

Revitalisation of Women's Skills in the Public Sector: A View into the 4th Industrial Revolution

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Abstract: The 4th Industrial Revolution has challenged organisations and governments to relook into their skills and to adjust accordingly. Various industrialisations have had a different impact on both men and women, with most women playing a catch up game. This is because most women were ill equipped to deal with the developments. In most instances, developments and adjustments are likely to attract men who are well positioned to lead. When growth opportunities are presented, men are given preference over women. Thus, this paper aims at probing the extent to which the South African government has developed strategies of revitalising the skills of women in the public sector to navigate the 4th Industrial Revolution challenges. The paper also argues that the previous contributions of women in various fields of industrialisations have been unrecognised in the chronicles of human accomplishments. This is because the written histories of industrialisation over the years have overlooked the women's contribution as insignificant, even though some of their work was distinctive. Thus, a desktop analysis was used to investigate the problem. The findings of the investigation highlighted lack of concise strategy that is used to develop the technological skills of women in the public sector. Therefore, this paper proposes a framework that can be considered as one of the strategies of revitalising the skills of women in the public sector.

Keywords: Industrialisations, Revitalisation, Skills, Strategies

1. Introduction

The existing gender-chauvinistic and patriarchal society has undermined women's endowment across the globe. Hence, women's contributions in various fields of human endeavour have been minimal and in some instances unrecognised in the chronicles of human accomplishments. McBride (2019) affirms that women for a long time have not been considered in the written histories of industrialisation over the years, even though some of their work was distinctive. In some organisations women were also not afforded opportunities to prove themselves in the workplace. Harvard Business Review (2013) state that in most organisations, men are favourably considered for critical assignments that can lead to their advancements as opposed to women who are given assignments that do not garner much attention.

Women are more likely to be left on the periphery of the organisations, in as far as technological developments are concerned. World Economic Forum (2019) observed that women are left behind on a number of issues, including technological advancements that will dictate future jobs. This is because organisations do not give them growth

opportunities, and that they are also not forthcoming in incorporating technological tools and other technologies in their workplace, out of their own initiatives.

Taylor (2018) argues that a minimal number of women benefit from digital technologies and that women use less internet as compared to men. This is because the world of technology is generally regarded as the men's world. Brenston (2020) agrees that technological revolutions are created by men and with men at the centre. Hence, boys from an early age venture into technological gadgets prior to girls. They end up creating a situation that renders girls mute in that area.

Nevertheless, the emergence of global gender advocacy has positioned women as a fulcrum of sustainable development in all the sectors, including the public sector. As a result, women are urged to take inspiration in the work of other women such as Marie Curie who discovered radiation, Grace Hopper who conducted a ground breaking research on computer programming and Barbara McClintock who pioneered an approach to genetics. These women and many others had to overcome gender and social obstacles that are still experienced by women in this

modern age (Thornton, 2019). Governments across the globe have tried to address some of those challenges at the policy and legislative levels, however, little has been achieved.

Women are still marginalised on a number of leading positions and programmes across the public sector. Osituyo (2018) maintains that there are fewer women in senior decision-making levels in the public service sector. Women are still expected to prove their capabilities in a number of ways, whilst carrying a greater chunk of the household responsibilities as compared to men. Sherrie Carter (2011) observed that the 21st century society does not have a problem with a woman who pursues a career, however, such a career does not exonerate a woman from her domestic responsibilities.

Domestic responsibilities, social and other gender related biases, deprive women of valuable time and opportunities to advance themselves in as far as technology is concerned. Since women make a greater percentage of government employees in South Africa, government has to ensure that women keep abreast of technological revolutions such as the 4th Industrial Revolution. OMNISA (2020) describes the 4th Industrial Revolution as the process of harnessing human brain power, Artificial Intelligence and Robotics that will propel the economy of the country forward. Therefore, this research seeks to probe the skills development practices in the South African public sector. A number of studies have been conducted on skills development across many sectors and organisations, without focusing on different ways of revitalising women's skills. The aim of this paper is to investigate ways in which women's skills in the South African public sector can be revitalised to mitigate the 4th industrial revolution challenges.

2. The Concept Skills Development

In the context of this paper, skills development as explained in the public sector context refers to the process of identifying skills gaps of the employees in the organisation, with the purpose of bringing about interventions that will enhance their performance. Labour Market Intelligence Partnership (2016) explained skills development as an act of ensuring that employees have access to opportunities in the workplace to grow and gain experience in their respective fields of work. Therefore, in the view of the 4th industrial revolution, it will be important

that women in the work place be equipped with the skills that will make them valuable.

Skills development enhances the worth of each and every employee in the organisation because it ensures that their contributions matters. As organisations develop programmes that will enhance the skills of the employees, they will have to reflect on the following questions:

- Which skills are needed to mitigate the 4th industrial revolution challenges?
- What are the envisaged qualities that will enable the organisation to be competitive?

The above questions, and many others, will ensure that targets are reached and that the goals and objectives of the organisation are also achieved. This is because employees are the most valuable asset of any organisation and they actively contribute towards its success. Bayraktar and Sencan (2017) confirm that the notion of employees being the most important asset in the organisation can be traced back to classical periods.

Nevertheless, many public institutions battle to attract the best employees for the relevant positions due to skills shortages. The World Bank (2017) consented that developing countries have a dire shortage of essential skills due to the fact that women and youth are disenfranchised. Disenfranchisement of women in organisations, perpetuate inequality, poverty and unemployment in South Africa. Moed (2018) agrees that South Africa is the most unequal country in the world.

Inequality, poverty and unemployment could be addressed amongst other interventions through the development of essential skills. The World Bank (2017) observed that skills development could raise income levels, improve the standard of living amongst the communities and in turn reduce poverty. Therefore, improving the skills of women makes for economic sense in organisations. Organisations should strive to contribute to the skills development of women, especially in the technological area, in view of the 4th industrial revolution. This will help the country not to lag behind other developing countries. Nevertheless, Peyper (2017) claims that South Africa, like all the other African countries, is not equipped to transcend to the 4th industrial revolution. This means that South

Africa is lagging behind many well developed and developing countries like China, Indian, Brazil and Russia.

Therefore, to address the backlog of trailing behind other countries in as far as technology is concerned, the politicians, strategist, entrepreneurs and prospective employers in the country should try and contribute immensely on the development of the workforce in the country. Workforce quality is a challenge in the country, and it has to be upgraded (Brown, 2020). The workforce cannot be expected to operate and transcend in the 4th industry without proper skills. The development of skills amongst employees, especially women who are employed in large numbers in government, will ensure that the country gains highly skilled and relevant workforce. Even though women are employed in large numbers in government, most of them are concentrated at lower management levels and not at senior decision-making levels (Osituyo, 2018). Thus, equipping the women with the skills that are required for current and future jobs should be the priority, as that will equip them for the most senior positions.

2.1 The Benefits of Skills Development in the Workplace

Triple E Training (2018) identified the benefits and disadvantages of skills development in organisations as Increased ability to adapt and adopt new technologies, better innovative strategies, better employee motivation, increased job satisfaction and morale amongst the employees, decreased

employee absenteeism and turnover, greater customer care and services and improved efficiencies and effectiveness in a workplace and knowledge base of employees is expanded.

2.2 Disadvantages of Skills Training in the Workplace

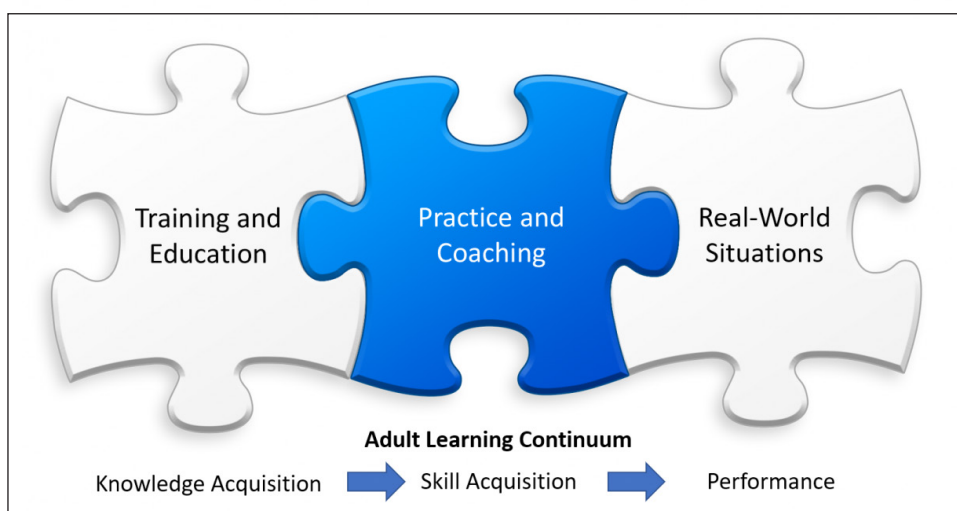
The disadvantages of training employees in a workplace includes among others such as employees lose valuable work time attending training, development training are costly to organisations, development programmes that are not based on needs analysis can be wasteful, training may fail to benefit the organisation due to poor planning, employees may lose interest during training and waste important resources and training may add extra burden on the administration of the organisation.

3. Skills Acquisition Theory

The skills acquisition theory claims that employees in the workplace learn through practice and exposure. Taie (2014) explained the learning process in the workplace as a movement from a lack of skill to a higher level of skilled behaviour which encompasses a set of new behaviours. The newly acquired skills will then be routinized and automated under certain conditions and they can also be transferred amongst the employees.

Figure 1 below elucidates the fundamental arguments in skills acquisition theory, which states that skill acquisition is preceded by training and

Figure 1: Skills Acquisition Continuum



Source: Seifert (2019)

education which unlocks the cognitive skills. Then the practice and coaching, provides a safe environment for application of skills, which will in turn enhance performance (Seifert, 2019). Lyster and Sato (2013) also confirmed that skills acquisition involves a number of stages. In their argument, the first stage involves understanding the rules of the tasks to be completed, followed by the explicit understanding of what has to be learnt.

According to Lyster and Sato (2013), learning is reinforced by constant exposure to rules and feedback that is timely and relevant. Spencer (2017) agrees that feedback that is timely reinforces learning and it motivates the individual to continue to work hard in applying the skills acquired. Examples of skills that can be acquired in different areas include the skill to drive a car, play a piano or operate a computer. Thus, a skill is acquired when an individual is able to rapidly and efficiently apply the knowledge with minimal operator error and without thinking of various components involved. Employees need to acquire the right skills to execute their responsibilities in the workplace. Employees may waste the important resources of the organisations if the right skills are not acquired. Amo (2019) asserts that highly skilled employees are happy employees, and are generally interested in advancing the goals of the organisation. In contrast, unskilled workers lack confidence to execute their duties, are counterproductive and could make an organisation lose its competitive advantage.

Papo, Dobrin, Popescu and Draghici (2011) argue that a competitive advantage in a public sector focuses on satisfying the needs of the customers. Thus, the competitiveness of the public sector and the ability to acquire new skills are enabled by cognitive or intellectual skills of the employees as well as their perceptual skills. Fisher (2019) says cognitive skills determine how an individual acquire new knowledge, learn, and think. The cognitive skills enhance the employees' innovative abilities and their abilities to solve complex problems that are inherent in every technology, without relying much on the expertise of others. Women should therefore be encouraged to develop their cognitive skills through problem solving activities. Apart from cognitive skills, the theory of skills acquisition emphasises the perceptual skills as the means of equipping employees with the ability to interpret information that is being presented. The skill will enable women to code and decode certain information in their

computers systems, with the view of embracing the 4th industrial revolution. Dombrowski and Wagner (2014) explained that technological advancements cause changes in mental demand of the workers.

4. Skills Development and Evolution of Industries

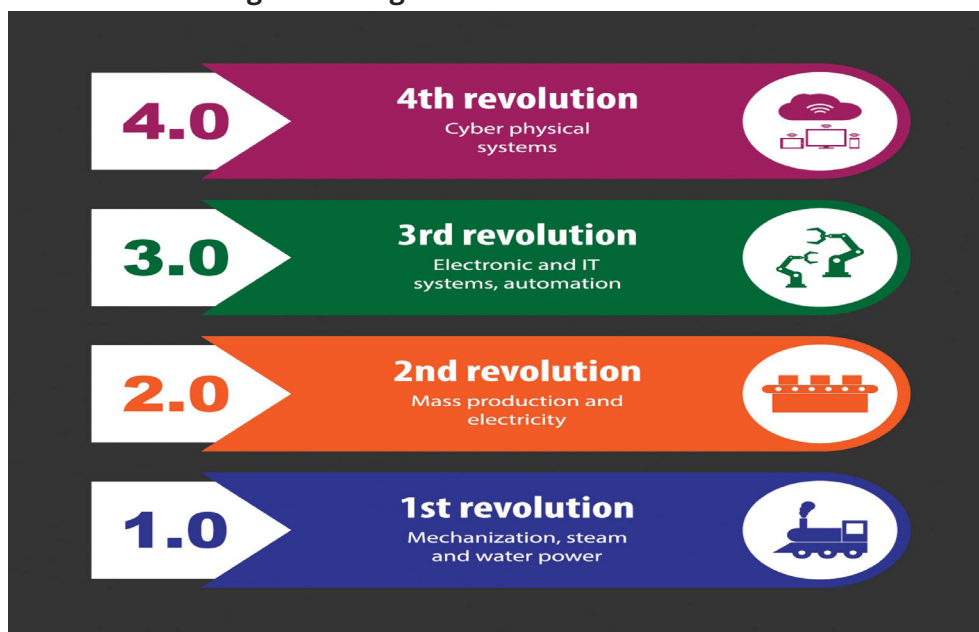
The 4th industrial revolution comes as a result of various industrialisations. Dombrowski and Wagner (2014) clarified the concept industrial revolution as a change in the technological economies and social systems within societies. Thus, industries have been evolving over the years, and in the process affecting women in a number of ways. For example, women in pre-industrial era were working in the comfort of their homes, taking care of their children and household duties, in addition to other responsibilities. Their work was integrated, they were able to move with ease between the home and the fields; that system changed with the phasing in of the 1st industrial revolution.

The first industrial revolution ushered women in the place of work, which kept them away from their homes and children for longer periods. McBride (2020) contends that industrialisation affected women profoundly because the work was separated from home. Women also had to acquire new skills that made them competent. They had to work in the factories just like men did of their time, but for lesser salaries. The Foundation of Western Culture (2020) stipulates that women in the 1st industrialisation earned one third, to half of the men's average salary.

To date, salary differences between men and women is still a problem. Stebbins and Frohlich (2018) state that in America women earn 28% less than men in every dollar, and in some jobs, the gender pay gap is even wider. In South Africa, De Villiers (2019) from Business Insider observed that women are paid 27,9% less than men. He further said that there is no industry in the country where women are paid more than men. For example, in the technology industry, men are paid 22,9% more than women, and in the finance industry, men are paid 21,8% more than women. Donnelly (2019) reporting on Investec Ltd said, the gender pay gap persists because women in senior leadership roles, and revenue generating positions are very few.

Nevertheless, one of the major findings of the study conducted by Columbia University was that,

Figure: 2 Progression of Industrialisations



Source: Schwab (2020)

women generally tend to undermine their capabilities, skills and their worth, when compared to men who overestimate their abilities. Furthermore, men were found to be more likely to ask for more pay and promotions than women. Women tend to think that if they put their heads down, play by the rules and work hard, their bosses will naturally see their hard work and reward them. Instead, the opposite occurs, they see men around them get promoted, some of whom are less competent, but have more confidence. Thus, Columbia College has introduced a programme to their undergraduate students on women and gender studies, to equip students with the issues of gender equality (Columbia College, 2020). The status quo is to prevail in the 4th industrial revolution unless women are empowered.

4.1 The Summary of the Nature of Industrial Revolutions

The first industrial revolution, as discussed above, moved people from agriculture and crafts to machine intense industry. Steam powered locomotives were produced, such as steam trains and ships (Schwab, 2020). Thus, Figure 2 above presents a summary of the nature of each industrialisation, from the first to the fourth industrial revolutions.

As depicted in Figure 2, the 2nd industrial revolution was marked by the discovery of electricity and petroleum; cars and aeroplanes were manufactured, and

were accompanied by mass production of other commodities.

The 3rd industrial revolution was marked by electronics, internet, automated production, Artificial Intelligence and Information Technology.

The 4th Industrial revolution is actually building on the 3rd industrial revolution. It is marked by automations, robotics, internet, Artificial Intelligence, a link between real objects and virtual processes (Schwab, 2020).

5. Policies and Strategies in Place for Skills Development

South African government has put in place a number of policies and strategies to address skills shortages. However, there is no specific programme in place to develop the technological skills of women in the public sector. "The digital gender gap deepens inequality among men and women by excluding women from the benefits of technological change" (Seyagues, 2018). Technological changes leave women behind because they do not always get opportunities to grow.

Governments still focus on male leadership and development. As a result, men are more likely to be trained on a number of technological programmes as compared to women who are perceived to have

high levels of anxiety on Information Technology (Goswami, 2016). These myths and many other prejudices on women development should be discarded. Such prejudices and many other stereotypes are often the source of challenges around women development.

Maruo and Young (2018) stipulated the challenges as barriers towards women development in technology such as tech-related jobs which remain male dominated, women's access to the internet and ownership of digital devices remains significantly lower in developing countries and preparedness of women in the area of artificial intelligence and robotics remains low. If these challenges and many others could be addressed, they could be used to enable women to add value to e-government.

6. Skills Development Act 97 of 1998

Skills Development Act 97 of 1998 is an act which is meant to address skills shortages and in this instance enable an environment for e-government. The aim of the act is to provide an institutional framework to devise and implement national sector and workplace strategies to develop and improve skills of the South African workforce. The Skills Development Act also provided guidelines on the establishment of Sector Education and Training Authorities (SETAs) which are tasked to provide training across various sectors. They are supposed to provide training that takes into cognisance the needs of employers and employees. Thus, training provided by the SETAs will be based on the sector skills plan and approve the workplace skills plans and annual training reports.

7. Skills Development Levies Act 9 of 99

Skills Development Levies Act 9 of 99, "Aims to provide for the imposition of a skills development levy and for matters connected therewith". The imposition of the levy is to ensure that money is available for the training and development of employees. In the past employees were not developed in their workplaces due to lack of funds. Even today, some companies are not complying fully with the payments of skills levy.

The skills development levy is thus paid by employers to South African Revenue (SARS) on monthly basis. The amount that is paid is determined by the wage bill of every organisation, that is 1% of the wage bill is paid to SARS. Nevertheless, public

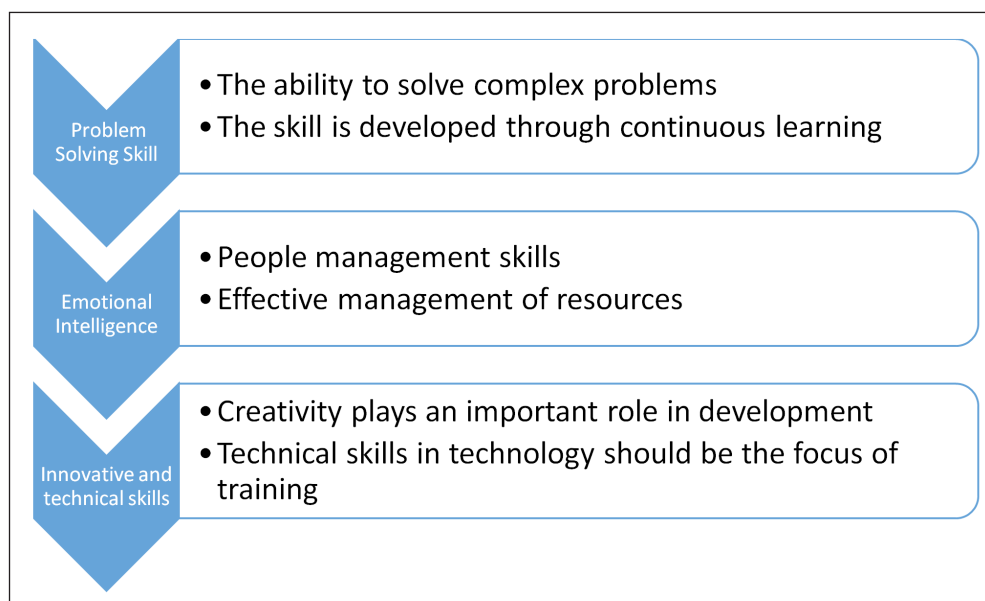
service employers are exempted from such payments. They are however obliged to budget for the education and training of their employees in equivalent amounts (SARS, 2020). Thus, the Skills Development Act and Skills Development Levies Act are some of the interventions put in place by government to facilitate the development of skills in the country. These and many other avenues can be exploited to revitalise the skills of women in the public sector.

8. Framework for the Revitalisation of Women's Skills in the Public Sector

The 4th Industrial Revolution will bring about disruptive innovations, a change in technology, critical thinking, and automation that will compel organisations to reposition themselves. When organisations reposition themselves, the focus is on its employees. This is because employees bring about innovations and creativity in the workplace. Thus, the framework for the revitalisation of women's skills is essential. The Business Dictionary (2020) defines a framework as the broad overview, outline, or skeleton of inter-linked items which supports a particular approach to a specific objective, and serves as a guide that can be modified as required by adding or deleting items. The suggested framework in this paper for the revitalisation of women's skills is presented as follows in Figure 3 on the next page.

The framework places complex problem skill at the forefront of the development of women. This is because new innovations and environments bring about unique problems. Thus, the skills are discussed as follows;

- **Complex Problem solving skill:** this skill can be developed through continuous learning, a shift in paradigms, and accumulation of new information that can be used strategically.
- **Emotional Intelligence:** robots do not have emotions - this is a distinct human factor that has to be developed. Women will be trained to understand their emotions and the way such emotions affect their colleagues. They will also learn how emotions affect the quality of their decisions. Therefore, with such type of knowledge, they will be in a better position to manage people and resources of the organisation effectively. Resource management skill will enable women to develop the skill to manage

Figure 3: Framework for Revitalisation of Women's Skills

Source: Author (2020)

various resources such as time, finances and knowledge resources. This is because organisations are expected to contribute towards knowledge creation. Thus, during the 4th industrial revolution, soft skills will be of paramount importance.

- **Innovative and technical skills:** creativity also plays an important role in every organisation and it should be developed through connectivity and interpretation of facts. Women will have to be trained to put puzzles together in an ambiguous and sometimes complex environment through the use of technology. In doing that, their technological skills could be developed in the process. Technological skills could be developed through following a particular programme that could be beneficial to their work environment (Boston City Campus and Business College, 2019).

9. Conclusion and Recommendations

Women development is an issue that has been on the agenda of many governments and institutions for a long time. This is because woman development is conducted in an environment which does not support growth for women. Women are not given enough space to contribute meaningfully towards the decisions of their institutions, hence, they are in small numbers in the top managerial positions of the institutions. The government should

encourage the public sector to prioritise strategies that are meant to develop the technological skills of women. This research found out that there is no strategy developed to prepare women to mitigate the 4th industrial revolution challenges.

The 4th Industrial Revolution should propel women to take a lead in being the agents of progress in their organisations and to prepare well to solve imminent complex problems in that area. Women should tap into available legislation on skills development to advance their skills with the help of their organisations. Based on the arguments presented in the article, the South African government should develop a specific strategy and programme which will prepare women in the public sector to navigating the 4th Industrial revolution challenges.

The programme should include training in Information Technology and other related soft skills. Furthermore, organisations should create an enabling environment for the growth and development of women. With the help of the proposed framework in this article for revitalising the skills of women, organisations can be in a better position to develop customised programmes.

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