International Journal of Social Science Exceptional Research

The Need for Skills Development and Transfer at Medupi Power Station

Sifiso Khumalo
Tshwane School for Business and Society 159 Nana Sita Street, Pretoria 0001, South Africa

* Corresponding Author: **Sifiso Khumalo**

Article Info

ISSN (online): 2583-8261
Volume: 03
Issue: 05
September-October 2024
Received: 23-08-2024
Accepted: 26-09-2024
Page No: 77-84

Abstract
Medupi Powers Station is a coal-fired power plant located to the west of Lephalale in Limpopo Province. The study was conducted by collecting data from a purposive sample of size n=402 employees and 12 officials who are responsible for skills-based training and capacity building during the construction phase of the project. A combination of quantitative and qualitative methods of data collection were used for conducting the study. Quantitative data analysis was performed by using frequency tables, crosstab analyses, ordered logit regression analysis and structural equations modelling. The study found that 284 of the 402 respondents who took part in the study (70.65%) were satisfied with the pace of skills development training activities that were provided to employees by Medupi Power Station Project, whereas the remaining 118 employees (29.35%) were not satisfied with the pace of skills development training activities that were provided to employees by Medupi Power Station Project. Results obtained from the study showed that the degree of satisfaction of employees on the pace of skills transfer was adversely affected by lack of mentorship programmes directed at poorly skilled employees, the exclusion of poorly skilled employees from skills-related training programmes, and the need to meet production targets of the contractors that were responsible for the construction of the Project.

Keywords: Skills transfer, Medupi Power Station, Structural Equations Modelling, Thematic analysis

Introduction

Medupi Power Station is located at Lephalale in Limpopo Province and belongs to the South African state-owned power utility company Eskom (Pty) Ltd (2021) [10]. The power station is a dry- cooled coal-fired power station. Upon completion, Medupi Power Station will be able to generate 4, 764 megawatts of electricity (Eskom Transmission Group, 2021) [10]. The research work carried out by Folly (2021:355) [12] shows that the successful completion of Medupi Power Station is hampered by an acute shortage of specialised engineering skills, lack of money, the abuse and mismanagement of resources, equipment and infrastructure, lack of accountability and political interference. As a result, Medupi Power Station is still under construction and far from ready to generate the badly needed 4, 764 megawatts of elecricity it is expected to generate. According to a report published by Eskom (Pty) Ltd (2021) [10], Medupi Power Station may not be fully operational until the end of 2023 due to various technical and design related flaws.

Kock and Govender (2021:128) [16] have shown that load-shedding cannot be avoided unless South Africa manages to complete the construction of power plants such as Medupi Power Station. The authors have pointed out that the key problems experienced by Eskom are lack of specialised skills in the field of engineering, ageing infrastructure, a high cost of maintenance and repair, difficlty in securing high grade coal at an affordable price, corruption in procurement, and the political appointment of people into purely technical positions. The authors have pointed out that there is a need for good leadership, accounability and transparency in Eskom.

Carmichael (2022:2) [8] has shown that the inability to ensure ethical conduct and accountability to the people has resulted in the loss of massive State resources and failure to deliver basic services such as electricity. The author has shown the need for accountability to the people and ethical leadership at all levels. Medupi Power Station is a coal-fired, dry-cooled power station.

It requires high grade coal to perform well. Low grade coal results in inefficiency. The power station has an installed capacity of 4, 764 megawatts. By the time Medupi Power Station becomes fully operational, it will be ranked as the 8th largest coal-fired power station internationally. Andreoni, Creamer, Mazzucato and Steyn (2022:237) [2] have identified key barriers to efficiency in the generation of electricity for business and industry in South Africa. The authors have proposed a model that is suitable for the management of mega projects in the energy sector. The model is suitable for ensuring energy efficiency and competitive power production. The efficient recruitment of highly skilled engineers, designers, artisans and vocational experts requires the ability to acknowledge competence, commitment and a proven trackrecord of performance on the line of duty.

Benoit, Clark, Schwarz and Dibley (2022:2) [5] have shown that good leadership traits are essential for maintaining productivity among employees and managers. One key aspect of good leadership is the assessment of work-related training needs among employees. Training needs must be identified by line function managers. To identify the training needs of employees, it is necessary to closely monitor and evaluate the level of performance of employees. Training is essential for the appropriate utilisation of technology-based operations. Ensuring overall efficiency in project management requires project leaders to assess and critically examine the level of knowledge and competence of employees at the workplace.

In order for employees to ask for help, line function managers must encourage them to be open about their areas of shortcomings and weaknesses. To achieve this goal, emotional intelligence is essential. The need for enhancing the level of modern technological skills among employees of Medupi Power Station requires line function managers to know their subordinates intimately. There must be good communication between line function managers and employees about work related issues. Open communication has the potential for encouraging employees to be honest about their training needs and inefficiencies. Open communication enables employees to build trust and confidence on their line function managers. Open communication motivates employees to emulate helpful lessons from their fellow colleagues. Open communication motivates employees to develop a sense of belonging and confidence.

Further to that Rudin and Sanders (2021) [24] have shown that massive financial resources are wasted on the procurement of coal and other resources at Medupi Power Station due to lack of accountability and disregard for business ethics. The authors have shown that the African Development Bank has extended a loan of 500 million American Dollars in 2008. In the year 2010, a loan of 3.75 Billion American Dollars was taken from the World Bank to speed up the completion of Medupi Power Plant. The main aim of investing on Medupi Power Station is to enhance electricity generation capacity. However, since 2007, there has been load-shedding due to failure to keep up with the demand for electricity from industry, business and households. The most prominent power outage in South Africa was experienced in the month of December 2019 following a loss of 6, 000 megawatts of electrical power generation capacity due to severe floods and rain.

The study conducted by Marcatelli (2020:2) [19] indicates that Medupi Power Station needs a highly skilled pool of artisans, electricians, boilers, construction engineers, and a reliable supply of water and coal in order to perform according to plan. The author has argued that a pool of adequately skilled and disciplined employees is essential for generating electricity according to plan. The author has pointed out that it is essential to broaden the variety of vocational, technical and artisan skills that are essential for successful performance and productivity at Medupi Power Station.

Thomas (2021:4) [27] has shown that it is necessary for power plants such as Medupi to look after the environment in which they operate. There is a need to respect the principles of corporate social responsibility and environmental sanitation. This means that power stations such as Medupi must adhere to the basic principles of proper waste management and environmental sanitation. Power stations such as Medupi must not promote pollution and irresponsible waste disposal.

Rationale of study

The research work carried out by Qhobosheane (2018) [23] has found that it is counterproductive to ignore the need for workplace training among poorly skilled employees. The work done by Tomaselli (2021:4) [29] has shown that it is economically prudent to build capacity among employees who require to enhance their level of skills and productivity by way of transferring skills. The author has argued that the alleviation of skills-related needs among employees is highly beneficial for ensuring productivity in state-owned enterprises. The world's largest and most developed economies have had to provide skills-based capacity-building training programmes. In this regard, the best examples are the USA, China, Japan, Germany, England and South Korea. Highly successful companies from these nations have had to roll out skills-transfer programmes with a view to enhancing overall productivity and work-related efficiency.

The study conducted by Tukamuhabwa (2015:43) [30] shows that good leadership is essential to roll out skills-based training programmes in service delivery institutions. The author has shown that good leaders place emphasis on the assessment of the level of skills possessed by their subordinates with a view to ensuring satisfactory performance and overall productivity. The study conducted by Fourie and Malan (2020:8693) [13] show that South African state-owned enterprises often fail to comply with National Treasury guidelines on procurement processes and public tenders. The authors have shown that the underlying causes of such problems are lack of accountability, lack of good leadership, lack of transparency, disregard for the rule of law, and lack of awareness about processes and procedures that need to be followed. The authors have recommended the provision of suitable skills-based and mentorship programmes to poorly skilled employees.

Objectives of study

The objective of study was to assess and evaluate the extent to which the skills transfer programme implemented at Medupi Power Station is successful.

Methods and materials of study

As part of the quantitative aspect of the study, data was collected from each one of the 402 eligible employees of Medupi Power Station. A self-administered questionnaire of the study was used for collecting data from eligible

respondents. All 402 eligible respondents of the study took part in the study voluntarily. Research ethics approval was obtained for the study from the Research Ethics Committee of Tshwane University of Technology (TUT) in Pretoria. Anonymity and confidentiality were ensured. Each respondent of the study was interviewed by using a structured, pre-tested and validated questionnaire of study.

A combination of quantitative and qualitative methods of data collection and analyses were used for conducting the study at Medupi Power Station. As part of the quantitative aspect of the study, a stratified random sampling (Levy and Lemeshow, 2013) [18] was used for selecting a random sample of size 402 employees of Medupi Power Station out of a total of 800 eligible artisan group of employees. Stratification was done by job category. According to Levy and Lemeshow (2013) [18], stratification by job category is appropriate for this kind of socioeconomic study. The total number of artisans at Medupi Power Station is 800 (Eskom, 2021) [10]. Thus, the population size of the study was equal to 800. The percentage of artisans transferring skills successfully to local employees was estimated at 50% as no prior estimates were available. By using the above values, the sample size of the study became 377. This sample size was further adjusted to 402 in order to make up for dropouts from the study. Thus, the actual sample size of the study was equal to 402 employees.

As part of the qualitative aspect of the study, 12 individual in-depth interviews were conducted with 12 administrators working at Medupi Power Station. These 12 administrators were responsible for all duties related to the transfer of skills at the power station.

Results of data analysis

Table 1 shows the general characteristics of the 402 respondents of study. The table shows that about 71% of employees were satisfied with the skills development training programmes that were provided to employees at Medupi Power Station. The remaining 29% of employees were not satisfied with the skills development programmes that were provided to employees at the power station. About 89% of employees were male, whereas the remaining 11% of employees were female. About 12% of employees were 25 years old or younger. About 28% of employees were 26 to 30 years old. About 38% of employees were 31 to 40 years old. About 20% of employees were 41 to 50 years old. About 2% of employees were 51 years old or older.

Table 1: Assessment of satisfaction with skills development training programmes (n=402)

Variable of study	Percentage
Satisfaction with skills development training programmes provided to employees	Satisfied: 70.65% Not satisfied: 29.35%
Gender of employee	Male: 88.59% Female: 11.41%
Age category of employee	25 years old or younger: 11.96% 26 to 30 years old: 28.26% 31 to 40 years old: 38.04% 41 to 50 years old: 19.57% 51 years old or older: 2.17%

Table 2: Highest level of formal education of employees (n=402)

Variable of study	Percentage
Level of education of employee	LLB in law: 1.09% BA in correctional management: 1.09% BA in finance and accounting: 1.09%
	BA in media and art: 1.09% BSc in electrical engineering: 1.09% BSc in geology: 1.09% BSc in mechanical engineering: 1.09% BSc in mechatronics: 1.09% BSc in metallurgy: 1.09% Diploma: 6.52% Certificate: 20.65% Grade 12: 36.96% Less than Grade 12: 26.09%

Table 3 shows frequency counts and percentages for the home provinces of employees. Most of the 402 employees were from Limpopo Province (78%). About 9% of employees were from Mpumalanga Province. About 4% of employees were from Gauteng Province. About 3% of employees were from the Free State. About 2% of employees were from the Eastern Cape. About 2% of employees were KwaZulu-Natal. There was one employee from the North-West Province.

Table 3: Home province of employees (n=402)

Variable of study	Percentage
Home province of employee	Limpopo: 78.26% Mpumalanga: 8.70% Gauteng: 4.35% Free State: 3.26% Eastern Cape: 2.17% KZN: 2.17% North-West: 1.09%

Table 4: Home languages of employees (n=402)

Variable of study	Percentage
Home languages of employees	Sepedi: 52.17% Tshwana: 17.39% Swati: 7.61% Tshivenda: 6.52% Isi Zulu: 5.43% Southern Sotho: 4.35% Isi Xhosa: 2.17% Sesotho: 2.17% Tsonga: 1.09% Northern Sotho: 1.09%

Table 5 shows frequency counts and percentages for the job categories of employees. The percentage of assistant supervisors was 1.09%. The percentage of entry level employees was 80.43%. The percentage of middle level managers was 1.09%. The percentage of senior managers was 16.30%. The percentage of team leaders was 1.09%. The fact that entry level employees accounted for 80.43% of all employees shows that most of the employees were poorly skilled employees who stood to benefit from the transfer of skills from well-experienced expatriate employees to poorly skilled local employees.

Table 5: Job categories of employees (n=402)

Variable of study	Percentage
Job category of employees	Assistant supervisor: 1.09% Entry level: 80.43% Middle level: 1.09% Senior manager: 16.30% Team leader: 1.09%

Table 6 shows frequency counts and percentages for the perception held by employees on the degree to which the policy of Medupi Power Station on the transfer of skills from expatriates to poorly skilled employees has been clearly explained to employees. About 68% of employees believe that the policy on skills transfer has not been clearly explained to them by the company.

Table 6: Clear explanation of the policy on skills transfer to employees (n=402)

Variable of study	Percentage
The policy of Medupi Power Station on the transfer of skills from expatriates to poorly skilled employees has been clearly explained to employees.	Strongly agree: 42.39%
	Agree: 26.09%
	Not sure: 5.43%
	Disagree: 5.43%
	Strongly disagree: 20.65%

Table 7 shows frequency counts and percentages for having a copy of the plan on the transfer of skills from expatriates to poorly skilled employees. About 66% of employees indicated that they were provided with a copy of the plan on skills transfer.

Table 7: Having a copy of the plan of the company on skills transfer (n=402)

Variable of study	Percentage
I have with me a copy of the plan of Medupi Power Station on the transfer of skills from expatriates to poorly skilled employees.	Strongly agree: 32.61%
	Agree: 32.61%
	Not sure: 4.35%
	Disagree: 8.70%
	Strongly disagree: 21.74%

Table 8: Allocation of a mentor to employees at the workplace (n=402)

Variable of study	Percentage
I was given a mentor for assisting and guiding me with what needs to happen for the day and for contributing to my upskilling.	Strongly agree: 30.43%
	Agree: 47.83%
	Not sure: 9.78%
	Disagree: 6.52%
	Strongly disagree: 5.43%

Table 9 shows frequency counts and percentages for the provision of progress reports to employees at the workplace. About 66% of employees indicated that they were provided with progress reports by the company.

Table 9: The provision of progress reports to employees (n=402)

Variable of study	Percentage
The company provides me with progress reports on how I am progressing in my upskilling programme.	Strongly agree: 22.83%
	Agree: 43.48%
	Not sure: 4.35%
	Disagree: 11.96%
	Strongly disagree: 17.39%

Table 10 shows frequency counts and percentages for the practice of a skills-transfer policy at the workplace. About 62% of employees indicated that the company was practicing a skills-transfer policy at the workplace.

Table 10: The practice of a skills-transfer policy at the workplace (n=402)

Variable of study	Percentage
My company practices a skills-transfer policy in the work place.	Strongly agree: 26.09%
	Agree: 35.87%
	Not sure: 11.96%
	Disagree: 8.70%
	Strongly disagree: 17.39%

Table 11 shows frequency counts and percentages on the inclusion of local employees in activities involving the transfer of skills from expatriates to local employees. About 72% of employees indicated that expatriate employees were including local employees in skills-transfer activities at the workplace.

Table 11: Inclusion of local employees in skills-transfer activities (n=402)

Variable of study	Percentage
Expatriates include us in the process of working and learning, and they do not hide information from us.	Strongly agree: 31.52%
	Agree: 40.22%
	Not sure: 10.87%
	Disagree: 6.52%
	Strongly disagree: 10.87%

Table 12 shows frequency counts and percentages on the degree to which the working environment is conducive for the transfer of skills from expatriates to local employees. About 75% of employees indicated that the working environment was conducive enough for skills-transfer activities.

Table 12: Suitability of working environment for skills-transfer activities (n=402)

Variable of study	Percentage
The working environment is suitable for skills transfer activities.	Strongly agree: 17.39%
	Agree: 57.61%
	Not sure: 10.87%
	Disagree: 7.61%
	Strongly disagree: 6.52%

Table 13 shows frequency counts and percentages on the degree to which the company arranges skills development courses for employees. About 68% of employees indicated that enough skills development courses were arranged by the company for employees.

Table 13: Arrangement of skills development courses for employees (n=402)

Variable of study	Percentage
The company makes arrangements of courses for skills development and transfer	Strongly agree: 14.13%
	Agree: 54.35%
	Not sure: 6.52%
	Disagree: 11.96%
	Strongly disagree: 13.04%

Table 14 shows frequency counts and percentages on the degree to which the skills development plan of the company is suitable for improving productivity. About 47% of employees indicated that the skills development plan of the company was suitable for promoting productivity at the workplace.

Table 14: Suitability of the skills development plan for improving productivity (n=402)

Variable of study	Percentage
The working environment is suitable for skills development and transfer activities.	Strongly agree: 6.52%
	Agree: 40.22%
	Not sure: 14.13%
	Disagree: 19.57%
	Strongly disagree: 19.57%

Table 15 shows 10 influential variables that are associated with effective skills transfer. The results are obtained from two-by-two crosstab analyses among pairs of categorical variables (Beh & Lombardo, 2021) [3].

Table 15: Results obtained from two-by-two cross-tab analyses (n=402)

List of 10 variables significantly associated with satisfaction with the quality of skills development training programmes that are provided to employees	Chi-square value	P-value
Lack of mentorship programmes directed at poorly skilled employees	24.0326	0.0000
Exclusion of poorly skilled employees from skills-related training programmes	21.4518	0.0000
Need to meet production targets of company	19.2789	0.0000
Failure to assess the training needs of employees	18.5023	0.0000
Lack of relevance of courses to training needs	17.7771	0.0000
Inability to implement skills development plan	15.2526	0.0000
Lack of awareness about skills transfer policy	14.9118	0.0000
Age category of employees	12.6682	0.0000
Level of education of employees	11.0769	0.0000
Lack of progress in the provision of training on how to use production equipment	10.9266	0.0000

Table 16 shows the most influential 3 variables that influence effective skills transfer. The results are obtained from ordered logit regression analysis (Hosmer & Lemeshow, 2013) [14].

Table 16: Estimates from ordered logit regression analysis (n=402)

Factors that affect efficiency in the transfer of skills	Odds Ratio	P- value	95% C. I.
Lack of mentorship programmes directed at poorly skilled employees	4.42	0.0000	(3.76, 5.02)
Exclusionof poorly skilled employees from skills-related training programmes	4.35	0.0000	(3.71, 4.96)
Pressure to meet production targets	3.96	0.0000	(3.31, 4.56)

Interpretation of significant odds ratios

The odds ratio of the variable "Lack of mentorship programmes directed at poorly skilled employees" is equal to 4.42. This indicates that the availability of mentorship programmes that are directed at poorly skilled employees makes skills-transfer programmes 4.42 times more effective in comparison with the non-availability of mentorship programmes that are directed at poorly skilled employees.

The odds ratio of the variable "Exclusion of poorly skilled employees from skills-related training programmes" is equal to 4.35. This indicates that the non-exclusion of poorly skilled employees from skills-transfer programmes makes skills-transfer programmes 4.35 times more effective in comparison with the exclusion of poorly skilled employees from skills-transfer programmes.

The odds ratio of the variable "Pressure to meet production targets" is equal to 3.96. This indicates implementing skills transfer programmes in an environment where trainees do not have to worry about meeting production targets makes skills-transfer programmes 3.96 times more effective in comparison with implementing skills transfer programmes in an environment where trainees need to worry about meeting production targets.

Discussion of results

Reports published by Medupi Power Station and ESKOM (2021) [10] indicated that there was a significant shortage of vocational, artisan and technical skills in the field of engineering and construction. The acute shortage of such skills was a significant obstacle to productivity and efficiency at the power station. The records showed that the recruitment of suitably skilled employees often took long due to administrative processes that had to be followed. The documents showed that South African training colleges and universities did not produce graduates who were tailor-made to the operational needs and requirements of the power station, and that fresh graduates had to be mentored before they could function fully. These findings were in agreement with findings reported by Meyer and Overen (2021: 4273-4287) [21].

Conclusion

Documents published by Medupi Power Station and Eskom (2021) [10] showed that the most important and valuable skills required at Medupi Power Plant were the following:

- The ability to operate, maintain, control and repair heavy and light power and electrical machines and tools
- The ability to detect electrical faults and overheating
- The ability to observe readings, take readings, and record electrical data on a spreadsheet
- The ability to use, maintain and repair power tools and electrical devices
- The ability to measure the amount of electrical current, voltage and resistance by using appropriate equipment and tools such as ammeters, voltmeters, capacitors and resistors

- The ability to install circuit breakers and surge protectors
- The ability to weld and cut metals to size
- The ability to drill through various hard surfaces
- The ability to use, maintain and repair power generating and distribution machines
- The ability to use, maintain and repair diesel engines
- The ability to use, install, test, maintain and repair power switches and transformers
- The ability to write a technical report and make an oral presentation based on such reports.

Recommendations

Table 17 shows a summary of the steps required for ensuring satisfactory skills transfer at Medupi Power Plant.

Table 17: Steps required for ensuring an effective skills transfer

Step	Administrative tasks to be preformed by the leadership of Medupi Power Station
Step 1	Establishing a dedicated team of experts that can execute a skills transfer plan effectively
Step 2	Allocation of budget for the recruitment of trainers
Step 3	The assessment of training needs
Step 4	Equalisation of the level of knowledge and skills among learners
Step 5	Implementation of skills-based lessons in theory and practical applications
Step 6	Monitoring and evaluation by testing the level of theoretical knowledge and practical skills

***Source*:** Adapted from Bandura (1992)

References

1. Adeleke O, Akinlabi SA, Jen TC, Dunmade I. Sustainable utilization of energy from waste: A review of potentials and challenges of Waste-to-energy in South Africa. Int J Green Energy 2021;18(14):1550-1564.
2. Andreoni A, Creamer K, Mazzucato M, Steyn G. How can South Africa advance a new energy paradigm? A mission-oriented approach to megaprojects. Oxford Rev Econ Policy 2022;38(2):237-259.
3. Beh EJ, Lombardo R. An Introduction to Correspondence Analysis. London: John Wiley & Sons; 2021.
4. Beirle S, Borger C, Dorner S, Eskes H, Kumar V, de Laat A, Wagner T. Catalog of NOx emissions from point sources as derived from the divergence of the NO2 flux for TROPOMI. Earth Syst Sci Data 2021;13(6):2995-3012.
5. Benoit P, Clark A, Schwarz M, Dibley A. Decarbonization in state-owned power companies: Lessons from a comparative analysis. J Cleaner Prod 2022;355(1):1-13.
6. Boshoff T. Is service delivery in South Africa for sale? Farmer's Weekly 2022;22005(1):14-15.
7. Bowman A. Parastatals and economic transformation in South Africa: The political economy of the ESKOM crisis. Afr Aff 2020;119(476):395-431.
8. Carmichael TR. Is protest action in South Africa bringing positive change or is it threatening our human right to security? S Afr J Bioethics Law 2022;14(2):1-13.
9. Eskom (Pty) Ltd. Annual report for 2019/2020. Johannesburg: Eskom Holdings; c2021.
10. Eskom Transmission Group. Transmission Development Plan 2015 to 2024. Johannesburg: Eskom (Pty) Ltd; c2021.
11. Ferreira IW. Government Corruption in South Africa. In: Corruption in the Public Sector: An International Perspective. London: Emerald Publishing Limited; c2021.
12. Folly KA. Competition and restructuring of the South African electricity market. In: Local Electricity Markets. London: Academic Press; 2021:355-366.
13. Fourie D, Malan C. Public procurement in the South African economy: Addressing the systemic issues. Sustainability 2020;12(20):1-13.
14. Hosmer DW, Lemeshow S. Applied Logistic Regression Analysis. New York: John Wiley & Sons; c2013.
15. Klug H. Challenging Constitutionalism in Post-Apartheid South Africa. Const Stud 2016;1(2):41-58.
16. Kock Z, Govender KK. Load-shedding and the declining energy availability factor: A case study of a South African power station. Mediterr J Soc Sci 2021;12(6):128-128.
17. Ledwaba M, Marivate V. Semi-supervised learning approaches for predicting South African political sentiment for local government elections. arXiv [Online]; c2022. Available from: https://arxiv.org/abs/2205.02223 [Accessed: 21 Nov 2022].
18. Levy PS, Lemeshow S. Sampling of Populations: Methods and Applications. New York: John Wiley & Sons; c2013.
19. Marcatelli M. Medupi power station and the water-energy nexus in South Africa. Transform: Crit Perspect Southern Afr 2020;102(1):1-26.
20. Medupi Power Station. Annual report for 2019/2020. [Online]. 2021. Available from: https://www.ESKOM.co.za/dataportal/emissions/ael/medupi-c2/ [Accessed: 21 Nov 2022].
21. Meyer EL, Overen OK. Towards a sustainable rural electrification scheme in South Africa: Analysis of the status quo. Energy Rep 2021;7(1):4273-4287.
22. Motepe S, Hasan AN, Shongwe T. Forecasting the total South African unplanned capability loss factor using an ensemble of deep learning techniques. Energies 2022;15(7):1-13.
23. Qhobosheane LAM. The impact of political interference in state-owned companies: A case study on SABC [Doctoral dissertation]. Bloemfontein: University of the Free State; 2018.
24. Rudin J, Sanders D. Debt, structural adjustment, and health. Glob Health: Ethical Challenges 2021;170(1):1-13.
25. Steyn S, Tyler E, Roff A, Renaud C, Mgoduso L. The Just Transition Transaction: A Developing Country Coal Power Retirement Mechanism. Cape Town: Meridian Economics; 2021.
26. Todd I, McCauley D. Assessing policy barriers to the energy transition in South Africa. Energy Policy 2021;158(1):1-8.

27. Thomas TS. Climate change and the green transition in South Africa. In: The Oxford Handbook of the South African Economy. Oxford: Oxford University Press; 2021;323(1):1-13.
28. Thornhills C. Public protector fearless defender of ethical conduct: A seven-year campaign. Afr J Public Aff 2016;9(3):322-323.
29. Tomaselli K. Unpacking history, unpacking corruption, and unpacking media analysis: Some recent books on the South African media. Commun 2021;1(1):1-19.
30. Tukamuhabwa BR. Antecedents and consequences of public procurement non-compliance behaviour. J Econ Behav Stud 2015;4(1):34-36.