

Digitization of Human Capital Management Activities in the Zimbabwean Mining Sector: Challenges and Opportunities in Achieving Sustainable Development

Regis Mishaeal Muchowe^a, Hazel Mubango^b, Lloyd Chingwaro^c

^amuchoweregism@gmail.com, ^bhazmub@gmail.com, ^clchingwaro@gmail.com

^{ac}Zimbabwe Open University P.O Box 1119, Mount Pleasant, Harare, Zimbabwe

^bWomen's University in Africa, Harare, Zimbabwe

Abstract

The main thrust of this investigation was to closely look on how digital technology has transformed human capital activities in mining companies in Zimbabwe, in realizing sustainable development. The major objective of the study was to understand human capital management activities that have been digitized in mining companies in Zimbabwe in realizing sustainable development. The secondary objectives seek to examine challenges and opportunities that are associated with digitization of human capital management activities in achieving sustainable development. The study employed qualitative methodologies to investigate the problem at hand. A saturation point method was used to determine sample size of human capital professionals in the Zimbabwean mining sector. Saturation point was reached at the 15th interview participant, and interviews were discontinued. Thematic analysis was utilized to present and categorize data availed by different study participants. The study established that human capital management functions such as recruitment and selection, training, reward management, employee records management and flexible work arrangements have been digitized. Challenges of digitization identified include increase in unemployment, lack of infrastructure, lack of skills and resistance from older employees. Opportunities of digitization included the realization of sustainable development goals 3, 4, 5, 12 and 13. The study recommends organizations to fully digitize their human capital management processes, and also come up with policies that make digitization implementation clear and easier to achieve sustainable development goals.

Keywords: *digitization, human capital management, sustainable development, technology, mining sector*

1. Introduction

Sustainable development is a commitment for every nation, organization and individual (UN, 2016). Achievement of sustainable goals should not be left out to political organizations but should be a collective effort from everyone (UN, 2016). This investigation focuses on digitization of human capital management activities, challenges and opportunities in achieving sustainable development. Sustainable development itself is a fairly new agenda that was adopted in 2015 by 193 nations under the United Nations banner, and this is meant to eradicate poverty, reduce inequality levels and tackle climate change and its consequences (UN, 2016). Digitization of human capital management is also a fairly new practice in the mining sector in third world countries (Nhongo, 2018). Zimbabwe by virtue of being part of the 193 nations who agreed to the Agenda 2030 of sustainable development goals need to be accountable to its citizens on its steps towards achieving these. The mining sector is the second largest contributor to the Zimbabwean economy, and therefore there is need to review its activities towards achieving sustainable development goals (World Bank, 2021). Digitization of human capital management activities is one such area that requires to be monitored in order to establish whether inroads or off roads are being made to achieve the agreed sustainable development goals.

Globally, mining industries have been implementing a plethora of measures and innovations to guarantee the realization of sustainable development goals. Large global players such as Bingham Canyon Mine and Mont Wright Mine have embarked in digitization of human capital management to achieve sustainable development goals (Renwick, Redman & McGuire, 2013). The challenge with this intervention is that it only focuses on one sustainable goal of climate action. Gupta & Rhymer (2022) observe that global players such as Tegmark are using digitization to achieve numerous sustainable development goals. These digital interventions include but not limited to artificial intelligence, e-commerce, e-human resource management, and use of robotics. Gupta & Rhymer (2022) conclude that there is a nexus between digitization and achievement of sustainable development goals. In a nutshell, globally there is evidence that digitization has potential in the achievement of sustainable development goals. However, most global documentations included digitization of human capital management as an integral part of a wholesale digital intervention. There is thus room for this investigation to single-out and isolate digitization of human capital

management, and establish the extent to which as a tool can be exploited in achieving sustainable development goals.

In the United States, Columbia Center on Sustainable Development (2016) notes that occupational health and safety, emerging infectious diseases, tuberculosis and non-communicable diseases are major issues in the mining sector. However, mining enterprises have been procedurally paying taxes, creating employment and gender equity, providing clean energy and availing technical and vocational educational training (TVET). This has in turn contributed in sustainable development goals of ending poverty, achieving gender equality, climate action and SDG 4 respectively. Legnick-Hall, Nelly & Stone (2017) posit that many USA organizations are digitizing to fit into the dynamic digital economy. They further state that digitization of human capital management is instituted in most American organizations to improve on productivity, innovation, speedy and adaptiveness. In terms of adaptiveness that is where digitization intersects with sustainable development goals. However, it can only be implied that by using digitization in human resources organizations such as Nike, Amazon and Disney are making efforts towards sustainable development goals. There is thus need for this study to expressly connect the dots between digitization of human capital management and sustainable development goals.

In Europe, digitization of human capital management activities has been viewed as both a hero and a villain to sustainable development. Fedorova, Koropets & Gatti (2019) document that digitization of human capital management at Russian University is negative as it results in unemployment, social pollution and hugely affects employee well-being. In other words, sustainable goal of poverty reduction is impossible to achieve given that employees are retrenched due to increase in digitization. However, Nad *et al.* (2022) present that GTK Minetic in Finland has been competitive after adopting smart equipment, information management systems, sensors, robotic cell, digital mineral processing solution, digital twin and machine learning. These have enhanced their mineral beneficiation and climate action in Finland. Hence, there is need to study how digitization of human capital management activities and sustainable development in Zimbabwe a country which is not in Europe with its unique socio-economic context as an emerging nation.

In Asia, organizations in the mining sector are working towards sustainable development goals by opening recycling subsidiaries and digitizing their operations (China Daily, 2022). UNDP (2020) conducted a survey on 13 enterprises in China which are privately owned. It was observed that

most of Chinese organizations have social responsibility departments which are responsible for aligning the organization and sustainable development goals. Fifty one percent of enterprises in China are concerned with growth, productivity and innovation. In achieving the three good health and wellbeing is promoted. In a nutshell, most companies in China promote sustainable goal number 8 of good health and well-being via digitization. It is important to also study how digitization of human capital management activities assists organizations in Zimbabwe in meeting sustainable development goals.

In Africa, a plethora of mining companies have come up with ways to achieve UN sustainable development goals. In Burkina Faso, SEMAFO mining company buys homemade soap from villagers to improve reduce poverty levels (Columbia Columbia Center on Sustainable Development, 2016). In Liberia, Arcelormittal mining firm helps with resources to fight with ebola annually. In South Africa, Anglo American company has a Zimele programs which funds startups for disadvantaged groups and individuals. The Brookings Institute (2022) notes that Africa has a lot of mining potential and views digitization as the missing link. The institute reports that digitization will improve mining productivity, enhance wealth, create jobs for skilled labour, and reduce negative environmental impact. It is against this background that an investigation on digitization of human capital management activities and sustainable development goals in Zimbabwe was carried out.

In Zimbabwe, little evidence has been presented on digitization of human capital management activities and sustainable development goals. The World Bank (2021) notes that digitization is a key enabler of Zimbabwean growth. Chindudzi, Maradze & Nyoni (2020) illustrate that digitization in financial institutions have increased sustainability. However, they indirectly demonstrate this point as their study dealt with financial performance. There is dearth of research on digitization and sustainable development goals and this research sought to cover and contribute in this area.

1.1 Research Objectives

The study was guided by the following objectives.

1. To understand human capital activities that have been digitized in the Zimbabwean mining sector;
2. To determine challenges of digitization of human capital activities in the Zimbabwean mining sector in achieving sustainable development goals; and
3. To explore opportunities of digitization of human capital activities in the Zimbabwean mining sector in achieving sustainable development goals.

1.2 Research Problem

Zimbabwe is part of the 193 nations that agreed to Agenda 2030 sustainable development goals (UN, 2016). In Zimbabwe issues to do with poverty, gender equality, unemployment, artisanal mining, illegal mining and environmental degradation have been topical (Nhongo, 2018). The mining sector is the second largest sector in Zimbabwe, and it should therefore be held accountable and be monitored in line with sustainable development goals. Digitization of human capital management is a new kid in the block, and is one practice that may be used in achieving sustainable development goals in the Zimbabwean mining sector. It is thus critical to explore the relationship between digitization of human capital management activities and sustainable development goals such as gender equality, environmental impact and poverty reduction. Furthermore, there has been a limited studies in Zimbabwe on digitization of human capital management activities and sustainable development goals.

2. Literature Review

2.1 Digitization of Human Capital Management

Digitization has become a buzzword in the 21st century globally. Before understanding the term digitization of human capital management, it is important to clarify the terms *digitization* and *human capital management* in isolation. Digitization is a term that applies in each and every management field, and examples include marketing, finance and production. Digitization means use of computers, hardware, software, internet of things in certain activity, so as to achieve efficiency and reduce costs (Halid *et al.*, 2019). In a nutshell, digitization is use of any modern software and hardware in conducting activities. On the other hand, human capital management

refers to all activities that are involved in the recruitment, deployment, motivation and managing of employees (Aggarwal & Sharon, 2017). In other words, human capital management refers to a set of activities that ensures that the management of people gives a sustained competitive advantage to the organization. Using the explanations of the two terms defining digitization of human capital management is not problematic. Digitization in human capital management has been used interchangeable with terms such as e-human capital management and digital human capital management. There is a difference between digitization and digitalization in human resources management. Digitization is taking advantage of newer technologies in executing HR activities, whereas digitalization is changing HR processes to start using technology. According to Goldstein (2015) digitization in human capital management refers to usage of internet and computer technologies in completing human capital related activities. On the other hand, Spitzer (2014) posits that digitization of human capital management activities is use of special software packages that makes it easier, fast, efficient and cost-effective to manage employees. Another explanation is brought forward by Aggarwal and Sharon (2017) that digitization in human capital management involves utilization of all technologies, computer and internet related programs to execute human resources functions. It can thus be concluded that digitization in human capital management means employing computers, software, hardware and the internet to manage staff in an efficient and effective manner. Digitized human capital management comes up in numerous forms ranging from recruitment, training, reward, performance management to flexible work arrangements.

2.2 Digitized Recruitment & Selection

Recruitment refers to the process of attracting qualified and experienced candidates to apply for a vacant post (Imo & Ibo, 2011). On the other hand, selection refers to the process of identifying the right candidate to fill the vacant post (Tripahi & Kushwaha, 2016). There is a huge difference between the terms *recruitment* and *selection*. When the organization is attracting people to apply for a vacant post, it is thus recruiting, and when they are doing interviews and other selection methods to appoint a candidate to fill the vacant post it is selection. Therefore, selection comes after recruitment. In terms of digital recruitment and selection, it is use of technologies such as internet, software and hardware in the recruitment and selection process (Anderson, 2017). In other words, a digitized recruitment and selection involves use of modern technology tools to make the process faster, cheaper and efficient to both the job seeker and organization. Some of the examples include posting of job adverts via social media, and receiving resumes and CVs via electronic

mails, job portals and or company websites. On the other hand, digitized selection may include conducting interviews, psychometrics and other selection assessments electronically via Zoom, Myteams, Skype, Google meet among other tools. The goal of digitizing recruitment and selection is to get the best candidate in a fast and cheaper way. In addition, digitization eradicates usage of excessive papers for resumes as job candidates submit these electronically. This is sustainable and is in line with UN sustainable development goals.

2.3 Digitized Training and Development

Training and development refers to the processes by which employees acquire skills, knowledge and abilities (Kalman, 2013). Training is usually associated with the learning of lower level employees within an organization. On the other hand, development is associated with acquisition of skills by professionals and managerial staff. However, in literature the two terms are used interchangeable. Training and development are critical as they ensure business survival and can lead to a sustained competitive edge (Shmitti, 2015). A digitized training and development refers to utilization of computer technologies in processes that lead to employees acquiring new skills, knowledge and abilities. This may be simple as sharing electronic videos, using electronic emails to share knowledge, and may be complex when the organization uses e-learning management systems. According to Bushnell & Stone (2013) big conglomerates have created what is known as *electronic corporate classrooms*. These are essential in making training and development flexible, exciting, cost-effective and efficient. Baneja *et al.* (2015) indicate that digitized training is flexible such that it allows for training take place anywhere and anytime. They further note that recorded trainings can be shared with future generations, and this meet sustainable development goals.

2.4 Digitized Reward Management

Reward management encompasses all activities that recognize employees for their work performance (Berman & Bell, 2011). Reward management can be both financial and non-financial. According to Charman (2021) reward management refers to all activities that are involved in ensuring that employees are compensated fairly and equitably. A digitized reward management uses technologies and software to reward employees. Some organizations have payroll software that they use to calculate salaries. Sometimes referred to as e-reward management it includes dissemination of payslips electronically. Major conglomerates have electronic reward management systems that are used to track employee attendance, monitor leave days, and keep a record of

employee total rewards. The major advantage of a digitized reward management is that it is easier to track and monitor employee rewards, and this can lead to an equitable employee reward. If reward management systems are digitized sustainable goals of gender equality and environment conservation can be met, since reward system will be fair and at the same time reducing paper work.

2.5 Flexible Work Arrangements

A digitized workplace can present employees with flexible work practices, and this is documented in literature as flexible work arrangements. Torrington *et al.* (2011) posit that flexible work arrangements are all about the introduction of technology in the business world. Muchowe *et al.* (2021) claim that flexible work arrangements is use of technology to make it easier for employees to work anywhere and anytime. Organizations take advantage of communication enabled technology such as Zoom, Skype, Microsoft Teams, Google Meet and electronic mails to ensure productivity. Some of the common practices of flexible work arrangements are remote working, teleworking, compressed working weeks and flexitime. The major benefit of embarking in flexible work arrangements is to enhance productivity and retain competent staff. Flexible work arrangements are environmentally friendly as they reduce air pollution by limiting staff commuting to work.

2.6 Sustainable Development Goals

Sustainable development goals are a product of 2015 United Nations General Assembly Summit which took place in September 2015. According to the UN Report (2016) sustainable development goals are part of Agenda 2030 blue print which shows what the world seeks to implement in order to make this world a better place for everyone and future generations. A total of 193 member states committed to the achievement of the 17 sustainable development goals and 169 targets. The goals are mainly meant to bring equality and efficient utilization of the earth's resources for tomorrow's generations.

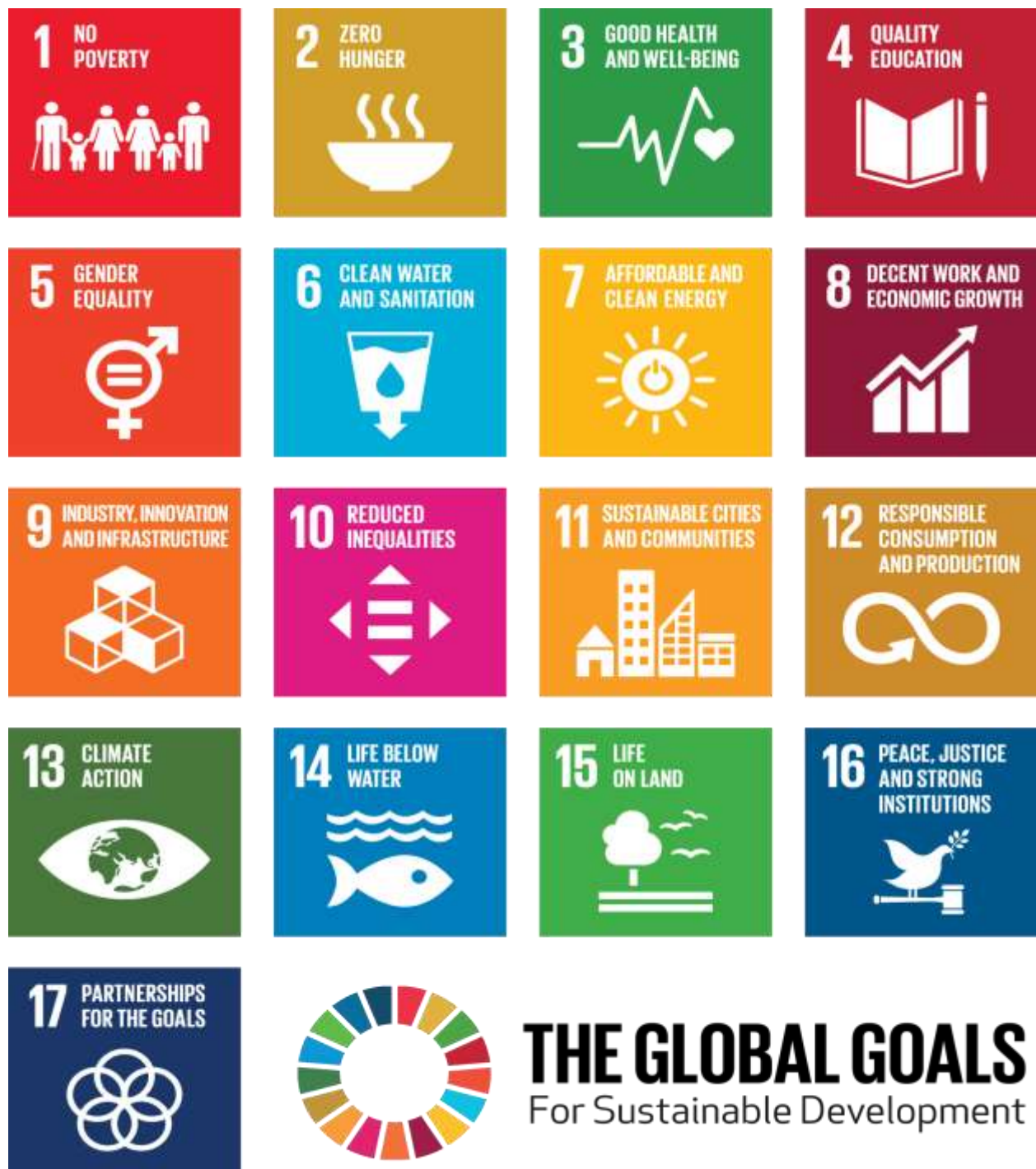


Figure 1: Sustainable Development Goals

Source: United Nations (2018)

Zimbabwe is also part of the 193 member states that was consulted and agreed on the sustainable development goals. Hence, as a nation it should be accountable and monitored the extent to which it has achieved these sustainable development goals. In conducting such an exercise mining firms which are part of the second largest sector would find themselves being monitored vis-à-vis sustainable development goals. Digitization of human capital management is an integral part of mining companies strategies, and it will be justifiable to assess this initiative's impact of sustainable development goals.

2.7 Theoretical Framework

2.7.1 Technology Acceptance Theory

Technology acceptance theory was propounded by Davies (1989) in trying to understand the reasons why customers may accept or not accept IBM products (Yusoff *et al.*, 2017). Technology acceptance theory seeks to explain why end users would use certain technologies (Urhiewhu & Daniel, 2015). The theory states that there are two major reasons that make people use digitized products. These are perceived usefulness and perceived ease of use. Organizations are likely to embrace digitized human capital management activities if these technologies are efficient and effective (useful). In as much a digitized practice may be useful, if it is complex to use organizations may not use it.

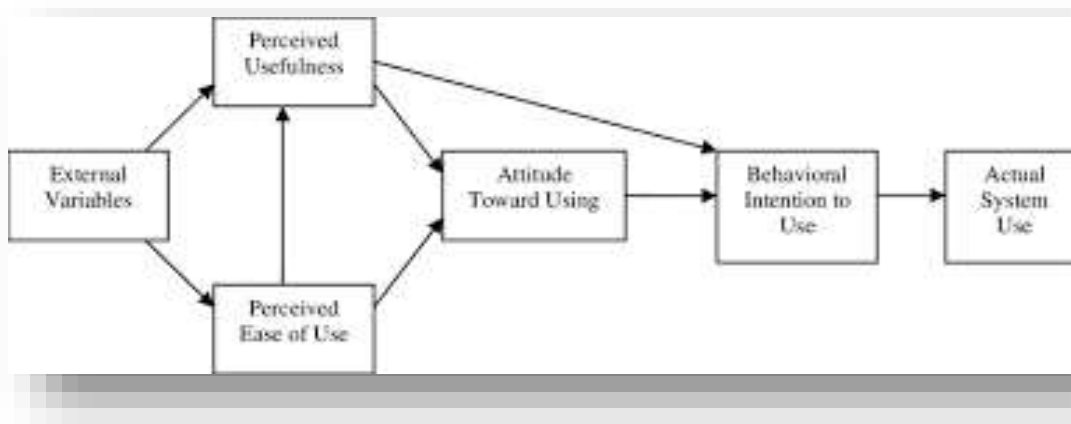


Figure 2: Technology Acceptance Model (Urhiewhu & Daniel, 2015)

In a nutshell, for users to accept and use digitized human capital activities they should be very useful. The systems should benefit the organization by limiting resources and time, at the same time making the organization meet its objectives and achieved a sustainable competitive advantage. Digitized human capital management activities should also be easy to use for every user. In other words, the use of digitized human capital management activities should require less effort. Technology acceptance theory was selected as theoretical framework because the theory has been tested and was found valid in a plethora of societies. In addition, technology acceptance theory has been found to have high levels of parsimony (2017). This inspired the researcher to adopt the theory as the theoretical framework.

3. Methodology

The study used an exploratory research design in seeking to understand the nexus between digitization of human capital activities and sustainable development in the mining sector. Exploratory research design paired with qualitative methodology helped the researcher to gain deeper understanding on digitization of human capital activities and sustainable development goals. The population of the study was the Zimbabwean mining industry its 1000 HR professionals fully employed in the sector were eligible to participate in the study.

The study employed purposive sampling techniques. The study used telephone interviews to gather data from key informants who were mostly from human capital management departments in mining firms in Zimbabwe. Telephone interviews were useful as they were flexible for both the researcher and participants. The study adopted a saturation sampling method, and at the 15th participants interviews were stopped as the respondents were no longer adding new information. Participants were first interviewed on the 1st and 2nd of September 2022, and repeat interviews were conducted on the 15th and 16th September 2022. This was used as a mechanism of ensuring the study is confirmable, credible, transferable and trustworthy. The interview participants were consistent with their responses in both occasions.

The sample profile was made up of 6 female human capital managers and 9 male human capital managers. Although the majority of participants were men, women also had a sizeable representation to make the results for this study valid for both genders. Furthermore, 6 participants

represented large mining enterprises, 5 interviewees were from medium mining enterprises and 4 are employed in small mining firms. This was important as it ensured that findings from this study represent the whole Zimbabwean mining sector.

4. Results/Findings

This section utilized thematic coding to present results that were obtained from telephone interviews. In line with the objectives for this study 16 themes emerged from the interviews. *Table 1* below details themes and extracts from telephone interviews.

Table 1: Thematic Analysis of Data from Telephone Interviews

Theme	Extract from interviews and explanations
Recruitment Selection	& All the respondents indicated that recruitment has been digitized in their organizations. All interview participants illustrated that their organizations are using the internet to advertise for vacant post, and use job portals and electronic mails for receiving Cvs and resumes from job seekers. Interview I highlighted this: <i>“My employer use online sites such as vacancymail to post vacant positions,we have an electronic email account for receiving CVs and resumes.”</i> 9 of the interview participants claimed that the selection process in their organization has been digitized. 5 interview participants indicated that they use Zoom platform for interviews as they have Zoom corporate accounts. The other participants highlighted they use Google meet and Microsoft teams. The other 5 interview participants were not an issue as they stated that their firms mixed both traditional and digitized selection. Participant IV stated this: <i>“At our organization it depends with the level of the advertised post.....if it’s a lower level post we conduct interviews on site, and if it’s a managerial post interviews are conducted online via Zoom.....we are still working on a recruitment and selection</i>

<i>policy that factors in digitization, and hopefully our Managing Director will approve it.”</i>	
Training development	& Training and development was the second most popular digitized human capital management practice. 11 of the study participants gave an account that they were using electronic trainings to make training interesting and productive. Participant II mentioned this: <i>“The last 4 trainings I have facilitated in my organization have been online.....I think Covid -19 pandemic showed us that training can be conducted online, and the benefits were that training can be done at the comfort of our homes, and even post-covid we will continue to use electronic training and development.”</i> The other four participants were not in disagreement, as they stated that development programs are carried out online, while trainings are conducted physically. Participant XV stated this: <i>“For some programs especially for management, they are carried out online.....Our environment does not accommodate mistakes, so for employees on the ground we conduct physical demonstrations to avoid accidents.</i>
Employee records	Interview participants indicated that their organizations have databases that store employee files and data. In as much some participants stated that they still have physical files, they showed commitment to simultaneously creating employee online databases as this is more safer than having physical ones which can be lost or damaged.
Reward management	Telephone interviews explained that reward management has been fused with technology. All participants described that they use payroll management software to calculate salaries. Participant III indicated this: <i>“We use Belina times software for our payroll....we even send payslips via emails and sms although some of the old staff are resisting this initiative.”</i>

Flexible work arrangements	7 of the study participants indicated that they are using blended work arrangements. The study found that for jobs that do not necessarily need physical presence incumbents are allowed to work remotely and telecommute. Participant XIII stated this: <i>“Our organization has a work from home policy that allows management employees to work from home.....however it is unfortunate that some jobs in our organization such as miners, general hands, security guards and mine captains, require incumbents to be at the workplace during their shift.”</i>
SDG13	The most popular sustainable development goal that study participants believe to be solved by digitization of human capital activities is climate action. Participants believe that their mining firms are using digitization to conserve the environment for future generations. They also indicated that digitization meant limited use of physical resources such as paper and vehicles that can cause air pollution.
SDG12	The study shows that digitization of human capital management activities leads to responsible consumption and production. Initiatives such as distribution of online payslips and online employee databases reduced paper work and are a means of conserving trees. In addition, telephone respondents asserted that remote working and telecommuting reduced fuel consumption. Participant VI highlighted this: <i>“Some of our employees work from home, and this reduces fuel consumption as they do not drive or commute to work every day.”</i>
SDG5	The investigation showed that gender equality is being advanced via digitization. Participant X indicated this: <i>“Use of payroll software for salaries ensures that women and men get equal salaries for same job and effort,the human element has been reduced that often lead to subjective remuneration systems.”</i>

In addition, respondents showed that digitization of human capital management activities came with initiatives such as flexible work arrangements that allowed women to care for their children at the same time fulfilling work commitment.

SDG3

Study participants indicated that digitization of human capital activities promotes good health and wellbeing. Most respondents claimed that offering flexible work arrangements removed commuting stress among employees of congestion. More so, employees on these arrangements are discouraged from driving to work every day and this reduces air pollution and ultimately reduces diseases associated with air pollution.

SDG4

The study reveals that digitized training and development result in quality education. Respondents described that gamified training programs are interesting and easy to understand. Participant IX had this to say:

“Online training programs are flexible and can be done anywhere,.....these videos are stored permanently online and can be of benefit for future apprentice trainees.”

Unemployment

Respondents showed that digitization of human capital activities threatened job security. Use of technology means that limited manpower is required in organizations. This diverges from sustainable goal number 1 of poverty reduction, as unemployment means an increase in poverty. Participant V stated this:

“Digitization at our organization has resulted in some members of the staff being retrenched.....most of these guys were bread winners and after retrenchment life becomes harsh for them and their dependents.”

Lack of infrastructure

Telephone interviewees stated that lack of infrastructure is another challenge they faced in digitizing human capital activities to meet sustainable development goals. The study found that there is lack of infrastructure to institute full scale digitized human capital

management activities to achieve sustainable development goals.

Interview participant XII highlighted this:

“Digitization of human capital management activities has potential for our organization to work towards sustainable development goals.....it is unfortunate that there is halfhearted commitment by our management to provide funding and resources on digitization.”

Lack of skills

In addition, study participants explained that their organizations lacked skills to digitize their human capital management activities so that they can work towards achieving sustainable development. They highlighted that competent and qualified IT personnel prefer organizations in the telecommunications industry such as Econet Wireless. At the end of the day, mining firms end up outsourcing digitization of human capital management activities which is expensive and sustainable.

Resistance

Furthermore, telephone interview participants indicated that resistance from employees is another challenge being faced by mining firms in digitizing human capital management activities in order to achieve sustainable development. This resistance comes from informal leaders and older employees. Participant VII illustrated by saying:

“Employees particularly the older who are not tech savvy resist digitization as they are afraid of technology.....on the other hand young staff resist digitization on the basis of job security.”

5. Discussion of Findings and Conclusions

This study was devoted at appreciating digitization of human capital management activities and sustainable development in the Zimbabwean mining sector. The first objective was to understand the human capital management activities that have been digitized. The major human capital management activity that has been digitized in the Zimbabwean mining sector is recruitment and selection. This finding is consistent with Halid *et al.* (2019) findings that recruitment and selection was wholly digitized in most of the Indian manufacturing firms. Organizations find it easier to

communicate with job seekers virtually and this gives them benefit in terms of cost reduction and speedy. This study also found that mining organizations in Zimbabwe have digitized training and development, and this is consistent Kalman (2013) observations that Singapore mining firms are utilizing e-training. Organizations are realizing that training and development that are digitized are flexible and exciting to employees. Furthermore, this study found that employee records are now being stored in online databases. This diverges from the observations by Chindudzi *et al.* (2020) that organizations in Zimbabwe in the banking sector only have online databases for their clients not employees. Perhaps in the last two years organizations in Zimbabwe have made strides in coming up with online employee databases. More so, the investigation shows that mining firms have digitized reward management, and this converges with Legnick-Hall *et al.* (2017) findings in the UK. The similarity may be because of the fact that use of payroll software in calculating salaries is a universal best practice in human capital management. In addition, this investigation revealed that flexible work arrangements is another digitized human capital management activity. This is in line with Gupta & Rhymer (2022) that organizations in India are using flexible work arrangements. This means that organizations are starting to understand the benefits of letting employees work anywhere and anytime. Therefore, with regards to the first objective this study found that mining firms in Zimbabwe have digitized in terms of recruitment and selection, training and development, employee records, reward management, and flexible work arrangements.

The second objective of the study was aimed at determining challenges encountered in digitizing human capital management activities and achieving sustainable development. The study found that the major challenge is unemployment which frustrates the achievement of sustainable development goal number 1 of ending poverty. This is in agreement with Chindudzi *et al.* (2020) that digitization in general reduces number of jobs in an organization. This is a general principle that digitization of activities comes at cost of job security. In addition, this study found that lack of infrastructure is another challenge encountered by mining companies in digitizing human capital management activities to achieve sustainable development. This finding converges with claims by the Brookings Institute (2022) that African countries lack infrastructure and capacity to institute digitization. Since Zimbabwe is part of Africa the agreement between the two observations is plausible. Furthermore, participants for this study showed that lack of skills is another challenge encountered in digitizing human capital management activities to achieve sustainable development. This deviates from Nhongo (2018) findings that Zimbabwe has a huge number of competent IT staff.

The deviation between the two studies may mean that people with these skills may have migrated for greener pastures in South Africa or overseas. In addition, the study found that resistance from employees is another challenge encountered in digitizing human capital management activities to achieve sustainable development. Older employees who are not tech savvy resist digitization. This is in line with technology acceptance theory that if end users perceive that the new technology is not easy to use they will reject it. Therefore this study found that unemployment, lack of infrastructure, lack of skills and resistance are challenges encountered in digitizing human capital management activities to achieve sustainable development.

The final objective was to explore opportunities of digitization of human capital activities in the Zimbabwean mining sector in achieving sustainable development goals. The study found that the major opportunity was based on sustainable development goal 13. Digitization of human capital activities in Zimbabwean mining companies is improving climate action. This is in agreement with findings by Nad *et al.* (2022) that mining organizations in Finland are using digitization to implement climate action. Therefore, climate action is the easier sustainable development goal to action when an organization digitize. Moreover, digitization of human capital activities was found to lead to responsible consumption and production. This agrees with Nhongo (2018) observations that teleworking in Zimbabwe reduces fuel consumption, and this explains the similarity as both studies were carried out in Zimbabwe. Furthermore, the study found that gender equality is being achieved via digitization of human capital activities. This finding differs to Chindudzi *et al.* (2020) who assert that digitization is widening the gap between men and women in Zimbabwe. This may mean that there has been massive improvement in gender equality in the last two years. Furthermore, the investigation revealed that good health and wellbeing is a product of digitization of human capital activities in the Zimbabwean mining sector. This diverges from Fedorova *et al.* (2019) studies which established that digitization of human capital activities increased stress amongst Russian University staff. The difference may owe to the difference in terms of socio-cultural contexts of Russia and Zimbabwe. The study also found that quality education is being achieved via digitization of human capital activities. Mining companies are thus investing in their future manpower. Conclusively the study found that sustainable development goals 13, 12, 5, 3 and 4 are being met via digitization of human capital activities in the Zimbabwean mining sector.

This study was unique in the Zimbabwe context, and it will serve as documentation on digitization of human capital management activities and sustainable development goals in the Zimbabwean

mining sector. The investigation focused on the mining sector, there is need for similar studies in other sectors such as the retail, commerce and manufacturing sector. In addition, the study focused on digitization of human capital management activities, and there is need to determine the impact of digitizing other fields such as marketing and finance, on sustainable development goals.

Acknowledgements

Gratitude is extended to all participants who generously provided their valuable time and shared their experiences and views for this study.

References

- Aggarwal, V. & Sharon S. D. (2017). 'Digital human resource management', in *Gyan Management*, 11, (i): 199-209.
- Anderson, J. 2017. 'Digital transformation', in *Moderna affärssystem*, 4, (i), 20-27.
- Baneja, B., Donovan, P., Haefele, M., Siddiqi, L. & Smiles, S. 2016. Extreme automation and connectivity: the global, regional, and investment implications of the fourth industrial revolution. *UBS White Paper for the World Economic Forum Annual Meeting*.
- Berman, S. J. & Bell, R. 2011. *Digital transformation: creating new business models where digital meets physical*, New York: Somers.
- Bushnell, N. & Stone, G. 2013. *Finding the next Steve Jobs: how to find, hire, keep, and nurture creative talent*, New York: Netminds.
- Charman, K. 2021. Digitization of rewards leads to better business outcomes. <https://www.spiceworks.com/hr/employee-recognition/guest-article/digitization-of-rewards-leads-to-better-business-outcomes/> Accessed on 01 September 2022.
- China Daily. (24 January 2022). Top 10 Chinese companies in line with UN Goals. https://global.chinadaily.com.cn/a/202201/24/WS61eddbada310cdd39bc82aa8_4.html Accessed on 01 September 2022.
- Chindudzo, G., Maradze, T. & Nyoni, T. 2020. 'The impact of digital banking on the performance of commercial banks in Zimbabwe', in *IJARIE*, 6, (vi): 1190-1219.
- Columbia Center on Sustainable Development. 2016. January 2016 Consultation draft. New York: World Economic Forum.
- Fedorova, A., Koropets, O. & Gatti, M. 2019. 'Digitalization of human resources management practices and its implications on employee well-being', in *Contemporary issues in business, management and economics engineering*, 739-749.
- Goldstein, J. 2015. 'Digital technology demand is transforming HR', in *Workforce Solutions Review*, 6, (i): 28-29.

Gupta, J. & Rhymer, J. 2022. 'Mindful application of digitalization for sustainable development: the digitainability assessment framework', in *Sustainability Journal*, 14, (i): 1-23.

Halid, H., Yussoff, Y.M. & Somu, H. 2019. The relationship between digital human resource management and organizational performance. *Advances in Economics, Business and Management Research, Series volume number 141, Proceedings of the First ASEAN Business, Environment, and Technology Symposiu.*

Imo, N. T. & Igbo H.U. 2011. Challenge of digitalizing information resources in Nigeria university libraries. A paper presented at the 49th NLA National Conference/ AGM 10th- 15th July. Awka.

Lengnick-Hall, M. L., Neely, A. R., & Stone, C. B. 2017. *Human resource management in the Digital Age: big data, HR analytics and artificial intelligence*, Boca Raton: CRC Press.

Muchowe, R., Mawonde, D. & Pande, C. (2019). 'The relationship between flexible work arrangements and organisational performance in higher and tertiary education institutions in mashonaland central province during the covid-19 period in Zimbabwe' in *International Journal of Research and Innovation in Social Science*, 5, (xii): 245-249.

Nad, A., Jooshaki, M., Tuominen, E., Michaux, S., Kirpala, A. & Newcomb, J. 2022. 'Digitalization solutions in the processing industry: The case of GTIC Mintec, Finland', in *MDPI minerals*, 1, (xii): 1-21.

Nhongo, J. 2018. Manokore Attorneys. What are the most exciting sectors to invest in Zimbabwe? 08 October 2018. <https://www.dlapiperafrica.com/en/zimbabwe/insights/2018/what-are-the-most-exciting-sectors-to-invest-in.html> Accessed on 11 September 2022.

Renwick, D., Redman, T., & Maguire, S. 2013. 'GHRM: A review and research agenda', in *International Journal of Management Review*, 15: 1-14.

Schmitt, J. M. 2015. 'Innovationskultur – grundlage einer zukunftsfähigen Arbeitskultur' in *Springer Fachmedien*, 73–88.

Signe, L. 2021. The Brooks Institute. 03 December 2021. Africa in focus: digitalizing Africa's mines. <https://www.brookings.edu/blog/africa-in-focus/2021/12/03/digitalizing-africas-mines/> Accessed 07 September 2022.

Spitzer, B. 2014. 'HR in the digital age', in *Workforce Solutions Review*, 5, (i): 15-17.

The World Bank. 21 May 2021. Digital transformation a key enabler of long-term resilient growth in Zimbabwe. <https://www.worldbank.org/en/country/zimbabwe/publication/digital-transformation-a-key-enabler-of-long-term-resilient-growth-in-zimbabwe> Accessed on 15 September 2022.

Torrington, D., Hall, L., & Taylor, S. 2011. *Human Resource Management*, Harlow: Pearson.

Tripathi, R., & Kushwaha, P. 2016. *A study on Innovative practices in digital human resource management. natioanl seminar on digital transformation of business in India: opportunities and challenges*, Dehradun: IMS Unison University.

UNDP. 2020. Private sector awareness of sustainable development goals: a survey report on business and sustainability in China. New York: UNDP.

United Nations. 2016. Transforming our world: The 2030 agenda for sustainable development (October Issue).

United Nations. 2018. The 2030 Agenda and the Sustainable Development Goals: An opportunity for Latin America and the Caribbean (LC/G.2681-P/Rev.3), Santiago

Urhiewhu, L.O. & Daniel, E. 2015. 'Conceptual and adoption of technology acceptance model in digital information resources usage by undergraduates: implication to higher institutions education in Delta and Edo of Nigeria', in *Journal of Education and Practice*, 6, (xxi): 83-92.

Yusoff, Y. M., Nejati, M., Kee, D. M. H., & Amran, A. 2018. 'Linking green human resource management practices to environmental performance in hotel industry' in *Global Business Review*, 9, (vii): 215-24.