Contributing Dimensions to Effective Performance Management in a Natural Resources Mining Company in Africa

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Abstract—The integration of performance management into an effective talent management strategy has progressed into a crucial management practice. It is essential to identify the top talent available and prepare these employees for mastery of the required competencies. The purpose of the study reported was to establish contributing dimensions of effective performance management in a natural resources mining company in Africa. The population for the study included professionals and specialists in various fields. Different commodities are mined, such as copper, cobalt, coal, platinum, fluorspar, and other non-ferrous divisions. The countries under study were Malawi, the Democratic Republic of Congo, Zimbabwe, Zambia, Mozambique and South Africa. A total of 784 questionnaires were distributed to respondents via the SurveyMonkey website with a response rate of 51%. A principal axis factor analysis was conducted to determine important factors. The results confirmed 5 contributing dimensions to effective performance management in a natural resources mining company in Africa.

Keywords—Performance management, talent development, appraisal

I. INTRODUCTION

THE scarcity of talent is the result of years of underinvestment in employees (not to mention high-performance individuals) and this has led to the perception that working in the mining industry is unpleasant and unexciting. The mining industry is competing for scarce skills in infrastructure, manufacturing and other local industries as well as the international mining arena and they are now beginning to realise that the current supply shortage is already impacting on productivity, efficiency and profitability. Mining companies need to pay more attention to their talent management strategies and approaches, with specific emphasis on performance management, its effectiveness and applicability to the specific industry. If they have a proper performance management strategy, they will make the best of people, conquer skills shortages and secure the right talent for the future.

II. LITERATURE REVIEW

According to [1], “a performance management system is a system of creating expectations and inspecting against those expectations”. [2] maintains that the ability to manage performance is frequently the major differentiator between organisations that produce satisfactory results and those that do extremely well. Without a focus on performance management at all levels of the organisation, the competitive advantage is difficult to establish.[3] and [4] agree that a company should understand which roles (and the individuals fulfilling them) should be reinforced, and what competencies need to be rearranged.

The papers [5], [6], [7], [8] and [9] all concur that through their various research projects the most crucial sub-dimensions of the performance management dimension are goal setting and measurement of performance, talent development, appraisal, performance feedback and incentive and performance-based pay.

A. Goal setting and measurement of performance

According to [10], clear expectations are an integral part of the success of performance management. [6] state that a common goal of management and the employee should be set, where a shared understanding of performance expectations of the role, development and business needs are all addressed. All individual, departmental and organisational objectives must be clarified and the way in which individual goals and accountabilities can be linked to organisational objectives. [8] states that a supervisor should discuss the nature, type of support and guidance that will be provided to employees to ensure that shared goals are achieved. [7] maintain that dimensions of measurement such as traits, behaviours and skills must be identified and a weighing factor attached to each.

B. Talent development

During the performance appraisal process it is necessary to identify employees who show capacity for growth, talent and further development. [12] contends that a skills assessment is an important source of information about what development actions individuals should engage in. Workers need development to enable them to perform to meet their personal and organisational goals. One of the aims of performance management assessments is to identify the “gaps” between existing competencies and capabilities and those needed, this
can be at individual and organisational level. These “gaps” can then be addressed through training and development [11]. According to [12], a talent development process should focus on the development of technical and generic competencies. Managers in the early phase of their careers often place additional focus on technical competence. As an end result, they normally fall short on the performance expectations required of the role. It is increasingly emphasized that high-potential talent should be capable of working in diverse work contexts. Hence there is an increased focus on generic competencies. The word “generic competencies” emphasizes an array of qualities and capabilities that are central in the workplace, such as problem-solving and analytical skills, teamwork, imagination and creativity [13].

C. Appraisal

In many employees’ experience, performance appraisal processes are among the largely overpromised and under delivered initiatives broadcast by organizations. They generate anxiety and stress and leave most managers and staff feeling equally unstable about outcomes. Performance appraisals do not have to be an unpleasant responsibility, and when done effectively, they can be a rewarding experience for all involved. [6] add that effective appraisal systems in many organisations are complex and do not measure what they are supposed to. It is essential for organisations to understand and effectively define performance appraisal otherwise it cannot be implemented efficiently. [7] are adamant that a performance appraisal system can only be effective in the following instances: when there is an organisation-wide (global) standardised appraisal system; when performance planning effectively sets goals and when training, preparation and motivation of performance evaluators/assessors are efficient.

D. Feedback

All employees have a need to know how well they are performing. An effective performance appraisal system ensures that feedback is provided on a continuous basis, from an employee’s supervisor or manager. While the annual performance discussion presents an excellent opportunity for both parties to exchange observations in depth, the annual performance appraisal discussion is not a substitute for day-to-day or week-to-week performance feedback. Avoiding such feedback is without doubt a real organizational strategic weakness [6], [7] and [14]. A common mistake in feedback on performance is infrequent measurement. By tracking and giving feedback on a weekly or monthly basis, the employee has the opportunity to make changes, develop where necessary and be productive [6]. [7] classifies two management skills required to give effective feedback. Firstly, the manager needs the ability to assess the situation for him/her to form a clear picture of the performance; and secondly, good communication skills are needed to explain to the employee what is expected of him/her. [6] and [15] indicate the importance of using technology (computers and cell phones) in the performance appraisal process. Leading companies use scorecard software to provide employees with real-time performance information. The advantage of the software is that it gives daily updates on performance for individuals, teams and the whole organisation. In the mining industry, in particular, this can be of great value where performance can be viewed and immediate changes made, to add [6] emphasise that one of the best appraisal methods to use is the 360 degree. This method enables a manager/supervisor to give detailed feedback to employees because it indicates their performance from different perspectives of how their colleagues, customers, subordinates and managers view them. It furthermore minimises bias towards workers.

E. Incentives and performance based pay

In the past few years, organizations have illustrated a high degree of dedication towards reinforcement of reward practices which are aligned with other HR practices and the goals of the organization. Efficient reward and benefits practices result in talented employees who thrive and succeed in performance-based environments. Reward and benefits practices are a fundamental motivator and may contribute towards the improvement of the productivity of employees if implemented properly [9]. One of the aims of a proper performance appraisal system is to motivate staff for increased performance through financial and non-financial rewards. Non-monetary rewards can be as crucial and as important as monetary rewards. Employees need to trust an organization’s salary administration system, and believe that rewards will be shared fairly and equitably [16], [17] and [18]. [13] emphasize that one of the most significant remuneration practices to improve employee and organizational performance is performance-based pay. It is a financial reward system for employees in which some or all of their monetary compensation is related to the way their performance is assessed relative to stated criteria. Performance-related pay can be used in a business context for how an individual, a team or the entire company performs during a given timeframe. [6] and [19] argue that an effective reward system should be linked to the performance development system, which focuses on performance-based pay and offers ample learning opportunities along with a healthy work environment. Variable pay can play a crucial role in boosting the performance of employees, especially the most excellent performers, instead of fixed pay packages. Few such reward practices involve sharing, bonuses, team-based incentives, profit sharing, ESOP's (employee stock ownership plans) and equity-based incentive awards. According to [20], the above-mentioned plans are highly effective in the mining industry because production levels can be measured and stock prices and profits are evident when bonuses, benefits and salaries are paid out to employees.

To summarize, by means of an appropriate performance appraisal system, top talent can be identified and possible skills and competency shortages improved. The first step to a performance management system is to (in conjunction with an employee) identify goals that the individual should meet – how communication of the goals will be measured and the individual or group will be appraised as well as rewarded and remunerated for their efforts. Possible training “gaps” should be identified and an employee assisted to narrow these “gaps” by means of training and development.
III. RESEARCH METHOD

A. Research methodology

The research question was: What are the contributing dimensions to effective performance management dimensions in a natural resources mining company in Africa?

B. Type of research

In this study, a quantitative research approach was used. [21] defines quantitative research as “… research within the primary aim of establishing casual relationships between variables.” This is a research methodology that relies on measurements, counting and the utilization of scales [22].

C. Measuring instrument

To obtain relevant information regarding performance management dimensions in a natural resources mining company in Africa, it was decided to make use of a questionnaire to gather data. An integration of the literature review, the current international TM strategy and the business plan of the mining group under study led to the design of the questionnaire. It was decided to make use of a 4-point forced Likert scale, to “force” definite choices from the respondents; consequently, the researcher was able to make scientific meaning out of the data as there are no neutral responses [22]. Five initial performance management dimensions were identified from the above. The Cronbach’s alpha was utilized to measure the reliability of the questionnaire. Permission from the mining company was obtained as well as individual consent from the respondents; confidentiality was therefore assured.

D. Population and sampling

No talent management strategy existed in the mining company in Africa. The study was undertaken during September 2012. The population for this study included professionals and specialists at 14 sites in the natural resources mining company in Africa, including fields such as engineering, science, research, technical services, geology, marketing, human resource management, legal services and electricity supply. Different commodities are mined, such as copper, cobalt, coal, platinum, fluor spar, bauxite and other non-ferrous metals. The countries under study were Malawi, the Democratic Republic of Congo, Zimbabwe, Zambia, Mozambique and South Africa. A convenience sample of 784 staff members at all the mining sites in Africa was selected. Questionnaires and letters of consent were distributed via the SurveyMonkey website. A response rate of 51% is reported.

E. Data analysis

A principal axis factor analysis was utilized to reduce the large number of variables to a smaller number of factors for the purpose of identifying the TM dimensions as perceived by staff members of the organization. The most important factor identified was performance management. Various dimensions were subtracted from this specific factor to identify contributing dimension to performance management. The factor loadings are the correlation coefficients between the variables (rows) and factors (columns). In the Statistical Package for the Social Sciences (SPSS), the factor loadings are found in a matrix labeled ‘factor matrix’ when conducting a principal factor analysis. An oblique rotation was performed, and pattern and structure matrixes were provided. The pattern matrix was used to investigate the factors for the study; thus, only unique contributions of coefficients were identified. The correlation of subgroups using the analysis of variance (ANOVA) was performed to determine whether there were significant differences in perception between various demographic groups. This is based on whether respondents of various demographic profiles agree or disagree with the statements of a questionnaire.

IV. RESULTS AND DISCUSSION

A. Biographical information

In terms of gender distribution, the majority of respondents were males (77.3%), while 22.7% females responded to the questionnaire. The majority (50.5) of the respondents were black, 35.9% were white followed by 9.1% Indian and 4% colored. The respondents’ highest qualifications indicated four intervals, namely Grade 12, National Diploma, degree and post-graduate qualification. A total of 18.7% had a Grade 12 or equal qualification, 28.8% a National Diploma, 25.3% obtained a degree and 27.3% a post-graduate qualification.

The majority of the respondents indicated that English was their home language (44.2%). French (29.8%) and other languages such as Chichewa, Shona and Ndebele followed (20%). A total of 17.4% specified that they were Afrikaans-speaking and 5.8% were Portuguese-speaking. At 46%, South Africans formed the largest group (46%).

A total of 36.4% are citizens from the Democratic Republic of the Congo (DRC), 7.3% from Zimbabwe, 3% from Zambia, 5.3% from Mozambique and 0.5% from Malawi. Of the respondents, 1.5% was citizens from other countries such as Britain, Russia and France.

The results received from the respondents indicated that the financial/commercial and treasury departments had the highest representation (22%), followed by procurement (10.3%), logistics (9.8%), geology and exploration (9.8%) and engineering/technical with 8.6%. The departments that were less represented were compliance/risk (2%), IT (3.8%), maintenance (3.8%), process/plant operation (3.8%) and research and development/laboratory (0.8%).

It is interesting to note that 75.1% of respondents had two years or less service within these mining companies. The number of respondents became fewer as the years of service increased, for example 6 years (4.3%), 10 years (0.8%) and 13 years (0.3%).

The level of respondents’ positions showed that the majority of respondents were managers (37.1%), followed by administrative staff (21%), professionals (17.2%), operational staff (12.9%) and technical staff members (11.1%). The majority of workers were employed on a permanent basis (60.9%), 30.3% were full-time expatriate employees and 8.1% were employed on fixed-terms contracts. The mine business units were well represented in the sample: Boss mining in the Democratic Republic of Congo (DRC) with 32.1%, headquarters (Johannesburg) with 19.9%, Frontier (DRC) with 11.6% and Mozambique with 10.1%.
B. Factorial structure of the questionnaire

A principal axis factor analysis with a direct oblimin rotation was performed on the 35 closed-question items to investigate the grouping of items and their correspondence to the original theoretical scales. As per Table I, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.919. The KMO should be 0.60 or higher in order to proceed with factor analysis. A cut-off value of 0.5 and a desirable value of 0.8 or higher are adequate. Bartlett’s test of sphericity with 0.000 is significant (p<0.05) and indicates sampling adequacy.

Table II indicates the average scores for each of the dimensions. As a result of Table II, the following performance management dimensions were identified. Dimension 1: Training “gaps” and financial assistance; Dimension 2: Development plan and promotional opportunities; Dimension 3: Importance of a performance management system; Dimension 4: Performance feedback; Dimension 5: Clear goals and mentorship.

All individual items contributed well to the overall reliability of the instrument. In Table III, the Cronbach’s alpha for the performance management and motivational processes factor (alpha = 0.85) indicates high reliability.

An analysis of variance (ANOVA) was used to assess whether there were differences between subgroups on the different factors. The subgroups were formed by the different demographic variables. Interestingly results are discussed with reference to performance management and the importance thereof.

As per Figure 1, below performance management was equally important to all language groups.

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**TABLE I**

RESULTS OF THE KAISER-MEYER-OLKIN MEASURE OF SAMPLING ADEQUACY AND BARTLETT'S TEST OF SPHERICITY

<table>
<thead>
<tr>
<th>KMO and Bartlett’s test</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>KMO measure of sampling adequacy</td>
<td>0.919</td>
</tr>
<tr>
<td>Bartlett’s test of sphericity</td>
<td></td>
</tr>
<tr>
<td>Approx. chi-square</td>
<td>4278.804</td>
</tr>
<tr>
<td>Df</td>
<td>465</td>
</tr>
<tr>
<td>Sig.</td>
<td>0.000</td>
</tr>
</tbody>
</table>

**TABLE II**

FIVE-DIMENSION IDENTIFICATION OF PM DIMENSIONS FROM THE PRINCIPAL AXIS FACTOR ANALYSIS

<table>
<thead>
<tr>
<th>Item description</th>
<th>Dim 1</th>
<th>Dim 2</th>
<th>Dim 3</th>
<th>Dim 4</th>
<th>Dim 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>The performance management system effectively identifies areas of my development.</td>
<td>0.78</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sufficient promotional opportunities are available in the organization.</td>
<td>0.64</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am satisfied with the way in which the organization’s performance management system is applied.</td>
<td></td>
<td></td>
<td>0.56</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Career development receives financial support in the organization.</td>
<td>0.31</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have a clear personal development plan.</td>
<td>0.27</td>
<td>2</td>
<td>-</td>
<td>0.20</td>
<td>4</td>
</tr>
<tr>
<td>I receive relevant feedback on my performance.</td>
<td></td>
<td></td>
<td></td>
<td>0.60</td>
<td>6</td>
</tr>
<tr>
<td>Individual goals set during the performance management process are clear.</td>
<td>-</td>
<td>0.33</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have an assigned coach/mentor to assist me with work related matters.</td>
<td></td>
<td></td>
<td></td>
<td>0.26</td>
<td>6</td>
</tr>
</tbody>
</table>

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**TABLE III**

ITEM ANALYSIS OF PERFORMANCE MANAGEMENT

<table>
<thead>
<tr>
<th>Item description</th>
<th>Cronbach's alpha if item deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sufficient promotional opportunities are available in the organization.</td>
<td>0.821</td>
</tr>
<tr>
<td>The performance management system effectively identifies areas of my development.</td>
<td>0.820</td>
</tr>
<tr>
<td>I am satisfied with the way in which the organization’s performance management system is applied.</td>
<td>0.822</td>
</tr>
<tr>
<td>Individual goals set during the performance management process are clear.</td>
<td>0.824</td>
</tr>
<tr>
<td>Career development receives financial support in the organization.</td>
<td>0.841</td>
</tr>
<tr>
<td>I have a clear personal development plan.</td>
<td>0.845</td>
</tr>
<tr>
<td>I have an assigned coach/mentor to assist me with work related matters.</td>
<td>0.840</td>
</tr>
<tr>
<td>Cronbach’s alpha for the performance management dimensions</td>
<td>0.845</td>
</tr>
</tbody>
</table>

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**Fig. 1 Means Plot For Five Factors Among The Different Language Groups**

A Pearson correlation analysis indicated that the younger employees were of the opinion that the more important remuneration becomes, the less important performance management becomes. The older employees felt that the opposite applied (Table IV).

According to the mean scores (Figure 2), it seems that those participants in possession of a National Diploma and grade 12 were of the opinion that performance management was less important to them. Employees with a degree and post-graduate qualification indicated that performance management was important to them.
It is crucial that the executive HR team in the company under study select and implement a performance measurement system that will have the most positive impact on the organization’s performance. An effective performance management system must address the following four things: It needs a clear definition of what kind of performance is needed, to generate an agreement on what should be done and how it should be done; It needs to guide the development of employees to perform at their best and it needs to provide data for the organization’s management information system, to have a clear knowledge and skills data base.

This research only focused on selected countries in Africa in a natural resources mining company, although it forms part of an international company. Future research could focus on the international performance management of this specific company, it could be compared with the African performance management system and possible changes could be suggested to combine the strategies to accommodate the international and the African performance management system. Research in other mining organizations (e.g. gold, copper, platinum) in Africa could be undertaken and compared with the natural resources mining industry, to identify whether the same or different contributing dimension of performance management apply.

Table IV

<table>
<thead>
<tr>
<th>Correlations</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance management and motivational processes</td>
<td>0.023</td>
</tr>
<tr>
<td>Remuneration</td>
<td>-0.61</td>
</tr>
</tbody>
</table>

Fig. 2 Means plot per factor between different qualifications

V. CONCLUSION

It is crucial that the executive HR team in the company under study select and implement a performance measurement system that will have the most positive impact on the organization’s performance. An effective performance management system must address the following four things: It needs a clear definition of what kind of performance is needed, to generate an agreement on what should be done and how it should be done; It needs to guide the development of employees to perform at their best and it needs to provide data for the organization’s management information system, to have a clear knowledge and skills data base.

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REFERENCES