The Role Of Effective Change Management And The Principles For Responsible Management Education (PRME) In Preparing For The Fourth Industrial Revolution

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Abstract

This paper aims to understand how HR professionals may effectively manage the transition to the Fourth Industrial Revolution (4IR) work environment. Data for this qualitative research was collected using semi-structured interviews. The sample comprised of 60 managers drawn from different sectors using purposive sampling. The grounded theory approach was used and data was analysed using open, axial and selective coding. Recommendations based on the results of the study are graphically presented with the aim of providing practitioners with a framework guideline for implementation. The goal is to facilitate the preparation and management of change as human resources, especially as business partners and drivers of change, enable their organisations to successfully transition into the 4IR work environment.

Keywords: Fourth Industrial Revolution; change management; Principles for Responsible Management Education (PRME); HR strategy; grounded theory approach

INTRODUCTION

The much anticipated debut of the Fourth Industrial Revolution (4IR) has necessitated intensive planning and change management at corporate levels. Since the Fourth Industrial Revolution (4IR) has been accompanied by fears and perceptions of job losses, a tremendous amount of this planning relates to 4IR and human resources, thereby bringing to the fore, the need for effective change management. Although the impact may be at corporate levels, planning to prepare for this impact begins at university and tertiary education level. This means that organisations, through their management teams, need to be alive to the dynamics of the environment, whilst taking cognisance of the ever-changing needs of internal and external customers. The management teams then need to be able to strategically change the organisation's direction, infrastructure and competencies to timeously serve the evolving needs. In order to ensure that change management is effectively undertaken, all management teams, especially human resource managers, have a crucial role to play in the change management process. By implication, systemic change as demanded by the 4IR, can be facilitated through business education. The modus operandi then is that the Principles for Responsible Management Education (PRME) sets the path for business schools to listen, learn, engage and commit to driving systemic change during the transition into the 4IR to facilitate a positive societal

impact. Preparing effectively for the 4IR using effective change management strategies and the Principles for Responsible Management Education (PRME) makes enormous sense as PRME nurtures sustainable development.

LITERATURE REVIEW

Background

To understand the future and completely recognise the impact that the 4IR will have in the workplace, it is crucial to firstly, examine the past. A better understanding of how precisely the 4IR will affect humans in the workplace can be gained by finding differences and similarities from the previous three revolutions. It is therefore important to start by understanding the origin of the 'industrial revolution'.

Allen (2011) describes the first industrial revolution as a revolution that steam powered mechanisation in 1784; it is a process that transformed largely rural societies in Europe and America into industrialised, urban areas through the introduction of machines and techniques in textiles and other industries. One could thus say that this revolution replaced a significant portion of the world's heaviest manual work, typically done by manual human labour, with that of mechanical power. This historic event was the first significant shift in how human labour was applied, as previously, it was mainly used for agriculture and the production of primary goods. Furthermore, it also signalled the creation of new types of work, different working conditions (mechanised factories), and new occupational requirements.

The second revolution started in the 1890s; it was characterised by mass production in new industries like steel, oil, and electricity. The telephone, light bulb, and internal combustion engine were some of the key inventions of this era. This revolution was driven by significant technological developments such as, improved steel manufacturing, the development of new

chemicals and chemical manufacturing processes, the invention and application of electricity, the invention and application of the internal combustion engine and production engineering-processes such as mass production, interchangeable parts, division of labour and the continuous-flow production line. Again, the nature of human work changed dramatically, most notably due to the application of division of labour.

The third revolution was the Information Technology and electronics revolution ushered in the 1960s, which gained momentum and evolved into digital technology beyond the 1980s. This revolution saw the mechanical and electrical systems of the previous revolution being further automated with the application of electronics and information technology. This increase in automation not only reduced the amount of manual labour performed by humans but also started to reduce the amount of brain work humans had to apply in their occupations (Kagermann et al., 2013).

2.2.1 The Four Stages of the Industrial Revolution

The concept of the 4IR has its backgrounds in Europe and therefore expanded and has been adopted by more top trade countries in different continents. The 4IR is built on the three previous industrial revolutions, namely, steam and waterpower, which was the mechanisation of manufacturing; electricity, which involved mass production using electric power, and the period of the computer launch (Schwab, 2016). The effect of the 4IR is expected to be further profound, permanent, and much faster in comparison to the previous three industrial revolutions. The elevated progress in the need of technologies (primarily communication and information technologies) by business has a potential to drive the future of the 4IR and could result in a positive effect on various parts of people's lives provided that the transition is effectively managed. The research question then arises how can corporate enterprises effectively prepare for and manage change that

is needed to smoothly transition into the 4IR work environment?   The study explored HR managers' perspectives on what needs to be considered to ensure that change management for 4IR is done properly since HR managers play a crucial role in the change management process.

Characteristics of the Fourth Industrial Revolution

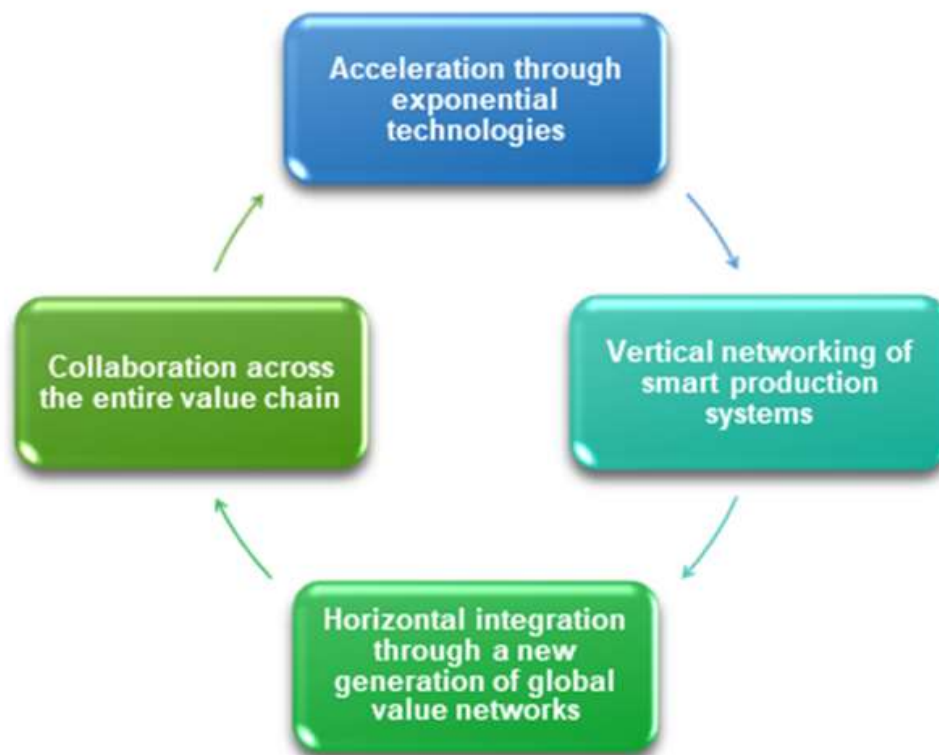The 4IR is characterised by 4 key systems (Figure 1).

Figure 1: Characteristics of the Fourth Industrial Revolution

Nagy, G., Illés, B., & Bányai, Á. (2018). Impact of Industry 4.0 on production logistics. IOP Conference Series: Materials Science and Engineering. p. 2.

Smart factories, which are largely the foundation of 4IR cannot operate on an unconnected basis. It is necessary to do the networking of smart products, smart factories and other smart production systems. The core of **vertical networking** comes from use of the cyber-physical production systems,   which allow companies and production facilities to respond promptly and correctly to essential demands (stock, machinery faults and unanticipated interruptions) requiring smart logistics and smart services.

In the 4IR, **horizontal integration** is expected to expedite the formation and protection of systems that establish and improve value. In this regard, crucial relationships are those between the customers and the business partners. It could also involve the incorporation of new business models within different continents and countries, thereby creating a worldwide network.

The 4IR encompasses **co-operation or collaboration** of the production process and the product. It recommends data transparency and high levels of programmed partnerships across the entire value chain from the production processes to the finished products until it reaches the market. Third-party suppliers and service providers must be properly integrated

horizontally into the company's production and logistics management systems.

Company processes, especially those participating in production involve the utilisation of numerous technologies. This can be achieved through **acceleration through exponential technologies**. The 4IR entails incorporating the technologies and innovations to mass market applications.

Change management

Change management has been defined as 'the process of continually renewing an organisation's direction, structure, and capabilities to serve the ever-changing needs of external and internal customers' (Moran & Brightman, 2001:111). The study explored HR managers' views on what needs to be considered to ensure that change management

for 4IR is done properly since HR managers have a crucial role in the change management process. Critical to HR managers effectively facilitating the change management process for the upcoming 4IR is being upskilled and equipped. In this regard, the Principles for Responsible Management Education (PRME) plays a crucial role.

Principles for Responsible Management Education

Through the integration of the UN Global Compact and leading academic institutions, a set of six Principles for Responsible Management Education (PRME) were developed. Business leaders who are expected to drive the implementation of 4IR can benefit from PRME (Figure 2).

PURPOSE: We will develop the capabilities of students to be future generators of sustainable value for business and society at large and to work for an inclusive and sustainable global economy.

VALUES: We will incorporate into our academic activities and curricula the values of global social responsibility as portrayed in international initiatives such as the United Nations Global Compact.

facilitate and support dialogue and debate among educators, business, government, consumers, media, civil society organizations and other interested groups and stakeholders on critical issues related to global social responsibility and

METHOD: We will create educational frameworks, materials, processes and environments that enable effective learning experiences for responsible leadership.

interact with managers of business corporations to extend our knowledge of their challenges in meeting social and environmental responsibilities and to explore jointly effective approaches to meeting

engage in conceptual and empirical research that advances our understanding about the role, dynamics, and impact of corporations in the creation of sustainable social, environmental and

Figure 2: The Six Principles of Responsible Management Education

Alcaraz, J., Marcinkowska, M. & Thiruvattal, E, (2011). The UN-Principles for Responsible Management Education: Sharing (and evaluating) information on progress. Journal of Global Responsibility. (2), p. 152.

The Principles for Responsible Management Education (PRME) were developed in 2007 by an international task force of highly profiled ambassadors (Deans, University Heads, official representatives from leading business schools and academic institutions). Based on the premise of and under the coordination of the UN Global Compact and leading academic institutions, the PRME task force developed a set of six principles which lay the foundation for the global platform for responsible management education. Organisations that become signatories to the PRME mindset `and philosophy soldier their conviction that tertiary institutions absorbing universal values into their syllabi and research can contribute to a more sustainable and integrated global economy and simultaneously mould more flourishing societal needs, thereby harnessing positive societal impacts.

RESEARCH METHODOLOGY

Research approach
In this study, the researcher adopted a qualitative research paradigm and followed the Straussian approach because of the lenience in the position of use of literature as a source of insight that helped the researcher to engage with participants, then have relevant probing questions. It is logical to use grounded theory analysis techniques as suggested by Glaser and Strauss (1967) and other authors (Giske & Gjengedal, 2007; Glaser & Holton, 2004; Holton, 2007; Jones & Alony, 2011).

The qualitative nature of this study entailed embarking on in-depth, recorded interviews with HR managers to provide insight into the research questions. The sampling procedure followed a non-probability sampling technique called purposive sampling. The purposive nature of the sampling procedure, which in grounded theory is referred to as theoretical sampling allowed the researcher to approach HR managers in different sectors that were theoretically in the best possible position to provide information that will answer the research questions. The sample may be described in terms of sector and size of organisation from which the participants reign.

Respondents
The sample comprised of 60 managers, from whom data was collected using semi-structed interviews to enable further probing and follow-up. The sample comprised of 22% being from the FMCG sector, 11.1% from the higher education sector, another 11.1% from the government sector, whereas 55.6% were from 'other sectors (e.g., Legal, Health, Transport, Mining, Security, Auditing Firm, Postal Services, Refinery, Beverages and Alcohol). The staff compliment from the companies where the participants are based consists of 38.9% having below 500 employees, 16.7% having between 500-1000 employees and 44.4% having above 1000 employees.

Instrument
Data was collected using a semi-structed interview schedule. Rapport was established by clarifying the purpose of the study, the process to be followed, risks/discomforts, benefits, costs, feedback process, informed consent to participate and permission to record the interview session. The interview schedule covered 6 aspects relating to the impact of 4IR in the workplace in South Africa, the influence of HR Professionals on the impact on 4IR in the workplace in South Africa, the impact of internal and external factos on HR Professional's success in facilitating 4IR within their organisations, problems anticipated in ensuring the facilitation of 4IR in the workplace

and the resources needed to ensure the facilitation of 4IR in the workplace.

Measures

Three levels of coding that were used in this qualitative study include open, axial and selective coding.

Data collection continued until the point of data saturation. Alvesson and Sköldberg (2009) describe saturation during interviews as a moment when there is no different data that is discovered by additional collection of data due to the fact that all the questions raised have been exhausted by the initial questions that were asked during the qualitative interviews. Each interview went through the initial open coding which involved grouping similar concepts into codes, that is, after each interview had been transcribed. After the point of data saturation, which is at a point where there was no new data emerging, the researcher went through open coded data to perform axial coding, whereby all codes were grouped according to themes. Selective coding was then narrated to formulate a storyline that explained the network of concepts or axial code that resembled a framework.

The researcher adopted the naturalist inquiry. When defining the naturalist enquiry, Lincoln, and Guba (1985) stated that it is a paradigm of enquiry whereby a model is used on the manner in which an inquiry may be conducted. In order to ensure trustworthiness, the most suitable terms in naturalist paradigms, followed in this study too are the concepts of credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985). This study adopted a comprehensive method to guarantee credible and accurate findings. Transferability has been boosted by a recruitment approach which required the highest variation in the sample.

To ensure dependability, this study clearly states the demographic of the variables, clearly defines the research questions employed in the process of collecting research data and clearly explains the coding procedures (Saumure & Given, 2008). The qualitative data analysis

package ATLAS.ti was used for coding. Steps have been taken with the purpose of ensuring that the findings of the study are the results of the participants and not the preferences of the researcher (Polit & Beck, 2014). Triangulation of different sources and perspectives has been done in order to promote confirmability (Lincoln & Guba, 1985). Confirmability has been addressed by cross checking codes for accuracy. The researcher also verified preliminary findings by listening to audio recordings to ensure credible interpretation of participants' responses.

RESULTS AND DISCUSSION

In assessing HR managers' views of transitioning for 4IR, the key results highlighted the need for:

- A change management strategy that will provide a framework that will regulate how each and every project of change will be managed by creating awareness, understanding, knowledge of benefits amongst employees. So in essence, the important role of HR will be to facilitate that process of bringing about the change through employee awareness and acceptance" [Interviewee 3].

- A change management plan which will reflect what is needed, the scope, what training is needed in order to make sure that the system is well anchored [Interviewee 1]. A proper change management plan will assist HR managers in identifying skills needed in the organisation and what each job requires in terms of new technology. [Interviewee 17]. In fact, the the change management plan plays a vital role in the implementation of the 4IR and in preparing and monitoring the readiness of HR [Interviewees 7 and 15]. In addition, throughout the process of transitioning to the 4IR environment, it is important to continuously reflect and ensure that HR legislation are complied with and not tempered with as labour laws play a large

part of HR readiness for 4IR [Interviewee 7].

- A change management process to lever the implementation of 4IR in the workplace by making sure that the different parts work together synergistically and that ideas generated fit the purpose and most importantly, making people from all generations be part of and own the change so they will be more willing to adapt with changes [Interviewee 3]. In this regard, another manager stressed the need to start a change management process by selecting the change management champions, who will pilot the entire process of workshopping and conveying the message to staff members and then doing a departmental diagnosis, working with line managers and assessing their departmental requirements and the requirements of 4IR and ultimately engaging in the consultation process. [Interviewee 5].

- A detailed plan on the approach to adopt in terms of change management. This means that there is a need to establish the steps to be taken to get to the desired destination. These steps must signify the common thread that is woven together in educating, selling, monitoring and self-checking to take corrective action timeously. In essence, what is needed is an all-encompassing plan that not only takes cognisance of the people but also the ways of working, the systems all netted together through effective communication. It must be noted that employees do not only need the education on what is 4IR but moreso, they need the guide and support on the 4IR journey. [Interviewee 1]. Furthermore, another HR manager cautions that ignoring undertaking a proper change management plan will only mean setting oneself up for failure and reiterates that change management is a very useful skill as change takes place rapidly and one needs to change with the times and again cautions by emphasizing the human element and carrying the people along. The

respondent goes on to add that the key thing that HR needs to do, looking at the technology, is to equip themselves with the knowledge, so that they can make sure that they get the right people for the right jobs. [Interviewee 9].

- Business conversation on change management with employees and management is needed to drive conversations at all levels towards 4IR to allow for brainstorming and engagement. Business conversations at the lower ends too will be imperative so that all employees understand why the change is needed, what's in it for them, what new skills they will need to develop and most importantly how the future of work is going to change. [Interviewee 5]. To this, another manager added the need for HR managers to explore information, keep management informed and to build relations across the organisation as well. [Interviewee 11]. In addition, in terms of the need for business conversations about 4IR, another interviewee emphasised its importance in ensuring that staff are ready and that whatever training and development that is taking place, takes technology into account and most of all persuading people to move from a mode of doing things in a way that they are comfortable with to doing things differently in order to avoid being obsolete and, to remain relevant. Furthermore, this respondent highlighted the need for business conversations to highlight the benefits of a 4IR strategy as well as its challenges. [Interviewee 12]. In this regard, he stresses that the implementation plan is of pivotal importance and goes on to stress that the platform used for consultation is key. [Interviewee 12].

- Involving relevant stakeholders in the change management process. [Interviewee 6] The respondent highlights the need to get buy in from all the stakeholders before changing the strategy and even stresses that buy-in and workshopping is needed before

changing the HR strategy. In terms of the HR strategy, the respondent adds the need to have a strategic HR plan enabling all Heads to express their expectations for the next 2 year period so that HR can then come up with a proper HR strategy that will incorporate the benefits of 4IR. [Interviewee 6]. In addition, managers will gain insight into the benefits of smart technologies and smart factories onto the business, preparing leaders to lead in such an environment, making them think from the global perspective, so that when they think of how 4IR will be utilised to the benefit of their business; hence, they will all ultimately, start thinking on a bigger picture.[Interviewee 16].

- Engaging in rigorous consultation. Engaging in rigorous concultation will entail HR putting forth a strong business case that shows why it is important to embrace 4IR and what the benefits will be in doing so. The talk should be about moving away from manual skills and from the 'business as usual mindset' in order to be competitive. Training and reskilling staff will be crucial to the process. Even line managers will need to be prepared to have the right training, skills and mindset regarding the benefits of smart technologes and smart factories to the business. So leaders too need to be prepared to lead in such an environment whilst being equipped with skills to lead and manage the anxieties of people and knowing how to prepare employees from a skills perspective, making them think from a global perspective so that they are able to absorb how 4IR will be utilised to the benefit of their business. It is imperative to note that the change management process does not only involve HR, but other departments in the organisation must also be part of the process to provide input to the process for its successful implementation, fo example, IT and operations, who will have their own processes where change management will feature. [Interviewee 3]. However, HR may

play the role of the champions or change agents or business partners to facilitate the buy-in from top management as an Executive Committee, IT as the critical people to nurture the process and all employees provide their dedicated support that is much needed in the process. [Interviewee 8].

- HR needs to have the right competencies and sills themselves. Undoubtedly, change management for HR relies on HR themselves having the necessary skills and knowledge that will be needed to provide guidance to the business. In order to do this, HR needs to be fully equipped to implement change guidelines that will ensure the successful implementation of 4IR. [Interviewee 7]. HR skills must be carefully nurtured too as those are the drivers of the organisation so HR too needs to upskill and equip themselves with the required knowledge of what changes are needed in order to themselves be effective and confident in such an environment. In other words, HR too needs to get a good grasp and a comprehensive understanding from the people and HR perspective so that HR managers are able to create and implement effective systems that impact people and business adequately for the change that is emerging. In fact, a culture shift is needed and change management is needed to nurture the ideal culture that can harness issues of skills, age profiles and mould the architecture that is needed to be put in place to ensure that it supports the business adequately. [Interviewee 8]. The change management process needs to identify and address those processes that will be impacted by technology that comes with 4IR as not all processes will be impacted in the same way. In the entire process of preparation for the 4IR, the critical aspects is being humane while focussing on the people side of things and managing the challenge of ensuring that people are ready for change, have the right mindsets and when realigning the whole shift. As another

manager explained that the younger, new graduate employees are more comfortable with the needs of 4IR while the older generation have embraced the technological changes but it takes a longer time to convince or persuade them to use technology. [Interviewee 17]. In addition HR needs to have the capability to timeously identify and mitigate risk. [Interviewee 18]

• Being able to identify any risk areas during the change management planning is crucial. The HR Business Partner often needs to play the role of the risk manager too and flag management of new things that are happening so that management thinking and the necessary paradigm shift at management and board levels can take place strategically

so that the entire management and workforce, can be, in this case, Pro-4IR [Interviewee 4].

The aforementioned necessities in preparing for transitioning to the 4IR environment are graphically presented in terms aligning the HR strategy with the organisation strategy, whilst aligning to the 4IR framework for ease of reference (Figure 4).

RECOMMENDATIONS

Recommendation 1

➢ Have a HR strategy that is aligned to the organisational strategy, taking cognisance of the 4IR framework (Figure 4).
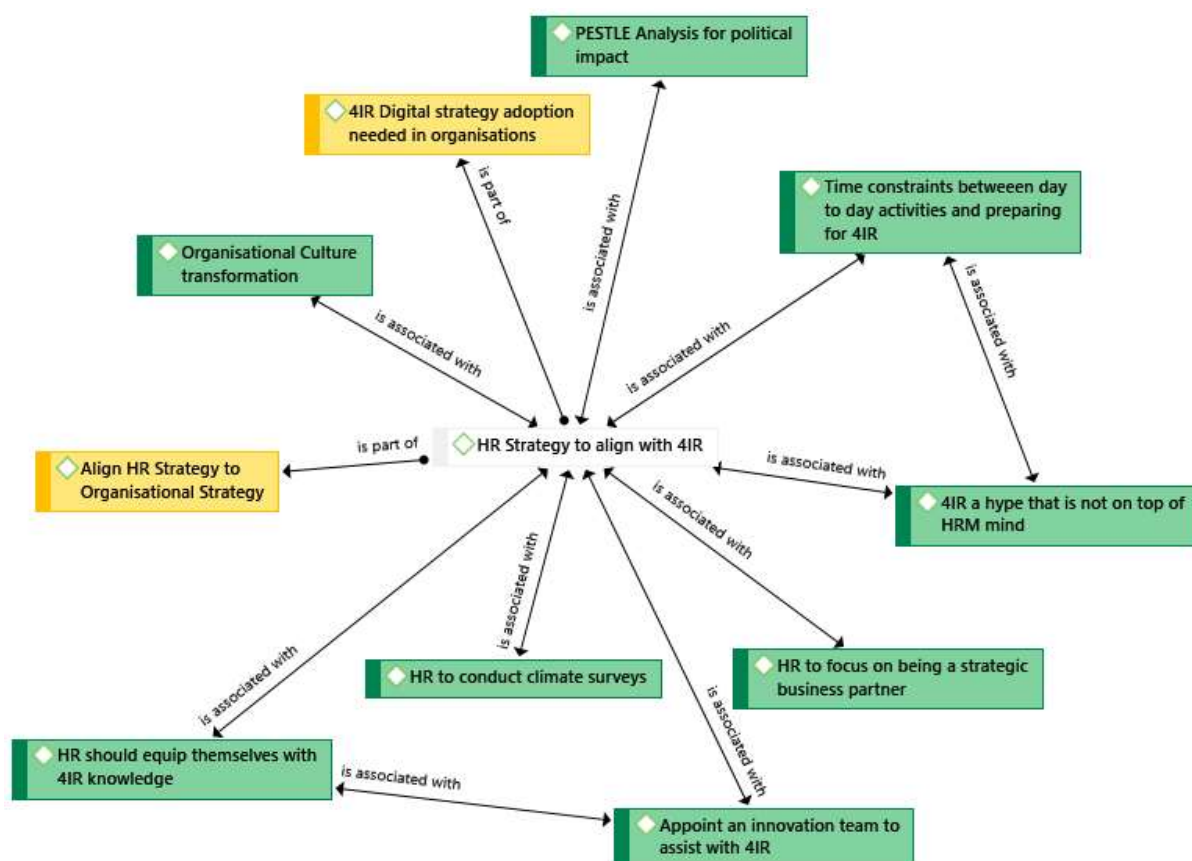

Figure 4: HR strategy alignment with organisation strategy and 4IR framework
Created by author

As displayed on Figure 4, having a HR strategy that is aligned to the organisational strategy will assist with ensuring that the goals of an organisation are achieved. Having a HR

strategy that is already aligned to the organisational strategy will make the HR strategy credible, will help to design the HR plan and to convince the Executive

management structure. From here, the HR strategy can be broken down to the resources that will be required in terms of both the technology and, the talent and skill needed in the 4IR work environment. In efforts to build talent for 4IR, Renjen and Brown (2018) emphasize the need to assess current talent strategies, especially those pertaining to youth and under represented societies and to implement best practices to further inclusivity and innovation. In this regard, Lee, Lee and Wong (2021) suggest a constructivit learning design to enable students to engage in deeper learning especiallty for mathematical learning for the 4IR.

Develop promising talent strategies: Analyze current talent strategies—particularly those focused on youth or under-represented populations—and implement best practices to promote inclusivity and innovation, and drive

economic return through differentiation. 4. Invest strategically in workforce training

It is advantageous to formulate a new HR strategy that is compatible with 4IR and relevant, whilst ensuring that the HR strategy is fully informed by and aligned with the organisational strategy so that both the people and organisational strategy drive the desired direction for the business. Digitisation, technology and the future way of working will also dictate this pace and trendline.

Recommendation 2

➢ Diligently undertake a complete Pestle analysis taking cognisance of political, economic, social, technological, legal and environmental challenges and demands when engaging in and aligning the organisational and HR strategy, whilst taking cognisance of the 4IR framework (Figure 5).

Figure 5: Six Factors of the PESTLE Analysis

Nandonde, F. A. (2019). A PESTLE analysis of international retailing in the East African Community. Global Business and Organizational Excellence, 38(4), 54-61.

Furthermore, in undertaking and aligning the entire organisational and HR strategy process, it is imperative to diligently undertake a complete Pestle analysis, taking cognisance of the six critical factors (Figure 6). These macro-environmental factors are critical in any

strategic management process and plays a significant role when preparing for the 4IR. It is important to undertake the Pestle analysis in conjunction with a SWOT analysis but the former must not replace the latter. The SWOT analysis provides deep insight into thr organisation's internal processes and structures and the Pestle analysis provides greater insight into the external factors. They therefore compliment each other in providing indepth insight into the organisation's opportunities, threats and future vision and projections.

Recommendation 3

➢ Having the HR strategy with the organisation strategy taking cognisance of the 4IR framework, the HR change champions are equipped to prepare their change management framework which takes cognisance of an array of factors (Figure 6).
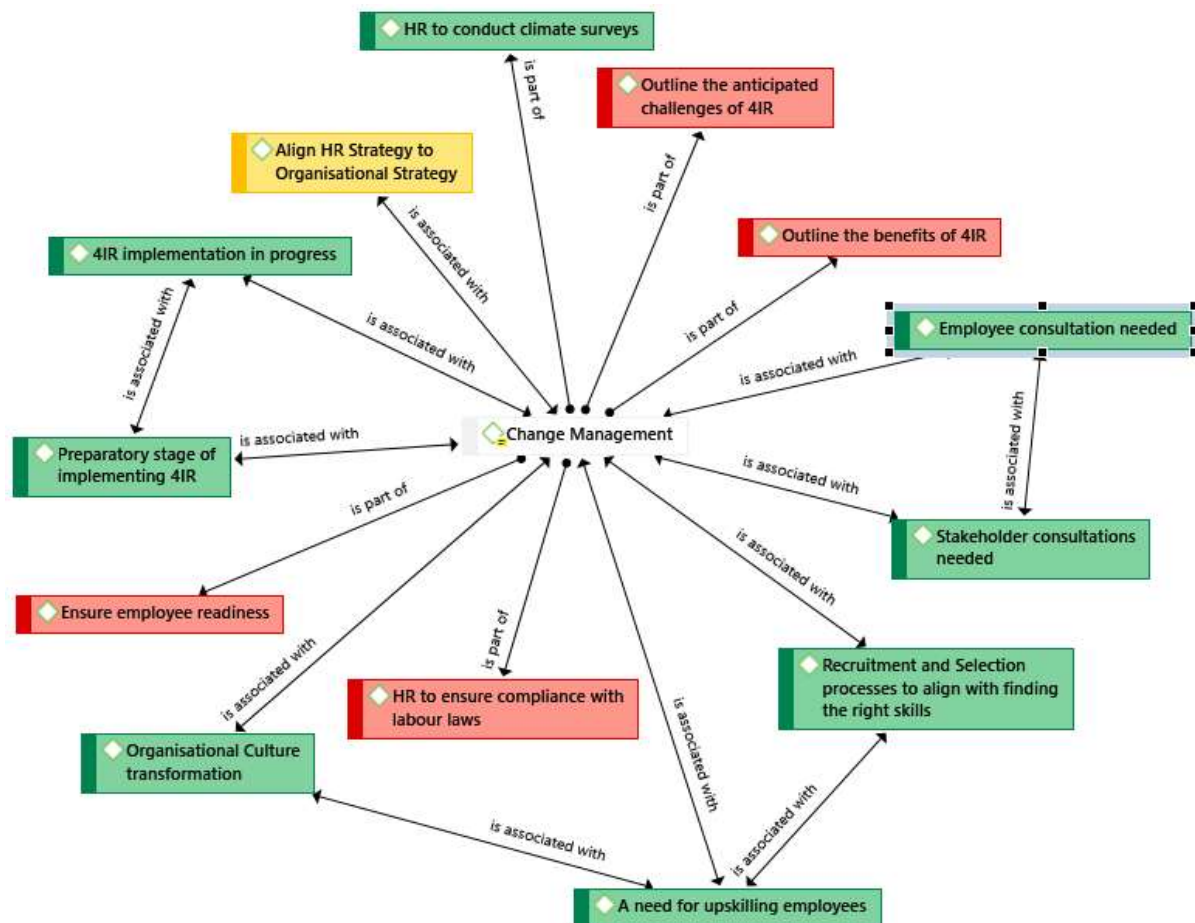

Figure 6: Change management framework
Created by author

Undoubtedly, HR manager and Business Partners too need to upskill themselves in order to be equipped to competently manage the aforementioned cumbersome and demanding change management process described in transitioning to enable the organisation to met the demands of the Fourth Industrial Revolution. This is where the 6 Principles for Responsible Management Education can become particularly beneficial to the corporate sector.

Recommendation 4

➢ Draw on assistance of academic institutions that are signatories to PRME, who have committed to preparing business leaders with the required knowledge that will address their current challenges in the workplace and that will assist in preparing the workforce in the organisations for the implementation of 4IR (as already outlined in Figure 1).

Figure 1 depicted detailed information of the PRME which shows the commitment of leading academic institutions in ensuring that their academic activities are aligned with preparing business leaders with the required knowledge that will address their current challenges in the workplace. It is therefore crucial that HR managers find these types of institutions that can assist them by designing curricula which will inculcate the necessary skills in order to be able to prepare the workforce in the organisations for the implementation of 4IR. This will require business schools and disciplines/schools to redesign their syllabi taking cognisance of learning outcomes that will feed into organisation's needs for skills that enable their strategic transition into the 4IR corporate environment. This also demands timeous interaction between business leaders and academics to ensure that the right kind of research is undertaken, whose outcomes and results help to create a framework/model for facilitating organisational transitioning and change management not only of organisational systems but also for preparing tomorrow's workforce. Such dynamic interactions will ensure that the business community proactively engages in an ecosystem that is congruent across education and workforce and organisation development. This will then require academics to succumb to, and fulfil the aforementioned 6 principles for responsible management education (purpose, values, method, research, leadership, dialogue) not only for societal benefit but also for the benefit of optimally operating business spaces that contribute to economic functioning and stability.

CONCLUSION

The synergistic integration of HR strategy and the organisation strategy of the business, whilst taking cognisance of the 4IR framework is imperative to enable the organisation to successfully transition into a 4IR work environment. The key aspect of drawing on the Principles for Responsible Management Education (PRME) is that practitioners must view the six principles in a cyclical, never-ending process such that there is continuous engagement between business schools and corporate spaces, thereby ensuring that academia continuously offers and confers relevant qualifications that feed seamlessly into and address business needs across change, age and era. Ultimately PRME will assist academic institutions and business to contributing effectively to ensuring sustainable development.

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