department also recorded improved effectiveness, efficiency and performance or reported any cost reductions and time-saving results as the case was for Taqui Syedi (2020). This study also confirmed whether automated HR systems had any form of impact on HR planning as was the case in the study conducted by Mwendwa (2017).

1.2. Statement of the Problem

Many organisations recognise that automating much of the HR functions is a beneficial milestone that saves them time, costs and unnecessary setbacks while at the same time increasing the efficiency and effectiveness of organisations (Muriithi, et al., 2014). Hence, this allows them to remain competitive and relevant in extremely competitive market environments (Udomphol and Siengthai 2016 and Bayraktaroglu, et al. 2019). While these automations are beneficial based on the literature findings, they may also pose a number of challenges that if not properly managed may comprise the organisations' capacity to remain competitive and relevant. Such challenges include technical difficulties, complexity of the systems, user perceptions as well as change management failures. MCM is currently using AHRP on some of the components of its Human Resource Information System and the relationship between these automations and the performance of the HR department has not been scientifically determined. The available literatures on which inferences can be drawn are largely conducted in the western and eastern parts of the world which operate under different technological and cultural contexts from Zambia thus creating a research gap. Moreover, few available literatures provide information concerning the influence of AHRP on performance in mining companies particularly within the Zambian context. Therefore, this study sought to investigate the influence of AHRP on the performance of MCM and also to understand the challenges and benefits of automating Human Resource processes.

2. Literature Review

2.1. Definition of Automated Human Resource Processes (AHRP)

Automated Human Resource Processes are techniques for employing software to electronically streamline tedious and time-consuming operations and assist the HR department in managing staff, according to Fitzgibbons (2021). Singh, et al (2023) further defined AHRP as ways of implementing HR strategies, policies, and practices in an organization and Uppin (2017) defined AHRP as software that operates by effectively reducing the time involved in the completion of a particular task while maintaining the quality of the work.

2.2. Impact of Automated Human Resource Processes on Performance

AHRP have been linked to a reduction in the cost of running a business. Findikli and Rofcanin (2016) proposed that a number of organisations make HRM investments based on the outcomes of automated HR systems. Further, Sritharakumar (2016) revealed that HRIS enabled desirable HR practices. Additionally, when implemented correctly, AHRP has a major impact on HRM performance as the functions encourage organizations to demonstrate their importance through techniques such as career development, performance

management, rewards, as well as information management. Supporting the position of Sritharakumar (2016), Uppin (2017) further established that employees perceived AHRP to be extremely beneficial to both the organisations and themselves in that the processes facilitated access to employees' information more efficiently and in time thus enhancing work clarity. Similarly, Barisic, et al., (2018) also reported that automated HRIS is an inescapable component of modern-day organisational set-up capable of providing multiple HR management processes and services such as reducing HR management labour costs, improving quality of strategic decisions implemented by management as well as maximizing the impact of organisational performance.

Moreover, Bansal and Gupta (2018) also asserted that using AHRP in India's organisations has had an impact on the reduction of security breaches and human error, excessive time consumption as well as inconceivable loss of resources. Similarly, Azizi, et al. (2021) also revealed that implementing innovative and effective HR management practices may enhance workplace safety, raise employees' mental wellbeing, motivate them more, and increase their levels of satisfaction. The researchers established that it is important to use effective, intelligent, and innovative HR strategies especially during health risks such as the Covid-19 pandemic. Organisations are now utilizing business analytics as a strategic tool to address HR demands. Margherita (2022) noted that enhancements in technology and data analytics encourage the transition from "descriptive and diagnostic" to "prescriptive and predictive" HR intelligence. Thus, this change may help organizations benefit from the implemented HR business intelligence and assimilated reporting approaches and structures as they grow.

In an attempt to understand the relationship between employee performance and the utilisation of AHRP, a study by Al-Dmour (2020; 2022) indicated that using innovative HRIS had a very favourable effect on both employee performance and work engagement thus confirming what other researchers such as Nangia and Mohsin (2020) established in their study concerning employee performance. One of the remarkable reasons that have led to transitions within HRM from manual to electronic is the idea that AHRP plays a significant role in cost reduction and also facilitates efficiency. Moreover, by strengthening its strategic orientation toward human resource management, AHRP improves client services and increases staff productivity. AlHamad, et al., (2022) also reported that investing in electronic human resources systems plays a vital role in enabling organizations achieve financial savings and be able to attract talent. Results of this study also showed that e-HRM has a desirable influence on organisational health, employees' practical skills as well as their creativity. Further, Abuhantash (2023) found that there was a relationship between the adoption of AHRP and the efficiency of the organization which resulted from the streamlining of HR systems, a drastic reduction of administrative burden as well as improved decision-making capabilities which were key in HR processes.

2.3. Characteristics of Automated Human Resource Processes

One of the important features of AHRP is that they have been incorporated by various established organisations for purposes primarily concerned with the enhancement of organisational efficiency. For instance, Phiri, et al (2024) reported that some functions of AHRP such as learning, and development performance and rewards management had a significant impact on the performance of the organisation and thus encouraged Zambian organisations to adopt AHRP in the execution of HR practices. Moreover, some researchers have found that some functions of AHRP strongly influence employees' emotional dedication to their company. In line with this, Atoko, et al (2019) conducted a study on Zambian institutions to determine the influence of HRM practices on employees' affective commitments. In this descriptive study, it was found that there was a significant relationship between training and development management and affective

commitment as well as recruitment management and affective commitment. Thus, recruitment strategies as well as the training and development strategies that are adopted by these organisations enable significant employee dedication to their organisations. The objectives identified in this study are in sync with the findings of these studies. Thus, there was need to confirm whether these findings were true even for a mining organisation like MCM which operates in a completely different industrial context.

In a nutshell, this section can ride on the summary that was highlighted by Rao (2000) who asserted that AHRP provide a sufficient, complete, and on-going information system on the people and the task. The next section addresses the functions of AHRP.

2.4. Functions of Automated Human Resource Processes

Mechanisms that warrant employees' access to correct company information and equip employees with the working knowledge substantially underpin well-managed and correctly designed processes (Laudon and Laudon, 2009). The HRM system has developed over time, and many businesses can now adapt the software to their desires and philosophy. Consequently, this approach has simplified administration because businesses and their staff are now more organised. Since companies are aware of the importance of the HR tools they need, most of the solutions for AHRP are made available so that they satisfy the organisation's needs. Currently, several providers are working on HRIS software, and the products are promoted and profit from businesses' undeniable need for efficient human resource management. Generally, the most popular functions include the following;

2.4.1. Payroll management

This is certainly one of the most widely used AHRP elements because it controls several financial aspects of a company, including wage payment: The fact that employees receive their pay within a certain time frame each month is taken for granted by them. The employees' faith in their employer's wealth is impacted by this stability. Employees may experience instability and uncertainty if the company lacks the necessary instrument to automate the payment. This tool enables each organisation to automate the payment procedure, thereby reducing paperwork in the process. The salary payments component allows an organisation to promptly and quickly pay its employees according to their preferred methods (Zin, 2012). Payroll management in AHRP also involves tax administration. Every organisation may be required to retain records of its financial situation for numerous years depending on the rules of a particular nation. However, most organisations find it difficult and cumbersome to keep a paper copy of these records (Perry, 2010). Furthermore, the company is obliged to pay taxes in accordance with its income. This characteristic feature enables an organisation to keep its finance-related records in a central place so that the levies and taxes can be handled electronically. Payroll management also handles bonuses payments. An organisation may have to pay bonuses to its employees in addition to wages and salaries, this is, however, dependent on the applied policies of the organisations.

2.4.2. Hiring and recruiting management

Over the past few decades, the hiring process has evolved, currently AHRP permit organisations to carry out most of the hiring and recruitment processes. Hiring and recruitment management allows an organisation to manage job postings. Organisations can post the jobs anywhere and the applications made will be received in one place. Further, hiring and recruiting management help in managing the application and the applicants. Recruiters are able to check the database when searching for the desired and right candidate. The data regarding prospective applicants is usually saved in a central place and can be checked or surfed when required (Yilmaz and Bulut, 2015). In addition, hiring and recruiting management helps in managing the recruitment process itself. The hiring process varies in every organisation. This feature allows businesses to precisely outline their hiring method, which improves hiring's effectiveness and speed.

2.4.3. Talent and career management

Armstrong (2006) reported that recruitment statistics may include the quantity of applications, the number of interviews, and the consequences of the hiring process to evaluate the effectiveness of the firm's recruiting and selecting processes. This information is necessary for cost-per-hire measures, and in some circumstances, reviewing selection data may show if recruiting managers are performing proper and efficient interviews. Data on turnover and retention, specifically the percentage of workers that remain with the organisation, are also useful for figuring out the cost per hiring. This feature implements the following; Manage skills development, manage employee's loyalty, organisation's process used by an organisation to identify and recruit the greatest and most suitable talent, and it manages employees' replacement. Talent and career management that is well-designed helps the organisation to maintain its finest personnel as well as attract exceptional candidates (Yilmaz and Bulut, 2015).

2.4.4. Rewards and Wellness management

Similar to the talent management feature is rewards and wellness management which enables the organisation to manage and research various strategies for enhancing employees' experiences while working for them (Zin, 2012). Every organisation has a distinct approach to wellness and rewards. The following can be implemented with this feature; Management of social activities, performance management, and incentive management. Although this feature was not captured in the conceptual framework, its importance in HRM cannot be underscored. It is just important as any other automated HR function and may also play an important role in how employees get motivated.

2.4.5. Time Management Module

With the help of this tool, businesses may manage leave requests, assign work based on employees' availability, manage time, and monitor the amount of time spent on each project or assignment (Yilmaz and Bulut, 2015). Organizations can regulate resource and production optimization through the time management features. Additionally, the time management function can aid in predicting hiring and financial needs. The essentiality of time management cannot be overemphasised. For instance, one of the systems that have been automated is time management at MCM and this function is important in determining individual pay in terms of overtime payments, salaries, and other allowances that are time dependant.

2.4.6. Performance Management System

AI in organisations is now used to discover the habits that lead to subpar work performance through predictive analysis. A company like MCM focuses primarily on the safety of its employees given the nature of its operations. AHRP, for instance, may recognize actions and circumstances that result in accidents. A new generation of survey technologies can spot stress and negative behavior trends and notify HR or line supervisors. These computerised career guidance systems also function as diagnostic tools that identify and communicate the priorities necessary for an employee's career growth (Findikli, 2016). These systems also give employees the opportunity to assess how well their knowledge and abilities match those needed for their current and next employment. Therefore, the results of this survey were helpful in determining how much the staff have valued this role.

2.4.7. Training and Development

The main goal of this feature is to ensure that the organisation recruits knowledgeable, talented, committed and engaged personnel that it requires. Training and development must be carefully planned, carried out, and connected to the organization's overarching goals and objectives for its goals to fully materialize (Muriithi, et al., 2014). HR managers should thus adopt AHRP that supports training and development as this attribute is

largely influenced by the type of HR system being utilized by a particular organisation. According to Armstrong (2006) the return on investment in workers' professional development may be demonstrated by tracking statistics on employee training. The ratio of workers who take advantage of professional development opportunities to those who apply what they have learned to their existing positions or use the training to progress within the organisation may be used to evaluate the Return on Investment (ROI). Many companies keep track of this information based on average annual HR Department spending or average annual spending per employee. Data on training costs can also be helpful in deciding whether to perform internal training or contract it out.

2.4.8. Manpower Planning/Labour Budgeting

In many instances, AHRP provide techniques that encourage and facilitate the collection, restoring and updating previously available data on the expertise, competencies, and knowledge of the organisation's personnel as well as providing access to data as necessary. Within the numerous departments, this approach provides a more educated, effective, and efficient administrative process (Findikli, 2016). HR managers may more easily identify and monitor workforce shortages, the amount and worth of the workforce and anticipate future labour requirements with help from HR knowledge systems (Muriithi, et al., 2014). As a result, since information regarding the labor force supply and demand forecast for manpower is typically easily accessible, AHRP may be able to help long-term planning. Staffing can be implemented more transparently and successfully using e-HRM. Managers can construct long-term staffing plans using data from the recruitment, training, and administrative subsystems, and HR personnel can take advantage of data on available vacancies and their requirements, job rates, retirement eligibility, and turnover of employees.

2.4.9. HR Data Analytics and Reports

The focus of HR data analytics is on a subset of Artificial Intelligence (AI) algorithms that primarily depend on the greater availability of data for forecasting future behavior and determining pay fairness (Ahmed, 2018; Tambe, et al., 2019). Therefore, HR teams are left with the responsibility of deciding what information to monitor, examine, manage, and protect, allowing AI to serve a bigger role in HRM. To improve important transactions and other talent outcomes, talent data is collected and used for human resource analytics. HR analytics specialists work with HR professionals to make available data-driven judgments that would help them make better recruitment decisions, enhance Labour operations, and inspire an ideal employee experience. Marler and Boudreau (2017) defines HR analytics as the practice made possible by Information Technology (IT) that makes use of graphic, pictorial, and arithmetical analyses of information concerned with HRM functions, human assets, organisational performance, and economic yardsticks to determine corporate effect and enable data-driven decision-making in the management of Human Resources.

2.5. Gaps in Literature

Although the reviewed literature provided informative and beneficial data as far as the objectives of this study are concerned, data on the performance of mining companies that have adopted AHRP is still scarce hence the need to investigate the impact of these processes on MCM, one of Zambia's largest mining companies. Thus, there is need to determine how AHRP are affecting the performance of the company to compare the findings with other studies.

3. Theoretical Framework

3.1. Resource-based view theory (RBV)

McGee (2015) defined the Resource-based View theory as a perspective that focuses on the functions of resources in skills as far as the generation of competitive advantage is concerned. In this definition, the term 'resources' highlights would refer to core competencies, strategic assets, and distinctive capabilities which allow organisations to remain unique and thus competitive on the market. This theory was developed through the works of Penrose (1959). It recognizes two categories of resources referred to as tangible and intangible aspects of organisational resources. Tangible resources include physical things that can be easily identified and assessed such as technological infrastructure and financial resources whereas intangible resources include resources that cannot be visibly observed but can be felt and these include such things as human capital (skills, loyalty and experience), relational capital and organisational capital. The assumption of this theory according to Vasudevan (2021) is that if the organisation can make the most of its resources (tangible or intangible) then it can enhance the quality of its products and also have competitive advantage against its competitors.

Thus, to support this theory, Salazar (2017) argued that value is usually a product of the configuration of the various organisational resources. Thus, for any organisation to be able to cultivate value, they must ensure the resources are well synchronized and recognize value to be the cornerstone of their operations. However, this study sets a slightly different perception of the RBV theory compared to the assumptions made by Vasudevan (2021) for instance. It recognizes the importance of implementing resources that can enhance the performance of organisations but also brings the attribute of value to the subject matter. Moreover, Nyamubarwa, et al (2013) also supported the RBV theory in its entirety claiming that the theory itself can be applied to explain the strategies that management in organisations use to organize HR as coping mechanisms against any external threat. Cabrera-Moya and Reyes (2018) also reviewed the application of the RBV theory for the Integrated Public Transport System (IPTS) of Colombia and found that quality of service, customer satisfaction, environment and productivity and efficiency all had an impact on the overall performance of the transport sector.

The RBV theory has been found to be useful in explaining organisational performance (Findikli, 2016). Fidikli (2016) reported that human resources are the most valuable resources for businesses in establishing a competitive advantage since they are priceless, distinctive, impossible to duplicate, and only partially replaceable. Mwendwa (2017) also cited the RBV theory and affirmed that the success of firms is indirectly and ultimately driven by the resources that go into the achievements of the firms' objectives. Hence, this study found the RBV theory to be informative since the primary focus is on how AHRP affects performance of the HR department. In line with the assumptions of RBV theory, the automated HR systems are the resources and capabilities that promote the success of the HR department and ultimately the organisation. Using the lens of RBV, AHRP in this context would be considered the essential, unique and inimitable resource that would enable the HR department to manage human resources in an efficient and effective manner that ultimately generates value for the organisation and enhances its performance.

Additionally, according to the RBV, resources that are not easy to transfer or purchase and require an extended period of dedicated learning or bring about a major paradigm shift in the environment and culture of the organisation are aptly unique and most challenging to imitate. Organisations are making huge investments in technology, and this also includes adopting technologies that support HRM practices. This is likely because organisations want to remain relevant in highly competitive markets. Hence, this theory has served as a basis for explaining why companies are now incorporating resources and capabilities that allow them to operate and perform favorably in competitive environments. For instance, Phiri, et al (2024) found that employing

strategic HRM practices in organisations does not only improve organisational performance but also increases the likelihood of organisational success. The objective of companies is increasingly involved in the development of the finest methods which may enable them to utilize the knowledge, abilities, and competences of their HR in the most efficient manner. Therefore, AHRP functions like online hiring and learning can be understood as initiatives that assist the company in achieving set objectives.

4. Conceptual Framework

Swaen and George (2024) defined a conceptual framework as that which shows the expected the relationship between research variables. The conceptual framework is relevant in defining the objectives of one's research process and guides on how these processes come together to draw coherent conclusions. Besides, the conceptual framework also shows the expected outcomes of the research and is usually presented in visual format to illustrate cause and effect relationships. In the context of this study, the visual presentation of the conceptual framework indicated how the independent variables (Payroll management, Recruitment management, Time management, performance management and HR data analytics/Reports) affected the dependent variables (the performance of the HR department). This conceptual framework was generated based on the objectives, literature that was reviewed including the theoretical framework that underpinned this study. It was also critical to identify the intervening variable in this study to better explain the relationship between the independent and dependent variables. The intervening variable that was identified was the skill-level of the AHRP users (HR personnel). This variable helped explain the observations better to understand the impact of AHRP on the performance of the HR department.

Further, the conceptual framework designed in this study was also inspired by research conducted by Phiri, et al (2024) who found that employing strategic HRM practices in organisations does not only improve organisational performance but also increases the likelihood of organisational success. Another study conducted by Atoko, et al (2019) appraised the importance of the mediating variable and found that there was no significant relationship between the mediating variable and the dependent variable implying that all the observations in the study were attributed to the identified independent variables.

Automating HR processes is associated with instant benefits such as improved customer satisfaction, higher employee productivity (Bal, et al, 2012). On average most of the HR staff would spend less time managing HR activities. Automation is thus a necessity if organisations are desirous of upholding optimal employee engagement. Organisations that eagerly invest in automation seemingly have a considerable competitive advantage and are better performing (Yilmaz and Bulut, 2015).

Based on the objectives of this study, the reviewed empirical studies and the theoretical framework that has been adopted for this study, the following conceptual framework has been designed to guide this research study;

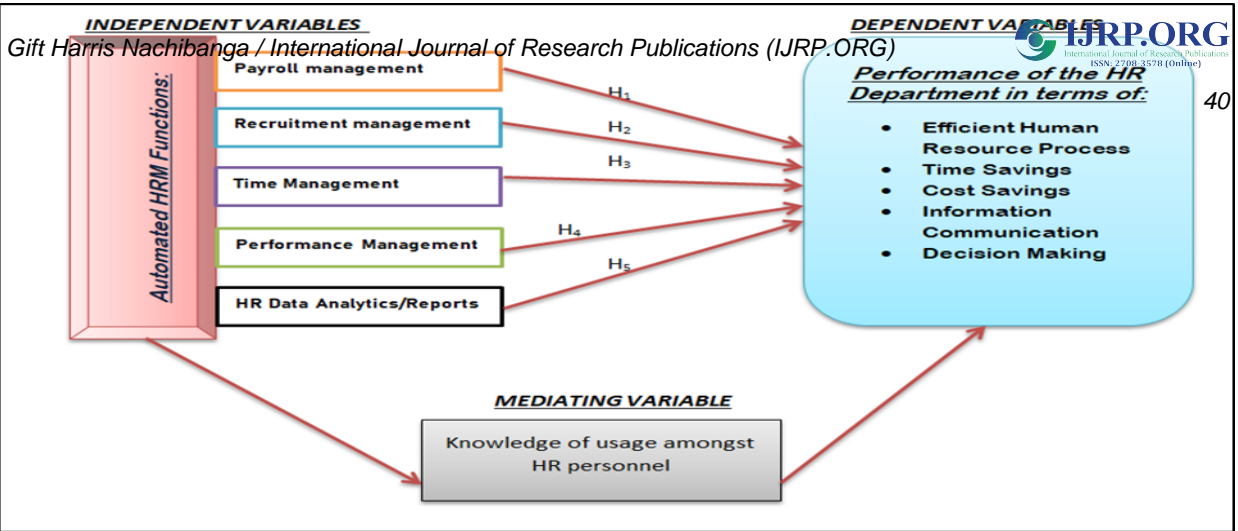


Fig 1

From the concept framework, the following hypotheses were developed;

- H1: Payroll management positively influences the performance of the HR department
- H2: Recruitment management positively influences the performance of the HR department.
- H3: Time management positively influences the performance of the HR department.
- H4: performance management positively influences the performance of the HR department.
- H5: HR data analytics/Reports positively influence the performance of the HR department.

5. Research methodology

This quantitative cross-sectional case-study employed the philosophy of positivism; a branch of Epistemology which relies on the understanding of knowledge as anything that can be objectively tested and proven using scientific methods (Saunders, et al, 2019). Moreover, a deductive approach in order to test the Resource-Based View (RBV) theory was also employed. A total of 78 people from the HR department are the study's designated target audience and a sample size of 71 was purposively selected using the Taro Yamane's (1967) sample calculation formula suggested by Phiri, et al (2024). The type of responses chosen is based on their expertise and familiarity with AHRP. The following is the formula;

$$n = \frac{N}{1 + N(e)^2}$$

where;

n= Sample size

N= population size

e= level of precision

$$n = \frac{78}{1 + 78(0.03)^2}$$

$$n = 71$$

Additionally, to address the research questions, t-tests, Pearson's product correlation, multiple regression analyses, cross-tabulations and inferential statistics were employed using a computer-software called the Statistical Package for Social Sciences (SPSS) version 25.0. Construct validity was used to examine the questionnaire's validity due to the large number of studies that have been done in this area. Further, the measurement tool's internal consistency was enhanced using test-retest reliability tests (Gravetter and

Forzano, 2012). Cronbach's alpha test was implemented to test the instrument's dependability as a data collection tool from the HR personnel at MCM.

6. Results and Discussion

6.1. Validity and reliability of data collection tool

Cronbach's alpha is a method of determining reliability by comparing the amount of shared variation, or covariance, among the items comprising an instrument to the total variance (Kimberlin and Winterstein, 2008). The concept is that if the instrument is dependable, there should be a high degree of covariance between the items in relation to the variance. In theory, Cronbach's alpha results should range from 0 to 1. The general rule of thumb is that a Cronbach's alpha of 0.70 and above is good. The following are the rules of thumb for the Cronbach's alpha;

">or =0.9 Excellent", "> or =0.8 Good", "> or =0.7 Acceptable", ">or =0.6 Questionable", ">or =0.5 Poor", "< 0.5 Unacceptable".

Table 1: Cronbach's alpha test

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha based on Standardized Items	N of Items
0.799	0.934	35

6.2. Demographic characteristics of the participants

The findings of this research showed that there were more males than females that participated in the study. 69% of the participants were male while 31% of the participants were female. The findings also showed that most of the participants that took part in this study were aged between 31 years and 40 years, followed by those aged between 24 years and 30 years and the least number of participants were aged between 41 years and 50 years. In addition, 45.1% of the participants had degrees while 42.3% possessed diplomas with 12.7% possessed certificates. The results indicated that 59.2% of the respondents operated from Nkana mine site while 40.8% operated from the Mufulira mine site.

6.3. Correlation between AHR functions and Performance

Correlation is a statistical strategy for determining a probable linear relationship between two continuous variables as well as the direction of the relationship. All associations, connections, and correspondences, and relationships are referred to as correlations (Mukaka, 2012). To decide whether the linear relationship in the sample data was strong enough to use to model the relationship in the population, a hypothesis test of the "significance of the correlation coefficient" was performed. In this study, the significance level of 3%, $p=0.03$ at 97% confidence interval was used to determine the level of significance. Thus, the relationship was only considered significant if the alpha value was less than 0.03 ($p<0.03$). Table 2 illustrates the correlations between AHRP and performance;

Table2: Correlations between Automated HR processes and Departmental performance

		Dependent Variables					
		Efficient Human Resource Processing	Cost Saving	Time Saving	Information Communication processing	Decision-making processing	
Independent Variables	Payroll Management	(r)	0.088	.475**	.590**	.565**	0.469**
		p	0.466	0.000	0.000	0.000	0.000
	Hiring and Recruitment Management	(r)	.281**	0.365**	.470**	.610**	0.261*
		p	0.018	0.002	0.000	0.000	0.028
	Time Management	(r)	0.201	0.165	0.384	.329**	0.231
		p	0.092	0.170	0.001	0.005	0.053
	Performance Management	(r)	.282**	0.159	.353**	.486**	0.423**
		p	0.017	0.185	0.003	0.000	0.000
	HR data Analytics and Reports	(r)	.589**	.404**	.512**	.617**	0.375**
		p	0.000	0.000	0.000	0.000	0.001

** Correlation (r) is significant at $p < 0.03$ level (p-value)

6.3.1. Payroll Management

The results in table 2 show the relationships between the dependent variables (performance) and the independent variables (AHRP). The results of this study show significant relationships between Payroll Management and Cost Saving, time saving, Information Communication processing, and decision-making processing. These relationships were moderately strong as they ranged between 0.413 and 0.59 at $p < 0.03$. The results also showed weak positive correlations between the payroll management and Efficient Human Resource Processing with r -coefficient of 0.088 at $p > 0.03$. These positive associations implied that this feature of AHRP while sufficiently managing numerous financial aspects of a business such as salary payments also affected the department’s performance in time spent on processing information, costs involved, information processing as well as decision-making. These results are consistent with the observations made by Zin (2012)

6.3.2. Hiring and Recruitment

Hiring and Recruitment were the other independent variables, and it correlated significantly with Efficient Human Resource Processing, cost saving, time saving, information communication processing and decision-making processing. The relationships ranged between 0.28 and 0.610, indicating weak to moderately strong positive correlations between the variables at $p < 0.03$. Atoko, et al. (2019) also made similar discoveries in the study that was conducted in Zambian firms where it was established that there was a significant relationship between training and development management and affective commitment as well as recruitment management and affective commitment.

6.3.3. Time management

Time management on the other hand showed weak positive correlations ranging between 0.067 and 0.216 for Efficient Human Resource Processing, Cost Saving and decision-making processing at $p > 0.03$. On the contrary, this independent variable showed a significant yet weak positive correlation between information

communication processing and time saving at $p < 0.03$. Moreover, this feature had positive links between improved time to correct errors and reduced time to process and disseminate information within the company. These observations are consistent with the results by Bansal and Gupta (2018) who asserted that using automated HR processes is associated with a massive reduction in excessive time consumption as well as inconceivable loss of resources.

6.3.4. Performance management

For performance management, the positive and significant relationships were observed with Efficient Human Resource Processing, time saving, information communication processing and decision-making processing. The correlation coefficient ranged between 0.28 and 0.423 at $p < 0.03$. However, there was a weak positive relationship observed between performance management and Cost Saving as this correlation was not significant at $p > 0.03$. These observations were also consistent with the findings by Findikli (2016) who recognized the importance of AI in enhancing performance management which in turn affects the generation of survey technologies that can spot stress and negative behavior trends and notify HR or line supervisors who established that.

6.3.5. HR data analytics

HR data analytics showed moderately strong relationships between Efficient Human Resource Processing, time saving, information communication processing, decision-making processing and Cost Saving with correlation coefficients ranging between 0.43-0.633 at $p < 0.03$. These results mirror the findings by Tambe, et al. (2019) who presented that HR data analytics has a positive relationship on the ability of HR personnel to make better recruitment decisions, enhance labour operations, and inspire an ideal employee experience.

6.4. Determining the major contributions of AHRP processes to the HR department

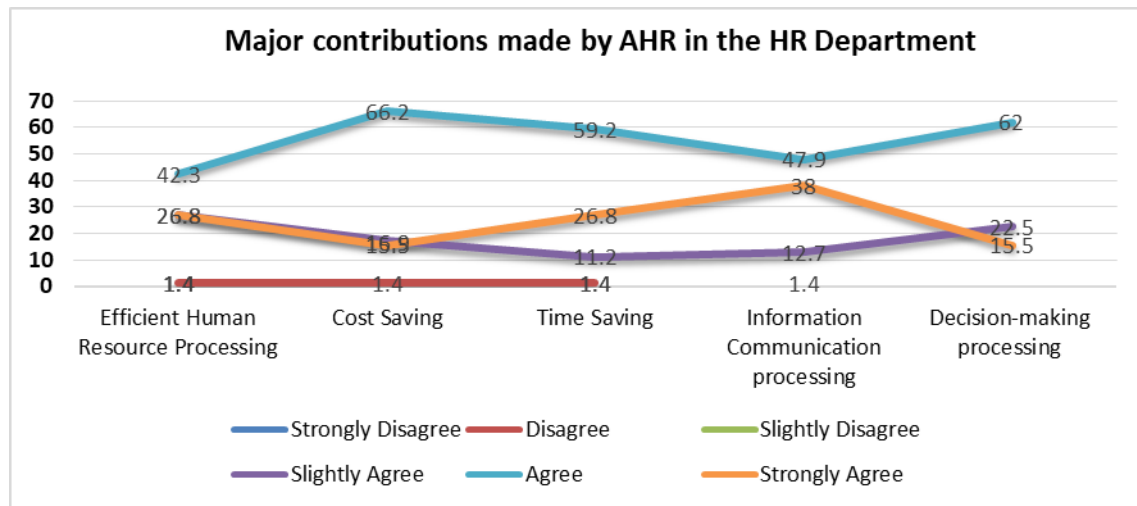


Fig 2: Major contributions made by AHR in the HR Department

Figure 2 shows the responses of respondents regarding the contributions that AHRP had made to the HR department. According to the results obtained, most of the respondents responded affirmatively to the questions about the major contributions of the AHRP processes. In terms of Efficient Human Resource Processing, majority 42.3% of the respondents “agreed” that AHRP helps the department in Efficient Human

Resource Processing. With regards to Data entry processes costs, 66.2% agreed and another 15.5% strongly agreed to the notion that AHRP helps the department to perform data entry processes. The results also showed the contributions of AHRP in Time Saving where 59.2% agreed and another 26.8% strongly agreed to that effect.

Closely linked to Time Saving was Information Communication processing, which had 47.9% of the respondents agreeing and another 38% strongly agreeing to that effect. Additionally, results also showed that respondents responded affirmatively to the contribution of AHRP in decision making. According to the observations, 22.5% of the respondents slightly agreed, 62% agreed whereas 15.5% strongly agreed to this contribution. These observations are similar with the findings that were made by Udomphol and Siengthai (2016) who indicated that AHRP seemed to have progressive impact on organisational effectiveness by decreasing paperwork and data input expenses and also enhanced the decision-making process.

6.5. Determining the influence of AHRP on the performance of the HR department

Table 3: Regression Model Summary of the influence of AHRP on Performance

Model Summary				
Dependent Variables	Model	R	R Square	Sig. F Change (Anova)
Efficient Human Resource Processing	1	0.537	0.288	.000
Cost Saving	1	0.534	0.285	.000
Time Saving	1	0.741	0.55	.000
Information Communication processing	1	0.609	0.371	.000
Decision-making processing	1	0.550	0.302	.000

Predictors (Independent variable): (Constant), Payroll Management, Hiring and Recruitment, Time Management, Performance Management, HR Data Analytics and Reports

Table 3 shows the relationship between the dependent and independent variables in terms of predicting the extent of influence that the independent variables had on the dependent variables. R-coefficient of the regression model indicates the strength and direction of the relationship between the dependent and independent variables while the R square (R^2) shows the extent to which the independent variables can influence the variations in the dependent variable. In the summary of the model in table 3, the independent variables, also referred to as the predictors included Payroll Management, Hiring and Recruitment, Time Management, Performance Management, HR Data Analytics and Reports whereas the dependent variables included Efficient Human Resource Processing, Cost Saving, Information Communication processing, Time Saving and Decision-making processing.

6.5.1. Efficient Human Resource Processing

According to the obtained results, the model derived significant R-Coefficient of regressions of 0.537 for the dependent variable 'Efficient Human Resource Processing' indicating a strong positive correlation with the independent variable and R^2 of 0.285 indicating that the model was able to significantly explain 28.5% of all variations in the data set at $p < 0.03$. These observations are similar to findings by Muriithi, et al. (2014) where it was determined that AHRP affects training and development as well as the financial performance of the bank. The findings in this study also support findings by Mwendwa (2017) whose results confirmed that employing automated HR planning enables organisations to facilitate HR planning which is an essential

component of organisational success. Therefore, AHRP processes in this study influences effective HR processes in terms of improved HR planning and staff forecasting process, improved data maintenance processes, improved training and development process, improved recruitment and engagement process and improved document trail. Therefore, AHRP functions in this study influences effective HR processes in terms of improved HR planning and staff forecasting process, improved data maintenance processes, improved training and development process, improved recruitment and engagement process and improved document trail.

6.5.2. Cost Saving

In terms of the influence that the independent variables had on Cost Saving, the model derived the R-coefficient of 0.534 indicating a moderately strong positive correlation with the predictors at $p < 0.03$ indicating that the variation in the dependent variable could be attributed to the independent variables with a prediction level of 28.5%. These results thus indicated that AHR significantly influenced the cost-saving outcome in the HR department. These findings support findings by Barron, et al., (2004) who found strong associations between automated HR processes and cost saving strategies and Barisic, et al., (2018) who also postulated that AHRP functions provides multiple HRM processes and services such as reducing HR management labour costs. In this study therefore, AHRP influenced cost saving in terms of reducing errors in processing employee salaries, reducing data input expenses, reducing the cost per hire and other recruiting expenses, reducing costs on filling due to reduced paperwork and reducing training expenses.

6.5.3. Time saving

The model also derived the R-coefficient of 0.741 indicating a strong positive correlation between Time saving and the independent variables. This correlation was also significant at $p < 0.003$ with R^2 of 0.55 indicating that 55% of the changes in this dependent variable could be attributed to the independent variables. These observations thus support findings by Udomphol and Siengthai (2016) who indicated that AHRP have a progressive impact on organisational effectiveness. The results in this study also coincide with findings made by Findikli (2016) who postulated that using AHRP influences the effectiveness and efficiency of the organization. In this study therefore, AHRP influenced the performance of the HR department in terms of time saving by reducing time spent on correcting errors, processing paperwork, communicating information within Mopani and making staff decisions. All these performance dimensions contribute largely to the efficient and effective running of the department.

6.5.4. Communication Information Processing

For communication information processing, the R-coefficient was 0.609, indicating a moderately strong correlation with the independent variables at $p < 0.03$. The model also derived R^2 of 0.371, showing that 37.1% of the changes in the dependent variable could be attributed to the independent variables. These results are like results obtained by (Lawler, and Boudreau, 2015) who established that automated HRIS contributes significantly to the timely completion of tasks and allows HR experts to coordinate their tasks and promote vital basic leadership thus enhancing communication. In this study therefore, AHRP significantly influenced the performance of the HR department in relation to the generation of information which conceivably added value to the company, amplified coordination between HR department and top Management and improved the department's ability to disseminate information effectively.

6.5.5. Decision-making processing

This dependent variable involved making rational decisions based on the information provided by AHRP processes. From the findings, this performance parameter shared a strong positive R-coefficient with the

independent variables and $R^2=0.302$ at $p=0.000$. The scores derived by the regression model indicated that there was significant level of influence that AHRP had on the performance of the department in terms of the ability to make decisions. These findings correlate with results that were presented by Phiri, et al (2023) which showed that strategic HR processes such as AHRP have the potential to influence organisational performance in terms of making decisions on who to train, reward and compensate. The results of this research also support findings by Abuhantash (2023), who reported that efficiency resulted from the streamlining of HR systems, a drastic reduction of administrative burden as well as improved decision-making capabilities which were key in HR processes. In this research, AHRP influenced performance by assisting management to decide when training and skill development were necessary, making better decisions on applicants to recruit and select, deciding when to hire, make more effective promotion decisions as well as to decide on employee compensation and rewards.

6.6. Determining the perception of respondents about AHRP

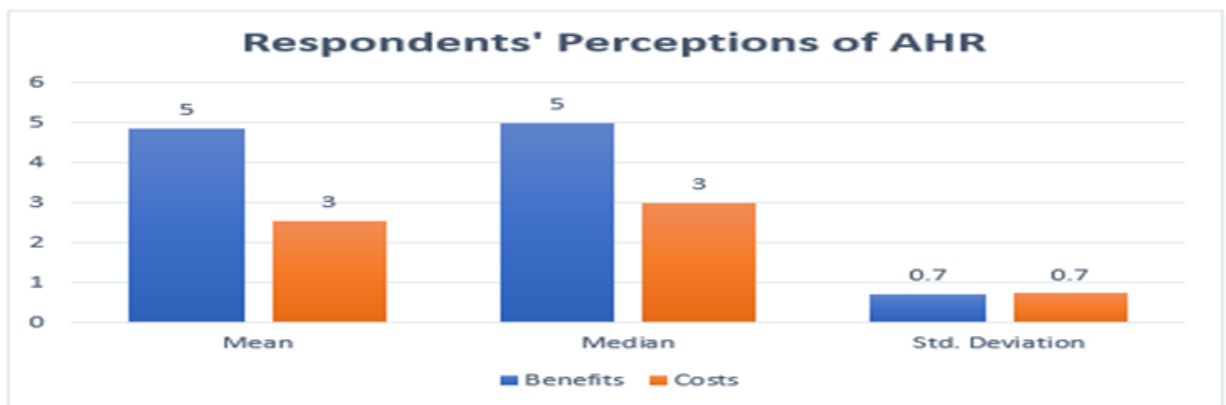


Fig 3: Respondents Perception of AHRP

Figure 3 shows respondents' perceptions of AHRP in relation to benefits and costs. According to the results, the mean of the responses concerning the benefits of using AHRP was 5 whereas the mean for the costs related responses was 3 and so was the median respectively. The standard deviation was 0.7 for both costs and benefits related to AHRP indicating that the responses were not so spread out from the mean values. The results showed that HR personnel found AHRP to be beneficial and less costly. Muriithi, et al. (2014) postulated that AHRP provides valid data which may be statistically analysed to provide meaningful segmentation of workforces, talent pools, or essential competencies. Further, Findikli (2016) reported increased congruency, competence, and commitment amongst organisational staff coupled with cost-effectiveness and increased satisfaction and acceptance for the electronic system based on how easily and efficient it allows them to work. Similarly, Udomphol and Siengthai (2016) also indicated that automating HR processes is perceived to have progressive impact on organisational effectiveness. AHRP users for instance confirmed that it improves the data maintenance process, decreases paperwork and data input expenses thus saving on costs incurred by an organization. Thus, the results in this study are reflective of the observations made in these past studies. Although AHRP is associated with maintenance costs, the costs were so minimal such that users still perceived AHRP to be one of the cost-saving mechanisms for the HR team.

6.7. Determining the knowledge level of AHRP usage

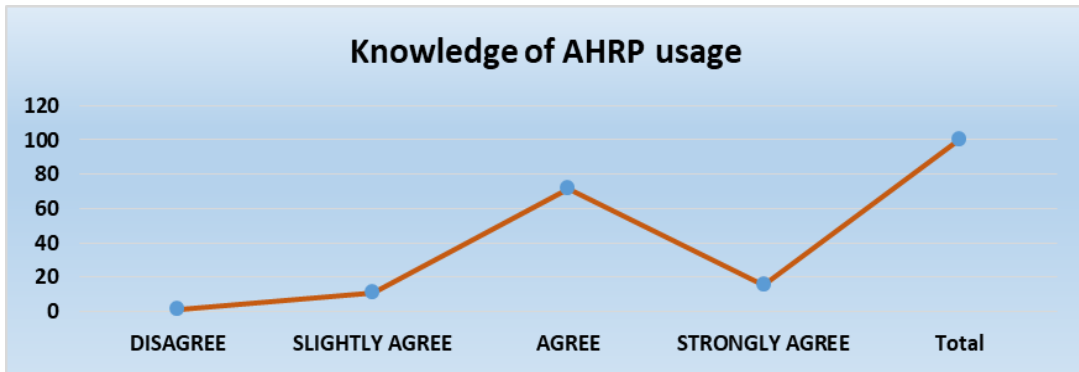


Fig 4: Knowledge of AHRP Usage

Figure 4 shows the knowledge of AHRP usage by the respondents in the HR department at MCM. The results showed that 1.4% of the respondents disagreed to having the knowledge of effectively using the AHRP, 11.3% slightly agreed to having the knowledge of using AHRP, 71.8% agreed to possessing the knowledge of using AHRP and another 15.5% strongly agreed to possessing the knowledge of effectively using the AHRP. This score reflects the effective application of training and development feature that the AHRP are equipped with. These findings support the assertion by Muriithi, et al. (2014) that the adoption of a continuous, methodical, and strategy-focused training approach is crucial for behavioural change and cultural adaptation and that HR managers should adopt HR systems that support training and development as this attribute is largely influenced by the type of HR system being utilized by a particular organization. Further, Armstrong (2006) also reported that the return on investment (ROI) in workers' professional development may be demonstrated by tracking statistics on employee training. He further reported training and development amongst employees may enhance ROI. In this study therefore, users of AHRP reported that they could confidently operate the AHRP with minimal supervision, they could transfer the knowledge about AHRP to newer members of the HR team and that they could confidently use all functions of the automated HR tools. Hence, this degree of usage amongst HR employees can ultimately affect the cost of training and essentially contribute to costs savings of the organization.

6.8. Regression model analysis of the influence that the mediating variables had on the performance of the HR department

Table 4: Regression Model Summary of the influence of AHRP on Performance

Model Summary				
Dependent Variables	Model	R	R Square	Sig. F Change (Anova)
Efficient Human Resource Processing	1	0.123	0.015	0.793
Cost Saving	1	0.252	0.064	0.218
Time Saving	1	0.108	0.012	0.853
Information Communication processing	1	0.171	0.029	0.571
Decision-making processing	1	0.256	0.065	0.207

Predictors (Independent variable): (Constant), Knowledge of usage amongst HR personnel

Table 4 shows the regression analysis model showing the influence of the mediating variable (Knowledge of usage amongst HR personnel) on the performance of the HR department. The derived R-coefficients ranged between 0.108 and 0.256. The correlations were not significant at $p > 0.03$ and levels of prediction ranged between 0.012 and 0.064 indicating that the independent variable could only explain between 1.08% and 2.56% of the variations in the dependent variables. The observations made from the regression model indicated that R-coefficients were weak at $p > 0.03$. Knowledge of AHRP usage was the adopted mediating variable in the conceptual framework. However, table 4.7 indicates that this mediating variable had no significant influence on the performance of the HR department.

6.9. Confirming the RBV theory

This study thus confirmed and supported the RBV theory to the effect that AHRP processes have brought about improved performance in the HR department. The findings in this study are in line with the position that Nyamubarwa, et al. (2013), Salazar (2017), Mwendwa (2017), Fidikli (2016), and Vasudevan (2021) who supported the RBV theory in its entirety claiming that the theory itself can be used to explain the strategies that management in organizations adopt to organize HR thus facilitating the smooth and efficient performance. Although these studies were conducted in different setups, the findings showed a similar trend and could all have indicated that the application of the RBV theory in organisational operations enhances its performance.

6.10. Hypothesis Testing

Table 4 Testing of the Hypothesis

Hypotheses	p-value	Test	Support
H1: Payroll management positively influences the performance of the HR department	$P < 0.03$	Regression	Supported
H2: Recruitment management positively influences the performance of the HR department	$P < 0.03$	Regression	Supported
H3: Time management positively influences the performance of the HR department	$P < 0.03$	Regression	Supported
H4: performance management positively influences the performance of the HR department	$P < 0.03$	Regression	Supported
H5: HR data analytics/Reports positively influence the performance of the HR department	$P < 0.03$	Regression	Supported

From the data displayed in table 4.6 in chapter four, all derived R-coefficients for the regression models were positive and ranging between 0.534 and 0.741. These values show that the associations between the independent variables (Payroll Management, Hiring and Recruitment, Time Management, Performance Management, HR Data Analytics and Reports) and the dependent variables (Effective HR processes, Time saving, costs saving, information communication and decision-making processing) were both increasing in the same direction. Besides that, the levels of independent variable predictions were also found to be significant at $p = 0.000$ for the dependent variables thus indicating that AHRP significantly influenced the performance of the HR department. Therefore, this study accepted the null hypotheses at $p < 0.03$.

7. Conclusion

These findings indicated that there were significantly positive associations between AHRP and the performance parameters that were adopted for this study. Specifically, this study found that AHRP

significantly influenced the performance of the organisation in terms of executing efficient HR processes, time saving, cost saving, information communication and decision-making. Hence, the null hypotheses that were developed in chapter two of this report had been accepted based on these findings. Thus, employing AHRP in most HR operations had the potential to make HR processes more efficient, improve time spent on processing, sourcing or capturing information, reduced costs involved in disseminating, organizing and filing information. Implementing AHRP also meant improved communication processes for vital information as well as enhanced decision-making procedures based on the availability of relevant information.

Further, employing AHRP was also found to be more beneficial than costly to the department in that there were reduced costs in the amount of paperwork involved in HR operations, reduced time spent on processing information, making decisions and communicating information. All these improvements were indicators of how AHRP had contributed to the efficiency and effectiveness of the department which were key to the operations of MCM. However, the influence of the mediating variable on the performance of the HR department indicated the absence of a significant influence on the performance of the HR department. Additionally, this study found that employees had the knowledge about AHRP usage. Hence, this indicated that employees were able to use AHRP with minimal supervision, yet effectively, and they were also able to transfer their knowledge to new users without any challenges. These findings also implied that the training and development function of the HR processes was being utilized effectively in preventing the company from incurring training costs thus enhancing the efficiency of the company.

8. Recommendations

Automated HR processes may be expensive to set up yet the long-term impacts for companies are seemingly beneficial. Mopani Copper Mines is one of the largest mining firms operating in Zambia whose extensive use of AHRP is recent. This may indicate that not too many companies operating in Zambia are utilizing automated HR processes. From the findings in this study, there are more benefits than costs associated with the use of AHRP. Besides the time and cost savings associated with the use of AHRP, employees also reported AHRP have improved employee relations within the department as well as employee satisfaction.

9. Recommendations for Future Research

Future research can focus on analyzing the factors that influence organizations to adopt AHRP in the management of human resource as well as the Long-term impact of AHRP on employee satisfaction and organizational culture. Further, a comparative study with other organizations in the mining sector could provide valuable insights and best practices. Additionally, future research can also consider the influence of organizational culture, leadership and literacy levels on the performance of the HR department. Further, future studies should consider the development of a framework or framework to resolve the research questions.

10. Limitation of the study

The HR department at MCM is one of the busiest departments where most of the employees are mostly engrossed in so much work relating to employees' welfare. Due to the employees' busy work schedules, collecting data in a timely manner as designed by the researcher could not be achieved. However, although there was this slight delay in the data collection process, the researcher was still able to make a timely submission to the university.

11. Contribution to the Body of Knowledge

From the reviewed literature, it was evident that studies on AHRP are more concentrated in the Western and Eastern parts of the world. Moreover, studies on AHRP within the mining sector are also few. Hence, the results obtained from this study will be able to contribute to the body of literature especially where usage of AHRP in the mining sector is concerned. In addition, these findings also have the potential to compel researchers to conduct more research works relating to AHR within the Zambian context.

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