Effect of Analytical Decision Making on Performance of Kenya Power

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Abstract: *The performance of Kenya Power Company has raised many pertinent questions. The state-owned enterprise faces a myriad of problems ranging from continuous loss-making to inefficiencies in power supply. This elicited the interest to investigate the role played by the top leadership of the organization in its performance. Therefore, the objective of was to determine the effect of analytical decision making approach on the organization's performance. The rational choice theory was reviewed and discussed. A set of two variables guided the study, that is, analytical decision making, and organizational performance. An explanatory research design was used. Quantitative methods were employed. The 31 directors/senior management staff of the Kenya Power Company constituted the target as well as accessible populations. A census design was adopted to enumerate all members of the accessible population to participate in the study. A structured questionnaire was used to collect relevant data. The questionnaire was pilot tested with the view of assessing its validity and reliability. Data analysis was aided by the Statistical Package for Social Sciences tool. Descriptive statistics and inferential statistics were used in the analysis. The null hypothesis was tested at p-value = 0.05 using the t-statistic. According to the study findings, analytical decision making method had statically significant effect on organizational performance (t = 3.412; p = 0.003 < 0.05). Therefore, at p-value = 0.05, the null hypothesis was rejected (p < 0.05). The study concluded that analytical decision making method was important at influencing organizational performance of the Kenya Power. It is recommended that the decisions made should be aligned to the company's policies and strategies than can enhance organizational performance.*
Key Word*:Analytical decision making; balanced scorecard theory; Kenya Power; organizational performance.*

I.   Introduction

Background of the Study

The challenges encountered in the process of making decisions are compounded by advancement in technology.[1] This necessitates the use of analytics in improving efficiency in decision making. For instance, it has previously been demonstrated that big data analytics can be integrated into the process of decision making.[2] Arguably, managers are most of the times not able to understand how they can reap the benefits orchestrated by analytics in their decision making. This is in spite of the managers working in organizations with sophisticated big data analytics (BDA) being likely to base their decisions on analytics (that is, evidence and facts).[3]

Organizational performance is characterized by a set of parameters, and their suitability is contingent to the context. The parameters include efficiency, productivity, effectiveness, economy, earning capacity, competitiveness, as well as profitability.[4] By and large, organizational performance can be defined based on three main dimensions. These are performance as success, performance as the result of action, and performance as action itself. As such, the appropriateness of the definition depends on the contextual objective or purpose.[4]

According to the evidence obtained from Australia, it is apparent that decisions made mainly by managers of small firms are mostly based on analytical outcomes.[5]This is contrary to the case of large organizations which may prefer alternative decision-making strategies. The decisions made by these entities are influenced by the state. This is premised on the fact that the state is the owner as well as the lawmaker and regulator of the organizations' operations. In the case of state-owned enterprises (SOEs) in China, however, there is independence at individual level where the management of these organizations are personally held to account for the decisions they make. At the same time, in order to improve the performance of these SOEs the government should offer oversight and also ensure that the entities enjoy political independence.[5] It is crucial to reckon that SOEs in China are perceived as political actors.[6] This is alluded to the Chinese government regarding the SOE's international expansion as important means of accessing crucial natural resources and strategic assets.[7]

In order to address instances of poorly performance state owned corporations, countries put in place frameworks or blueprints that guide them in making decisions relative to investment and divestiture in SOEs. Such decisions aim at striking a balance between the societal value of investments and the commercial profitability of the SOEs.[8] Strategic decision making culminated in the divestiture to foreign direct investment (FDI) of state owned enterprises in Tanzania which reports poor performance. However, despite the divestiture of these SOEs, the government still retains the controlling stake. There is policy recommendation to improve accountability and performance evaluation reporting of SOEs in Tanzania.[8]

The low power generation capacity and inefficiencies, which reflect poor performance of the concerned organizations in the electricity sub-sector in Kenya, are partly attributed to the low supply of power.[9] According to a report by the World Bank, electrification in the country, which stands at 32%, is below the Sub-Saharan Africa (SSA) average of 43%.[10] Performance and sustainability are closely linked. Given that strategic management practices are said to be consequential to sustainability of state corporations in Kenya, it is very likely that the performance of the aforementioned organizations could be partly attributed to the strategic decisions made by them.[11]

In the wake of performance challenges at the Kenya Power, the Board of Directors enforced implementation of a strategy aimed at turning around the depressed performance fortunes of the organization.[12]The strategy sought to improve the organization's performance on the dimensions of customer experience, revenue growth, sales growth, cost management prudence, and system losses reduction. The implementation of the strategy was anchored on results, rewards, and consequences. In order to enhance its performance, the company has resolved to ensure the presence of a stable and reliable power supply network. The main objective of this initiative is to ensure enhanced customer satisfaction as well as sustained sales.[12] It was important to investigate the implication of analytical decision making on the performance of Kenya Power given that the organization had earlier launched a system to enhance strategic decision making, yet, questions persist with regard to its performance.

Statement of the Problem

The poor performance of the Kenya Power particularly in terms of inefficiencies in power supply (power rationing), frequent power outages, and inexplicably high cost of power have led to businesses incurring huge losses, interference of organizations' operations, and disillusionment of household consumers. Granted that reliable, efficient, and quality supply of electricity is a crucial catalyst of economic growth and development,[13] it is apparent that poor performance of the Kenya Power is bound to compromise the economy. It is apparent that organizational performance is pegged on the management. Therefore, it was important to investigate the influence the analytical decisions (part of strategic decisions) made by the top management had on organizational performance of the Kenya Power. It was also evident that there was scarcity of empirical literature on the aforesaid subject. For instance, the results of an empirical study indicated that the cost of power outage in Kenya impacted the performance of business enterprises.[9] However, the study did not illustrate how the said performance was influenced by analytical decision making at the Kenya Power. On the same note, another studyassessed strategic initiatives that affected organizational performance of the Kenya Power.[14]The study linked performance to strategic initiatives as opposed to analytical decision making. Another study assessed strategic decision making processes among SMEs.[15]Yet, the study did not link analytical decision making to organizational performance. Therefore, it was imperative to determine the effect of analytical decision-making on performance of the Kenya Power.

Research Objective
To assess the effect of analytical decision making on performance of Kenya Power
Research Hypothesis
H_0:There is no significant effect of analytical decision making on performance of Kenya Power.

Rational Choice Theory

Rational choice theory was developed with the intent of enhancing the understanding modeling of social and economic behaviour in order to inform decision making.[16] The theory is founded on the postulation that cumulative social behaviour emanates from individual actors, where each is in the process of making individual decisions.[17] The theory is concerned with the determinants of, or factors that influence choices made by individuals. According to the theory, an individual has alternatives (choices) or preferences among the available options from which they can select.[18]

In making decisions based on the available choices, there are different approaches which can act as the guiding principle. An individual can have two options considered preferable. A person can fail to have a preferential inclination towards either of the available options. Lastly, option A can be more preferable than option B, and option B can be more preferable than option C, and so on. In the latter case, preferences

transit.[16]In making a rational decision, there is an assumption that a rational agent (person) puts into consideration the available information, probable cost implications, potential benefits, and probabilities of events. The choice determination should be consistent in making the best choice of action, otherwise referred to as decision.[18]

It is stated that decisions and choices are made by muddling through (random choice making) as long as the choices and/or decisions made have high chances to result in the best possible outcome or outcomes.[19] Therefore, the rational choice theory can be applied to explain how random choice decision making can be done. Analytical decisions making can also be explained by rational choice theory. Indeed, there are steps which have been put forward in random choice analysis.[20]The analysis involves identification of relevant agents, establishing potential constraints or challenges faced by the identified agents, and also coming up with decision rules in respect of each agent. The analysis also includes determining consistency of the aforesaid rules among other key issues. Therefore, it is apparent that the management of the Kenya Power can apply the rational choice theory to make analytical decisions.

Empirical Review

In a study conducted in Australia, analytic-based decision making was investigated alongside big data and analytic culture.[3]The objectives were to examine the effect of big data analytics sophistication on analytic-based decision making, and to assess the effect of organizational analytic culture on analytic-based decision making. The study adopted a cross-sectional survey design where a sample of 163 senior information and technology (IT) managers were involved in the study. The study findings indicated that managers of small organizations were more likely to base their decisions on analytic results as opposed to their counterparts in charge of large firms. Inferentially, managers of small entities employ analytics in order to remain competitive in an industry dominated by larger organizations.

In a case of Nigeria, a study was conducted to investigate privatization and performance of state-owned enterprises.[21]The study sought to appraise the performance of selected privatized SOEs in Nigeria. Secondary data were used by the study. The findings of the study indicated that the performance of SOEs was greater after privatization as compared to the period prior to privatization. The study concluded that managers of the SOEs should ensure that there is strict conformity to the organizational performance instead of pursuing goals with political connotations. In order to enhance their performance, it is recommended that the rest of SOEs ought to be prioritized.

A qualitative study and conceptual framework that focused on four African countries sought to explore how decision-makers employ evidence in community health policy and financing decisions.[22]The countries that study focused on included Mozambique, Malawi, Ethiopia, and Kenya. The objective was to comprehend the use of evidence in policy and financing decisions particularly in large-scale community health programmes in the aforesaid countries. Key informant interviews were conducted on 43 respondents from the aforementioned countries which have embedded universal health coverage (UHC) strategies. It was established that use of evidence is limited at all levels, partly due to lack of relevant evidence.

A study on the performance of information use centered on the management of performance in Kenya's public sector.[23]The objective of the study was to find out how and why managers employ performance information in making decisions. A case study research design as well as qualitative methods were adopted. Face-to-face interviews, observations, and document analysis were used to collect the pertinent data. The current and former management staff of the Ministry of Agriculture, Livestock and Fisheries constituted the study population. It was revealed that performance information was employed in making decisions for resource re-allocation, and policy advisory. This was carried out after a keen analysis of information use in the various departments under the afore-stated ministry. One of the conclusions made by the study is that budget decisions relied on historical costs and were, therefore, incremental.

The performance of the public sector in Kenya was examined by a study that focused on e-government strategy.[24] The objective was to investigate the implementation of e-government strategy and the performance of the public sector in Kenya. A positivism philosophy guided the study Descriptive and explanatory research designs were adopted. Stratified random sampling technique was used to obtain a sample from the study population. Pertinent data were collected from the sampled respondents using a semi-structured questionnaire. According to the study findings, the e-government institutional framework influenced the performance of the Kenya's public sector.

Conceptual Framework

A conceptual framework is described as a blueprint that illustrates the study variables and how they are believed to relate. The illustration is either graphical, in narrative, or both. It is stated that the conceptual framework describes an interaction or relationship between the main concepts (variables).[25] Figure no 1 shows the conceptual framework in respect of the present study.

Analytical Decision Making ➢ Analytical methods ➢ Ambiguity tolerance ➢ Alternatives assessment	→	Organizational Performance ➢ Efficiency ➢ Customer satisfaction ➢ Employee satisfaction
Independent Variable		**Dependent Variable**
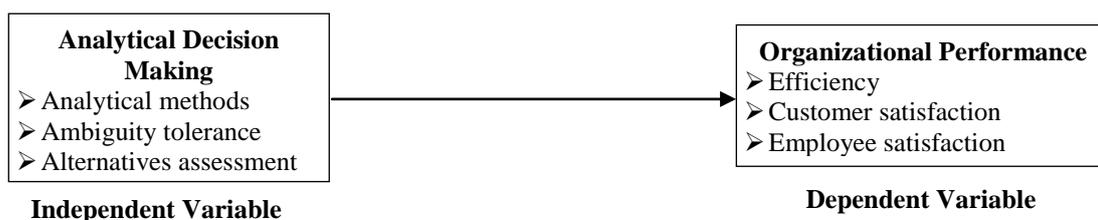
Figure no 1: Conceptual Framework

According to the framework shown in Figure no 1, it is apparent that there are two sets of variables, that is, independent and dependent variables. The independent variable is analytical decision making while organizational performance is the dependent variable. Each of these variables is operationalized using measurable indicators. Analytical decision making is operationalized by data collection methods, analytical methods, ambiguity tolerance, adaptability, and alternative assessment. Efficiency, customer satisfaction, supplier relationships, and employee satisfaction. It is presumed that there is a relationship between analytical decision making and performance of the Kenya Power Company.

Table no 1: Summary of Reviewed Local Empirical Studies and Research Gaps

Author(s) & Year	Topic	Findings	Research Gaps	How Gaps Were Filled
Muriu (2017)	Performance management in Kenya's public service: A study on performance information use	Performance information was employed in making decisions for resource re-allocation, and policy advisory	The study did not relate analytical decision making to organizational performance	This study linked analytical decision making to organizational performance of Kenya Power
Mungai (2017)	E-government strategy implementation and performance of the public sector in Kenya	The e-government institutional framework influenced the performance of the Kenya's public sector	The study focused on organizational relative to institutional framework but not strategic decision making	This study was concerned with strategic decision making and organizational performance.

II. Material And Methods

Research Design

An explanatory research design was used in this study. Explanatory research enables the determination of relationships between study variables, specifically, cause-and-effect relationships.[26]The choice of this design was premised on the fact that the study sought to evaluate how (and the extent to which) strategic decision making explains (or is related to) the performance of the Kenya Power Company. Besides the research design, quantitative methods were adopted. The aforementioned methods are associated with numerical data which this study collected and analyzed. These data are quantifiably useful in addressing research questions and meeting objectives pertinent to the research in both business and management.[27]The foregoing underlines the adaptability of quantitative methods in the present research which is not only in the business field, but also involved collection of data to address research objective and hypothesis.

Target Population

The target population included all the 31 senior management staff and directors working with the Kenya Power. The accessible population which was the same as the target population comprised the senior management staff and directors working at the head offices of the aforesaid company based in Nairobi as well as the 8 regional managers.

Census Design

A census design is a complete enumeration of all items, entities, or objects in the population.[28]Expectedly, the management staff attached to the head offices of the Kenya Power Company as well as the regional offices were considerably few (31 senior management staff / directors and regional managers). Therefore, the researcher included them in the study by way of collecting data from them.

Data Collection Instrument

Structured questionnaires (contains close-ended questions or data items) were employed in collecting primary data. Structured questionnaires enabled collection of numerical data which were in tandem with the research methods adopted by this study. The questions (or data items) in respect of the study variables (or objectives) were structured in conformity to a 5-point Likert scale.

Data Collection Procedure

The questionnaires were administered to the respondents by the researcher in person. The drop-off/-pick-up method was adopted where the respondents were allowed a mutually-agreed time after which the filled questionnaires were collected. In the case of regional managers, data were collected either through email or Google form. This method was highly recommended due to the assertion that it significantly enhances the response rate because it reduces the non-response bias.[29]

Pilot Study

A pilot study was conducted with the objective of evaluating the validity and reliability of the research questionnaire that was used to facilitate data collection. The pilot study was conducted amongst randomly selected senior management staff attached to the head offices of Kenya Electricity Generating Company (KenGen) based in Nairobi.

Validity Test and Reliability Test

Validity and reliability of the research questionnaire were determined using the data that were collected through the pilot study. The content validity was assessed where the expert opinion of the supervisors was obtained in modeling the final questionnaire. The content validity was determined by consulting the supervisors assigned by the University (St Paul's University) with regard to the content (objectives, variables, sub-variables, overall questionnaire) of the data collection instrument. It is stated that a content valid instrument is obtained after conducting a rational analysis of the data collection tool by experts or raters who are familiar with the field or subject about which the research study is being conducted.[30]

Reliability which is defined as the consistence of the research results, or the extent to which the study results can be replicated,[31] was tested using the Cronbach's alpha. All study variables, that is, analytical decision making ($\alpha = 0.714$), and organizational performance ($\alpha = 0.830$) returned alpha values greater than 0.7. Therefore, it was concluded that the individual study constructs as well as the overall data collection instrument were reliable. This was based on the fact that, all of them returned alpha values above the minimum threshold of alpha = 0.7.[32]

Data Analysis and Presentation

The Statistical Package for Social Sciences (SPSS) facilitated data analysis.The data were first analyzed using descriptive statistics which included frequencies, percentages, mean, and standard deviation. This was followed by pertinent inferential statistics. In particular, Spearman's rank correlation and regression analyses were carried out. The null hypothesis was tested at p-value = 0.05 using the results of t-statistics. The following simple linear regression equation or model guided the analysis.

$Y = \beta_0 + \beta_1 X_1 + \varepsilon$

Where;

Y	= Organizational Performance
β_0	= Constant
X_1	= Analytical Decision Making
β_1	= Regression Coefficient of Analytical Decision Making
ε	= Margin of Error

The results of the study were presented using tables. Relevant discussions accompanied these results.

III. Results

Descriptive Analysis

This part presents the findings in respect of analytical decision making and organizational performance of the Kenya Power Company. The data collected from the senior managers and/or directors of the aforementioned state-owned enterprise were in form of a 5-point Likert scale. According to the scale, integers 1 to 5 represented 'Strongly Disagree (SD)', 'Disagree (D)', 'Neutral (N)', 'Agree (A)', and 'Strongly Agree (SA)' respectively. The descriptive statistics used include measures of distribution (represented by frequencies and percentages), measures of central tendencies (represented by mean), and measures of dispersion/variation (represented by standard deviation). The relevant results are presented in Table no 1 and Table no 2.

the respondents admitted that Kenya Power was highly effective in supplying power to consumers (agreed/strongly agreed = 83.3%), and that the company exhibited good relationship with its suppliers (agreed/strongly agreed = 45.8%). On the latter assertion, a considerable number of respondents (37.5%) were indifferent.

A majority (41.7%) of the senior managers and directors were neutral in respect of the assertion that the service quality of Kenya Power Company was ranked highly. There were diverse views and general neutrality in respect of the propositions that the employee turnover was less than 1% at Kenya Power Company (mean = 3.08; std dev = 1.176), and that satisfaction of customers at the company was reportedly high (mean = 2.71; std dev = 0.999). Most of the respondents disputed that employee satisfaction rate was ranked highly (disagreed/strongly disagreed = 54.2%), and that only a few customers presented grievances at the Kenya Power Company (disagreed/strongly disagreed = 50.0%).

Correlation Analysis

The study used the Spearman rank's correlation analysis to examine the relationship between analytical decision making and the organizational performance of the Kenya Power Company. The results of pertinent correlation analysis are illustrated in Table no 3.

Table no 3: Spearman's Rank Correlation Matrix

Spearman's rho	**Analytical Decision Making**	Correlation Coefficient	1.000	
		Sig. (2-tailed)	.	
		N	24	
	Organizational Performance	Correlation Coefficient	.505[*]	1.000
		Sig. (2-tailed)	.012	.
		N	24	24

*. Correlation is significant at the 0.05 level (2-tailed).

The results of Spearman rank correlation analysis shown in Table no 3 indicate that the relationship between analytical decision making and organizational performance was positive, moderately strong, and statistically significant at p-value = 0.05 (r_s = 0.505 < 0.05). The results were interpreted to mean that as the Kenya Power Company embraced analytical decision making, there was likelihood that its organizational performance would increase moderately.

Simple Linear Regression Analysis

Simple linear regression analysis was carried out in order to determine the extent to which analytical decision making affected organizational performance of Kenya Power Company. The pertinent results are presented in Table no 4, Table no 5, and Table no 6.

Table no 4: Model Summary of Analytical Decision Making and Organizational Performance

Model	r	r Square	Adjusted R Square	Std. Error of the Estimate
1	.588[a]	.346	.316	.40428

a. Predictors: (Constant), Analytical Decision Making

The coefficient of determination (r^2 = 0.346) as shown in Table no 4, indicate that 34.6% of variability in organizational performance of Kenya Power Company could be explained by analytical decision making adopted by the company. The results underline the importance of this decision making method with regard to performance of the state-owned enterprise.

Table no 5: ANOVA of Analytical Decision Making and Organizational Performance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.902	1	1.902	11.639	.003[a]
	Residual	3.596	22	.163		
	Total	**5.498**	**23**			

a. Predictors: (Constant), Analytical Decision Making
b. Dependent Variable: Organizational Performance

The results of F-statistic shown in Table no 5, that is, $F(1,22)$ = 11.639; p = 0.003 were found to be statistically significant at p-value = 0.05. Therefore, there existed a simple linear relationship between analytical decision making and organizational performance. This meant that the collected data fitted the adopted

simple linear regression model ($Y = \beta_0 + \beta_1 X_1 + \varepsilon$). The model was thus employed to demonstrate the effect of the aforementioned decision making method on the performance of Kenya Power Company as shown in Table no 6.

Table no 6: Regression Coefficients of Analytical Decision Making and Organizational Performance

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	.713	.783		.911	.372
Analytical Decision Making	.769	.226	.588	3.412	.003

a. Dependent Variable: Organizational Performance

In line with the results shown in Table no 6 ($Y = 0.713 + 0.769 X_1$), a unit change in organizational performance of Kenya Power Company required 0.769 unit change in analytical decision making when other factors were held constant. The results of t-statistic (t = 3.412; p = 0.003 < 0.05) indicated that the effect of analytical decision making on organizational performance of the aforementioned organization was statistically significant at p-value = 0.05. Using these findings, the null hypothesis (H_{01}: There is no significant effect of analytical decision making on performance of Kenya Power.) was rejected, and its alternative taken to be true.

IV. Discussion

To a considerable extent, the descriptive results on analytical decision making in the Kenya Power Company were contrary to findings of an earlier study which indicated that small organizations were more likely to embrace analytical decision making as opposed to large organizations.[3] It is apparent that, Kenya Power Company, despite being a large organization, was established to have embraced analytical decision making method. Despite the neutrality in the Kenya Power Company's senior managers on the company's having access to data relevant to analytical decision making, an earlier local study had put emphasis on the importance of evidence (represented by pertinent data) when making decisions.[33]

The descriptive analytical results on organizational performance of the Kenya Power were contrary to the observation made previously that most organizations in Sweden surpassed their target customer satisfaction index.[34]These correlation analytical results were in support of earlier findings which indicated that embracing analytics in decision making improved competitiveness (an aspect of organizational performance) of an organization.[3] The results of simple linear regression analysis underscored the importance of the senior management and directors of Kenya Power Company making analytical decisions in order to enhance the performance of the company

V. Conclusions and Recommendations

With regard to analytical decision making, the study concluded that goals of Kenya Power Company were not only clear but also quantifiable. The decisions made by the company were inferred to be highly adaptable to the organizational strategies. It was also deduced that firm used advanced data analytical methods in making strategic decisions. Analytical decision making method was concluded to be very crucial to the organizational performance of the Kenya Power Company.

The senior management and directors of Kenya Power Company are advised to make decisions that are aligned to the company's policies and strategies that can enhance organizational performance. Measures should be put in place to adopt advanced data analytical methods given that analytical decision making was concluded to be crucial to the organizational performance of Kenya Power.The middle-level and line managers at Kenya Power Company should be ensured that they have the capacity required to use advanced data analytics to implement decisions made by the senior management.

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