# “Investigating the use of strategic management process in the mining industry”


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# Investigating the use of strategic management process in the mining industry


## Abstract

The objective of this study is to investigate the extent to which strategic management process is utilized within the mining industry. Strategic planning is an organizational management activity that is used to set priorities, focus energy and resources, strengthen operations, ascertain that employees and other stakeholders are working toward common goals, establish agreement around intended outcomes, and assess and adjust the organization's direction in response to a changing environment. A typical strategy management process has the following steps: initial assessment, situation analysis, strategy formulation, strategy implementation, monitoring and evaluation. The other objective is to determine which analytical tools are commonly used for situational, internal and external assessment as input to the strategic management process. A structured questionnaire was used for the study. A total of 300 mines were randomly selected from a research population of mining organizations in South Africa, Africa and globally. The respondents were all part of senior management. A response rate of 64% was achieved. The results indicated that about 20% of the organizations did not institutionalize their strategic planning functions and did not have a good strategic foundation. The results also showed that 60% were not satisfied with their productivity and 30% indicated that their cash flows were not stable at all. There was a significant number of organizations who do not use strategic analytical tools. A statistically and practically significant positive relationship was found between strategic management dimensions and business performance implying that the use of strategic management process can lead to improved business performance.


**Keywords:** strategy, strategic management, strategic planning, mining industry, strategic analytical tools.
**JEL Classification:** M100.

## Introduction and background

This study focuses on investigating the use of strategic planning and management processes in the mining industry. The supply of mineral and metal products has underpinned human endeavor through millennia and will carry on playing its role in meeting the needs of societies (International Council of Mining & Minerals, 2012). The global mining industry is characterized by the fact that its companies come from a number of countries, both developed and developing. Tracing the centre of gravity of global mining over the past two centuries demonstrates its role as a foundation of society throughout history (International Council of Mining & Minerals, 2012).

According to Wells (2012, p. 3), the goal of any organization, including the mining organizations, is to deliver superior sustainable performance. "Performance" means some form of return on investment. "Sustainable" means profit over the long term rather only a short-term burst of profits and failing to invest for the future. "Superior" means better than competitors; organizations which always do their utmost to win are less likely to be blindsided by competition and are more likely to succeed.

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To deliver superior sustainable performance, organizations need a good strategy. Thompson et al. (2012, p. 63) summarized the definition of strategy as the game plan that management is using to stake out a market position, conduct its operations, attract and please customers, compete successfully and achieve the desired performance targets. According to Kumar and Rathore (2015), mining strategy is defined as the connection between the mining organization and its current and forthcoming business facets; it also determines the long-term goals and objectives of the mining industry and management of resources, as well as actions required for carrying the defined goals. There are three levels of strategy. Corporate strategy involves the scope of a mining organization and markets in which it competes and also comprises the new acquisitions, allocation of resources and vertical integration between the business units. Business strategy outlines how the organization competes within the mining industry or market and focuses on attaining competitive advantage over its competitors. Functional strategy puts emphasis on resource management at the operational level.

The central thrust of a strategy is, therefore, undertaking moves to build and strengthen the long-term competitive position and financial performance by competing differently from rivals and gaining a competitive advantage (Thompson et al., 2012). This requires a sound strategic management, which, according to Wheelen and Hunger (2011), is a broader term than strategy and can be interpreted as a set of managerial decisions and actions of an organization that can be used to facilitate competitive advantage

and long-run superior performance over other organizations. The basic building blocks of strategic management are concerned with answering four questions shown in Figure 1 (Wilkinson, 2013)

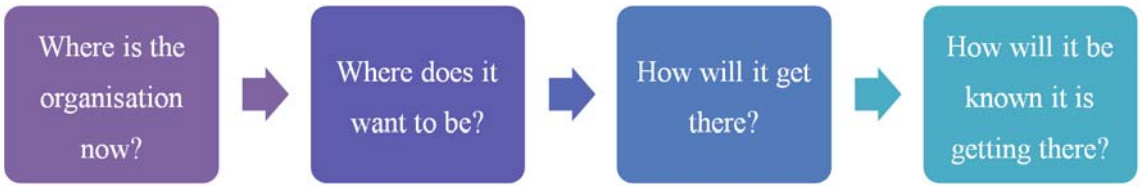


**Fig. 1. Basic questions for strategic management**

Source: Wilkinson (2013).

The questions show that strategic management essentially has planning, execution and review/control components. There are many components of the process which are spread throughout strategic planning stages. Most often, the strategic management process has four common phases (David & David, 2013; Rothaermel, 2012; and Thompson & Martin, 2010):

- Strategic analysis: Process of gathering, examining and providing information for strategic purposes. This phase involves examining the internal and external factors affecting an organization.
- Strategy formulation: The process of determining the best course of action for realizing organizational objectives and hence achieving organizational purpose. Managers formulate corporate, business and functional strategies after conducting strategic analysis.
- Strategy implementation: Putting the organization's selected strategy into action. Strategy implementation entails designing the organization's structure, allocating resources, developing the decision-making process and human resource management.
- Strategy evaluation: Final phase of strategy management process. The main strategy evaluation actions are: assessing external and internal factors from which the current strategies are based, evaluating performance, and taking remedial actions. Evaluation ascertains that the organizational strategy, as well as its implementation meet the organizational objectives.

Strategic management is an ongoing process. Therefore, it must be realized that each component interacts with the other components and that this interaction often happens in chorus (Hill & Jones, 2012, p. 12).

Formalized strategic management does lead to superior performance by organizations (Fred, 2011, p. 48). Studies have been able to provide substantial evidence of the profitability of strategy formulation and implementation. The formalized strategic management process makes a difference in the recorded measurements of return on assets, sales and profits. Organizations that adopt a strategic management approach can expect that the system will lead to improved financial performance. The main point is that strategic management enables an organization to orient itself to its market and ensure that it is actualizing the right strategy. In recent years, many organizations have realized the importance of strategic management. However, the key difference between those who fail and those who succeed is the manner in which strategic management is done and how strategic planning is carried out (Wells, 2012). Organizations need to ensure their longer-term viability and success in the marketplace by realizing the benefits of strategic management.

The problem statement is discussed below.

## 1. Problem statement

Mines currently face tough choices around their profitability, attracting and developing key skills, capital raising, capital allocation and stakeholder engagement. The complex nature of the environment within which these organizations operate requires increased strategic flexibility, speed and innovation to manage environmental discontinuities and unpredictable changes for the creation or maintenance of any competitive advantage (Thornton, 2013). Even in tough times, mining companies should use strategic thinking and analytical tools to face their tough choices.

According to analysts such as Deloitte (2013a) and PWC (2014), mining companies need to focus on key aspects of their high-level and operational strategies which collectively form the basis for long-term strategic planning and short-term prioritization. They should be able to clearly define both the financial and non-financial objectives which should be aligned with the company's overall vision, as they will guide investment decisions. They should identify sources of sustainable advantage and use this as the basis for business model development. These choices generally include the mining method, mine design, technology and sustainability choices. They should ascertain that they have the capabilities and skills in place and that they are configured properly to implement these strategies successfully. The fundamental challenge

facing mining organizations is how to create sustainable value while operating within mandated strategic boundaries, identified constraints, and variable market and economic conditions. According to the White Paper about the future of mining from IBM Global Services (2014), mining organizations have serious choices to make about every aspect of their business. They can either stagnate or innovate. The most fundamental change is in changing the approach to the supply chain, where the goal is not to push product out of the ground and just flood the market, but to respond quickly to complex customer relationships and market dynamics.

According to Deloitte (2013b), *"During challenging times such as these, mining companies can choose to pursue a 'survival strategy' or a 'leadership strategy'. Those pursuing a survival strategy will cut costs to the bone while adopting a risk-averse posture and focus on defending their core business. Other companies adopt a leadership strategy, looking to identify unusual opportunities, enabling the mining company to gain ground during the downturn and to make step changes in performance"*.

The researcher was prompted to investigate the use of the strategic management processes in the mining sector and how it affects overall perceived business performance. The investigator was also prompted to investigate the use of strategic analytical tools and techniques in the crafting and implementation of strategies. It has also been noted that there is also still a void in academia and in practice about the use of strategic management processes and analytical tools in the mining sector for strategy formulation and implementation.

The research objectives of the study are outlined below.

## 2. Research objectives

The primary aim of this research study is to investigate the extent to which strategic management process is utilized within the mining industry and whether it is used to achieve competitive advantage and business performance. The secondary objectives are:

- To conceptualize strategic management by conducting a literature study.
- To determine to what extent strategic management process is used within the mining industry.
- To determine the relationship between the dimensions of strategic management and perceived business performance.
- To identify the tools and techniques which are commonly used in strategy analysis.
- To compare the findings based on the demographic profile.

## 3. Research methodology

A survey design was used in which a selected sample was studied to make inferences about the population (Saunders et al., 2009). The survey involved selecting a representative and unbiased sample of subjects drawn from senior management in the mining organizations in South Africa, Africa and globally. The researcher used a simple random sampling technique to select participants. Saunders et al. (2009) state that simple random sampling involves the selection of a sample at random from the sampling frame using either random number tables or a computer. A total of 300 mines were randomly selected from a population of 850. A response rate of 64% was achieved.

The survey questions were developed based on the existing literature with some questions adopted from a questionnaire by Strategic Futures Consulting (2009). The questions about different analytical tools used in the strategic management process were also developed based on the extant literature. The structured questionnaire which was used and shown in Appendix A on page 214 was divided into sections comprising the biographic information, items of strategic management and business performance which were measured using a 4-point Likert-type scale. The respondents were also requested to indicate with a Yes or No on the questionnaire if their organization was using specific strategic analytical tools.

**3.1. Statistical analysis.** The data received from the completed questionnaires were captured and analyzed with the use of the statistical software program SPSS and STATISTICA with the assistance of the Statistical Consulting Services of the North-West University. Descriptive statistics and effect sizes were used to decide on the significance of the findings. The results are to be compared by way of mean and standard deviations. Confirmatory Factor Analysis (CFA) was used to verify the factor structure of the set of variables. Cronbach Alphas were computed to assess the reliability of the measuring instrument. Pearson product-moment correlation coefficients were calculated to identify the relationships between the variables. The statistical significance level is set at a 95% confidence interval ($p \leq 0.05$). The cut-off point of 0.30 is used to determine practical significance of a medium effect. T-tests and ANOVA are employed to determine differences between the groups in the sample.

## 4. Presentation and discussion of results

The results of the empirical study are reported and discussed below. Firstly, the results from the biographical questionnaire will be discussed and secondly, an interpretation of the data from the instrument used will be presented.

**4.1. Biographical profile.** Biographical information was reported for a number of employees in the organization, level of employment, type of metal mined or processed, number of years the organization has been operating and the geographic location (see Table 1).

A total of 193 questionnaires were received representing a response rate of 64%.

*Size:* The majority of the respondents were working for the mines with more than 1000 employees (66%) followed by those in smaller operations with less than 499 employees (18%). The respondents from medium-sized mines with 500 to 999 employees were about 16%.

*Level of management*: The majority of respondents were managers (57%) followed by directors (34%) and CEOs (9%).

*Types of mines:* About 51% of the respondents were from the mines producing precious metals such as gold and platinum group metals. About 17% were from coal mining organizations, while about 11% were from the steel industry. A total of 12% were from the mines producing non-ferrous metals such as copper and only 8% were in the industrial metal mines.

*Tenure of the mine:* The majority of the respondents were from the mines with more than 20 years in operation (87%) which serves as a confirmation that most of the mines in the world have been operating for decades.

*Geographic location:* Most of the respondents were from the South African mining operations (55%), other respondents were from the rest of Africa (23%), while the respondents from other continents such as USA and Australia formed 21% of all the respondents.

Table 1. Biographic profile of the respondents

| Item | Category | Frequency | Percentage |
|---|---|---|---|
| Number of employees in the organization | <499 | 35 | 18.1 |
| | 500 – 999 | 30 | 15.5 |
| | >1000 | 128 | 66.3 |
| Level of employment | CEO | 17 | 8.8 |
| | Director | 66 | 34.2 |
| | Manager | 110 | 57.0 |
| Type of metal mined or processed | Iron and Ferro Alloys | 22 | 11.4 |
| | Non-Ferrous Metals | 24 | 12.4 |
| | Precious Metals | 99 | 51.3 |
| | Mineral Fuels | 32 | 16.6 |
| | Industrial Metals | 16 | 8.3 |
| Number of operating years | < 10 | 2 | 1.0 |
| | 11 – 20 | 23 | 11.9 |
| | > 20 | 168 | 87.0 |
| Geographic location of the operations | South Africa | 107 | 55.4 |
| | Africa (not SA) | 45 | 23.3 |
| | Others | 41 | 21.2 |

Source: compiled by authors from survey results.

The results of descriptive statistics are presented in the next section.

**4.2. Descriptive statistics.** *4.2.1. Strategic planning and management*. One of the main objectives of this study was to measure the extent of the use of the strategic planning and management processes by the mining organizations. The results are presented in Table 2.

Table 2. Results of the questionnaire on strategic planning and management

| | | Strongly disagree | Slightly disagree | Slightly agree | Strongly agree | Mean | Std. deviation |
|---|---|---|---|---|---|---|---|
| Institutionalizing the planning function | | | | | | | |
| C1 | Management team takes formal responsibility for the organization's strategic planning. | 0 | 26 | 59 | 108 | 3.42 | 0.72 |
| C2 | The organization has a formal strategic planning process that is performed regularly. | 14 | 33 | 37 | 109 | 3.25 | 0.98 |
| C3 | The organization provides resources ear-marked specifically for strategic planning. | 16 | 36 | 45 | 96 | 3.15 | 1.00 |
| C4 | The organization follows a defined set of procedures in its strategic planning process. | 15 | 25 | 53 | 100 | 3.23 | 0.95 |
| Establishing the strategic foundation | | | | | | | |
| C5 | The organization has a written mission statement. | 1 | 5 | 65 | 122 | 3.61 | 0.54 |
| C6 | All management and senior staff understand the mission. | 0 | 18 | 75 | 100 | 3.43 | 0.65 |
| C7 | The organization has written strategic goals. | 0 | 23 | 71 | 98 | 3.38 | 0.69 |
| C8 | The goals list measurable targets (e.g., volume, profitability). | 5 | 8 | 78 | 102 | 3.43 | 0.70 |
| C9 | The organization systematically measures actual performance versus goals. | 2 | 10 | 93 | 88 | 3.42 | 0.58 |
| C10 | The current vision for the future represents the "best thinking" from the leadership team. | 5 | 14 | 73 | 101 | 3.40 | 0.73 |
| Developing strategic plans | | | | | | | |
| C11 | The organization uses the strategic (situational) diagnosis to formulate strategic plan options. | 4 | 27 | 66 | 96 | 3.31 | 0.80 |
| C12 | It considers business performance options (e.g., cost reduction, alternative suppliers or production improvements). | 2 | 3 | 79 | 109 | 3.54 | 0.59 |
| C13 | It considers market penetration options (e.g., pricing/ promotion, market expansion and segmentation) | 12 | 9 | 79 | 93 | 3.31 | 0.84 |
| C14 | It considers management options (e.g., restructuring, purchasing competitive businesses). | 2 | 9 | 79 | 103 | 3.48 | 0.64 |
| C15 | The organization considers product enhancement options. | 11 | 28 | 51 | 103 | 3.28 | 0.92 |

Table 2 (cont.). Results of the questionnaire on strategic planning and management

| | | Strongly disagree | Slightly disagree | Slightly agree | Strongly agree | Mean | Std. deviation |
|---|---|---|---|---|---|---|---|
| C16 | The planning process is based on criteria by which options can be compared. | 7 | 32 | 55 | 99 | 3.28 | 0.86 |
| C17 | The organization decides its strategic plan(s) based on risk/return criteria. | 22 | 22 | 43 | 105 | 3.20 | 1.06 |
| C18 | It takes into account unavoidable uncertainties about the future. | 18 | 20 | 59 | 87 | 3.17 | 0.97 |
| Managing strategic plan implementation | | | | | | | |
| C19 | The organization makes strategic decisions based upon the strategic plan. | 1 | 21 | 60 | 108 | 3.44 | 0.71 |
| C20 | The organization assigns lead responsibility for the implementation of the action plan to a person or, alternately, to a team. | 2 | 26 | 61 | 104 | 3.40 | 0.73 |
| C21 | Sufficient resources are allocated for implementation. | 3 | 30 | 85 | 75 | 3.21 | 0.74 |
| C22 | The organization sets performance standards for each plan element. | 4 | 43 | 67 | 75 | 3.15 | 0.83 |
| C23 | The organization develops an organized system for monitoring how well those performance standards were met. | 8 | 50 | 58 | 77 | 3.09 | 0.88 |
| C24 | The organization reviews monitoring data regularly. | 3 | 41 | 77 | 71 | 3.14 | 0.79 |
| C25 | Managers are updated regularly about how the organization is progressing towards its future vision. | 10 | 36 | 69 | 78 | 3.14 | 0.87 |
| C26 | The organization's vision for the future has been clearly communicated to all levels | 9 | 50 | 54 | 80 | 3.09 | 0.93 |
| C27 | Strategic planning is used for the following organizational purposes: | | | | | | |
| A | Achieving sustainable competitive advantage. | 6 | 28 | 71 | 87 | 3.25 | 0.82 |
| b | Motivating innovation. | 11 | 53 | 82 | 45 | 2.85 | 0.86 |
| c | Implementing productive action plans. | 2 | 8 | 91 | 90 | 3.41 | 0.63 |
| d | Ensuring ongoing success. | 3 | 7 | 78 | 104 | 3.48 | 0.65 |
| e | Identifying various types of risks facing the organization. | 7 | 10 | 63 | 112 | 3.47 | 0.77 |
| f | Scanning business environment. | 7 | 16 | 81 | 87 | 3.30 | 0.79 |
| g | Ensuring the existence of proactive business continuity planning. | 9 | 10 | 73 | 99 | 3.38 | 0.80 |
| h | Ensuring effective recovery after a disaster or crisis. | 10 | 24 | 76 | 82 | 3.22 | 0.85 |

- Institutionalizing the planning function. The mean scores above 3 in Table 2 indicate that the majority of the mining organizations have institutionalized their strategic planning functions. The standard deviations for the questions were also relatively low indicating their agreement to the statements. This implies that most of the mining organizations have formal strategic planning processes and they allocate resources ear-marked for this function. About 20% of the participants responded negatively, indicating that some of the mining organizations do not have any formal strategic planning processes at all. Most of those mines are based in Africa, excluding South Africa.
- Establishing the strategic foundation. The aim of the following set of questions (C5 – C10) was to determine if the mining organizations had well-established strategic foundations. Based on a mean score above 3 and a low standard deviation, most of the participants responded positively to these questions implying that most of the mining organizations had established their own strategic foundation. The organizations have well-understood mission statements, strategic goals and systematically measured their performance against their goals on a regular basis. However, there were about 12% of the mining organizations that had not established their strategic foundation.
- Developing strategic plans. Questions C11 to C18 were meant to determine how the organizations develop their strategic plans. A mean score of above 3 with a relatively low standard deviation indicate that most of the participants responded positively to these questions. About 80% of the organizations use situational diagnosis and consider different strategic options to formulate their strategic plan. This also implies that there are almost 20% of the organizations who do not develop their strategic plans properly.
- Managing strategic plan implementation. The majority of the mines also follow the prescribed steps in the implementation of their strategic plans. They allocate sufficient resources for the implementation phase and monitor the progress with regular feedback given to other managers. There is also a significant number of mines who do not use the process. About 24% do not allocate sufficient resources, while almost 30% do not have any organized systems of monitoring their performance. About 31% of the respondents also indicated that there is a lack of communication to all the levels about the vision for the future.
- Organizational purpose for using strategic planning process. The other objective of the study was to determine the purposes which the strategic planning process is used for by the mining organizations. The results are shown in Figure 2.

More than 90% of the participants use strategic planning processes to ensure ongoing success; implement productive action plans and do risk analysis. More than 80% use the process to achieve sustainable competitive advantage with only 66% using it to motivate some innovation. About 44% do not use the strategic planning process to motivate innovation and about 18% do not use the process to achieve sustainable competitive advantage. This is a significant number of organizations with negative responses to these questions.

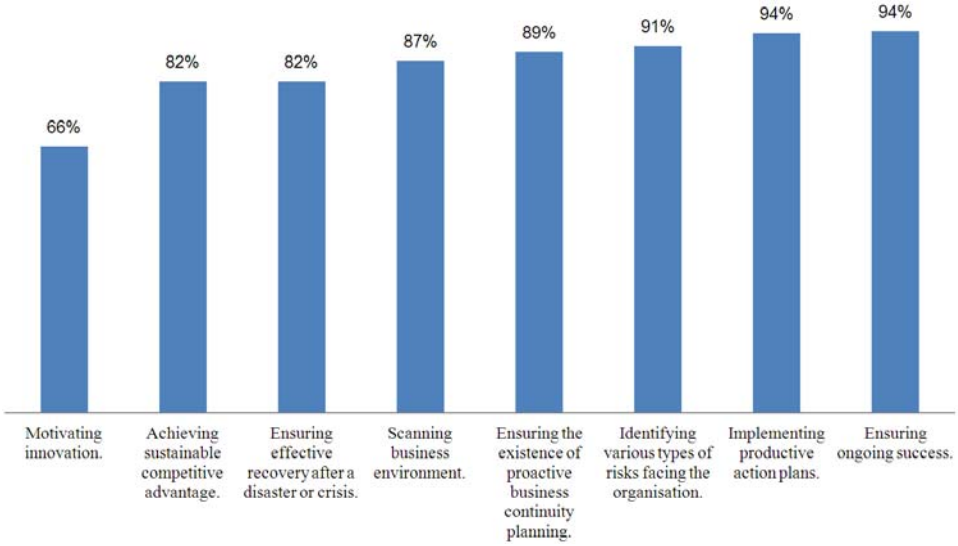


**Fig. 2. The purposes of the strategic planning process**

Source: compiled by authors from survey results.

The other objective of the study was to determine which analytical tools or techniques are used as part of strategic management. A number of techniques was listed and the respondents were asked to indicate by Yes or No whether their specific organizations use the technique or not. The results are presented and discussed below.

*4.2.2. Analytical tools and techniques in strategic management*. A summary of the tools used for the analysis of the internal resources such as financial, human, technical and both internal and external informational resources which the organization can exploit to apply and consolidate its strategy is shown graphically in Figure 3.

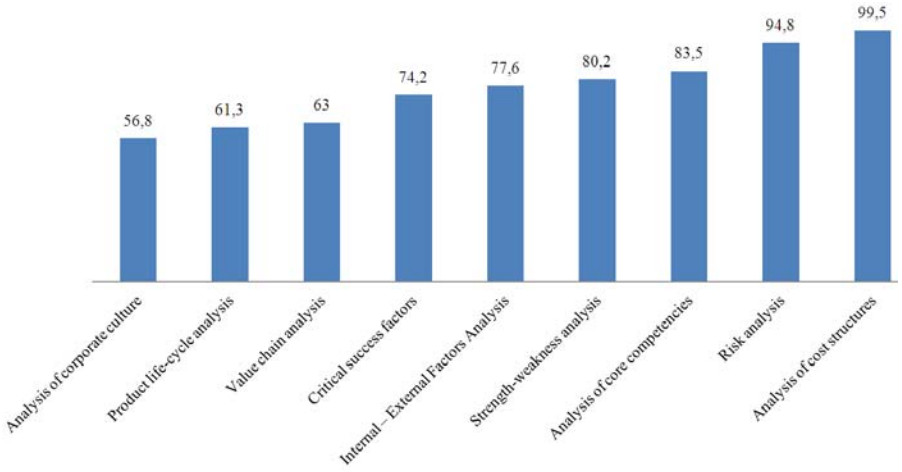


**Fig. 3. Summary of the tools used in analysis of the internal resources (%)**

Source: compiled by authors from survey results.

The analysis of the cost structure is done by almost all the mines. The mines do cost analysis to monitor the cost of their inputs and operations in their quest for survival. Risk analysis is carried out by about 95% of the mines. More than 80% of the mines analyze their core competencies which, according to Deac and Duna (2012, p. 27), can allow the organizations to determine their specific skills that will give them a true competitive advantage. About 80% of the organizations determine their strengths, based on which they would have to consolidate their positions or craft their strategies. The organizations also determine their weaknesses which they would have to overcome in an effort to achieve competitive

advantage. About 74% of the organizations determine the critical success factors which should improve their chances of crafting a sound strategy according to Thompson et al. (2012, p. 133). Value chain analysis which allows the systematic identification of the sources of competitive advantage and of its activities is done by only about 63% of the respondents. About 61% of the mining organizations use the product-life cycle technique to identify distinct stages affecting the sales of products, from the products' inception until its retirement. Only 57% of the mines analyze their corporate culture which is essential in the implementation phase of strategy.

It is worth noting that a significant number of the organizations do not use these tools:

- about 20% do not analyze their core competencies and determine their strengths and weaknesses;
- about 26% do not determine the critical success factors, while about 37% do not carry out value chain analysis;
- about 39% do not do product life-cycle analysis while more than 40% do not even do an analysis of their corporate culture.

A summary of the tools used in the analysis of the external market forces is shown graphically in Figure 4.

More than 80% of the organizations do competitor analysis and benchmark themselves to learn the best practices in the industry. About 76% scan for the opportunities that they can pursue and the threads which could place their operations at risk. Scanning of the political, economic, societal, technological, ecological or environmental and legal factors in the macro-environment, as well as the global forces is only done by 62% of the respondents. About 38% of the respondents do not use Porter's 5 Forces technique to assess and evaluate their competitive position. Almost half of the organizations do not assess their industry structure using the strategic group maps' technique.

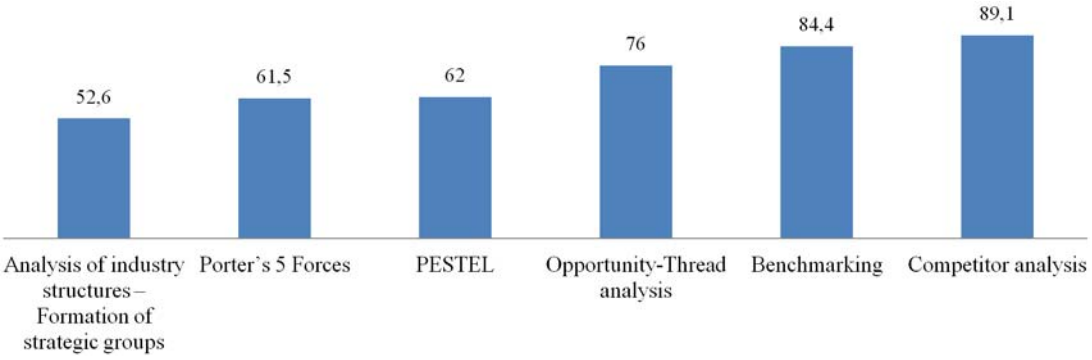


**Fig. 4. Summary of tools used for analysis of external market forces (%)**

Source: compiled by authors from survey results.

The BCG matrix and industry attractiveness technique are not widely used in the sector with more than 65% of the participants responding negatively to their use. About 90% of the organizations have a mission statement which should define their current business and purpose. About half of the organizations use generic strategies as a tool for strategic positioning. The Ansoff matrix is not a commonly used technique with only 13% of the participants responding positively to its use within their organizations.

A summary of the tools used generally for strategic planning and evaluation are shown in Figure 5.

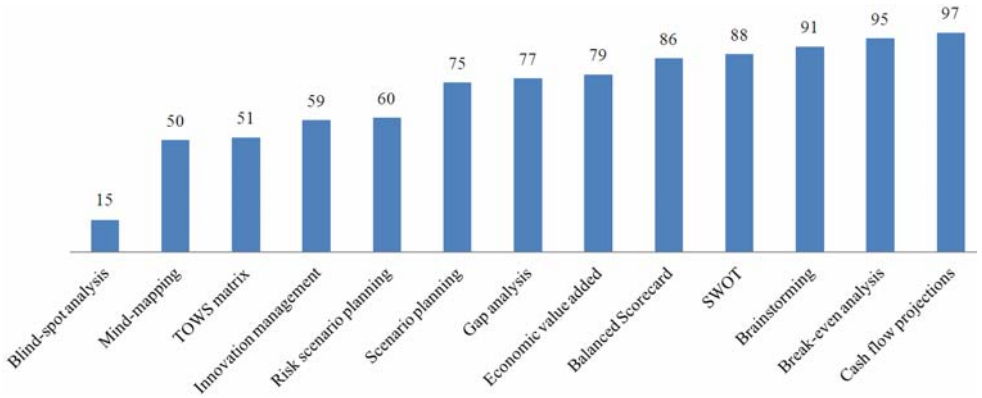


**Fig. 5. Summary of the tools used in strategic planning and evaluation (%)**

Source: compiled by authors from survey results.

More than 90% of the organizations do break-even analysis and cash flow projections which are financial tools essential to analyze and monitor the performance of the organizations. Brainstorming is used by more than 90% of the respondents to generate ideas. SWOT analysis, which is a structured method to determine the internal strengths and weaknesses, as well as the external opportunities and threats, is used by the majority of the mines (88%).

About 86% of the mines have a balanced scorecard which is essential for performance management. Gap analysis and scenario planning are used by about 75% of the mines. The TOWS matrix is an essential tool which should be carried out as a follow-up to SWOT analysis to assist organizations in determining strategic alternatives. This technique is only used by almost half of the organizations. About 85% of the participants responded negatively to the use of the blind-spot analysis technique. This technique is essential to assist organizations in preventing the misjudging of industry boundaries, market trends and customer behavior.

The next section shows the results of the overall perceived business performance of the mines which were measured.

**4.3. Perceived business performance.** The results for the overall perceived business performance are summarized in Figure 6.

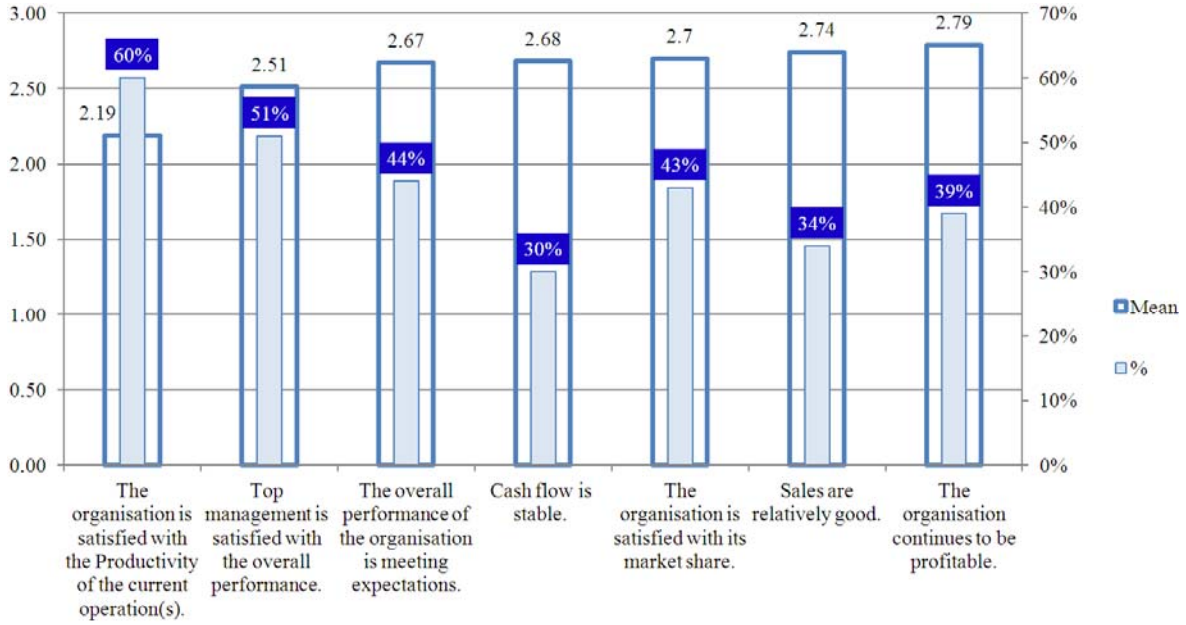


**Fig. 6. Mean scores in ranking order for perceived business performance**

Source: compiled by authors from survey results.

About 60% of the organizations were not satisfied with the productivity of their current operations. The mean score for this question was the lowest at 2.19 indicating that the majority of the responses were negative. About half of the respondents indicated that their top management were not satisfied with the overall performance of their mining organizations. The mean score was 2.51 with a relatively high standard deviation of 1.13. The high standard deviation indicates that the respondents did not concur and provided a large spread of the results.

The overall performance of 44% of the mines was not meeting expectations with a mean score of 2.67 and a high spread shown by a high standard deviation of 1.19. This is in agreement with the 39% whose organizations were not reported as profitable. About 43% of the mines were also not satisfied with their current market share. A significant number (30%) of the mines indicated that their cash flows were not stable at all.

The results for factor analysis are shown below.

**4.4. Factor analysis.** Reliability, according to Easterby-Smith et al. (2008), is concerned with the consistency of the instrument. An instrument is said to have high reliability if it can be trusted to give an accurate and consistent measurement of an unchanging value. Reliability was calculated and evaluated by means of Cronbach Alpha. Sekaran and Bougie (2010) suggest that the Cronbach Alpha co-efficient should be greater than 0.70, for the data to be regarded as reliable and internally consistent. Factor reliability of the identified dimensions is presented in Table 3. All the factors display satisfactory levels of reliability with Alpha coefficients ranging from 0.91 to 0.96.

Table 3. Results of factor reliability

| № | Factor | Cronbach Alpha | Cronbach Alpha based on standardized items | N of items | Mean | Minimum | Maximum | Range | Variance |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Institutionalizing the planning function | 0.954 | 0.959 | 4 | 3.263 | 3.145 | 3.425 | 0.28 | 0.014 |
| 2 | Establishing the strategic foundation | 0.914 | 0.913 | 6 | 3.444 | 3.384 | 3.605 | 0.221 | 0.007 |
| 3 | Developing strategic plans | 0.907 | 0.911 | 8 | 3.320 | 3.175 | 3.536 | 0.361 | 0.016 |
| 4 | Managing strategic plan implementation | 0.959 | 0.961 | 8 | 3.206 | 3.091 | 3.441 | 0.349 | 0.019 |
| 5 | Business performance | 0.946 | 0.946 | 7 | 2.613 | 2.192 | 2.788 | 0.596 | 0.042 |

Source: compiled by authors from survey results.

The number of items that loaded on each factor is shown in the table. The average mean scores for each factor are also shown. Factors 1 to 4 had mean scores above 3.2 indicating that the majority of the participants responded positively to the items in these factors. Factor 5 has a mean score of 2.613 with a high range of 0.596 indicating a relatively more negative response and a high spread in the response values.

The other objective of this study was to determine if there were any relationships among the dimensions of strategic management and the performance of those organizations. The results of the correlations between the identified factors are shown below.

**4.5. Correlations.** The results of the product-moment correlation coefficients between the constructs are reported in Table 4.

Table 4. Correlation coefficients between strategy management and perceived business performance dimensions

| | Institutionalizing the planning function | Establishing the strategic foundation | Developing strategic plans | Managing strategic plan implementation | Business performance |
|---|---|---|---|---|---|
| Institutionalizing the planning function | 1.000 | .815** | .868** | .881** | .685** |
| Establishing the strategic foundation | .815** | 1.000 | .790** | .839** | .635** |
| Developing strategic plans | .868** | .790** | 1.000 | .869** | .790** |
| Managing strategic plan implementation | .881** | .839** | .869** | 1.000 | .793** |
| Business performance | .685** | .635** | .790** | .793** | 1.000 |

Note: ** correlation is significant at the 0.01 level (2-tailed).
Source: compiled by authors from survey results.

As shown in Table 4, there is a strong statistical and practical significant correlation among *Institutionalizing the Planning Function; Establishing the Strategic Foundation; Developing Strategic Plans and Managing Strategic Plan Implementation* as the dimensions of strategic planning and management process. The table shows that *Institutionalizing the Planning Function* dimension is positively correlated to *Business Performance* (practically significant, large effect). *Establishing the Strategic Foundation* is positively correlated to perceived *Business Performance* (practically significant, large effect). *Developing Strategic Plans* is positively correlated to perceived *Business Performance* (practically significant, large effect). *Managing Strategic Plan Implementation* relates positively to the perceived *Business Performance* (practically significant, large effect). All the dimensions of strategic planning and management processes are positively correlated to the overall perceived business performance of the organization (practically significant, large effect). *Developing the strategic plans* and *Managing the implementation of strategy* are the most highly correlated to perceived performance.

The other objective of this study was to compare the findings based on the demographic differences. This was achieved by using the T-test and ANOVA tools to establish if there were any significant differences in the responses based on the biographical information of the participants. The results are discussed below.

**4.6. Differences based on demographic profile.** *4.6.1. Number of employees.* Most of the organizations with 500 – 999 employees had negative responses in terms of their performance with a mean of 1.933. The larger mining organizations with more than 1000 employees had a mean score of 2.718 which was close to the mean score of 2.812 obtained for the smaller organizations with less than 500 employees. The large organizations with more than 1000 employees had the highest mean scores in the responses to the items related to strategic planning and management

processes. This implies that most of the large mines have well-established strategic management processes compared to the smaller and medium-sized organizations.

*4.6.2. Level of employment*. The directors responded more positively to the items of strategic management than the CEOs and the managers. The standard deviation for the responses by the CEOs to the items about the planning function being institutionalized was relatively high, indicating a high spread in the way they responded.

*4.6.3. Type of metal*. The organizations producing precious metals such as gold and platinum group metals had the lowest mean score for business performance indicating that the most negative responses were received from these miners. Those in the industrial and non-ferrous metals gave more positive responses compared to those producing precious metals; however, they showed the highest spread in terms of their responses. Mines producing mineral fuels such as coal had the highest mean score for business performance indicating that the participants from these miners responded the most positively.

*4.6.4. Geographic location.* The lowest mean score for business performance was obtained for the organizations in Africa. Their standard deviation was also relatively high indicating a high spread in terms of their responses. This implies that the participants from the mines in Africa responded the most negatively compared to those in South Africa and the other continents such as USA and Australia. The performances of the mining companies in South Africa were also more negative compared to those from other continents. The lowest mean scores were also observed from the respondents from the mines in Africa in response to the items of strategic planning and management process.

## Conclusion

Conclusions regarding the specific theoretical objectives and the results of the empirical study are made.

**Conclusions regarding the specific theoretical objectives.** To answer the first objective of the study with regard to the conceptualization of strategic management, from the literature study, it emerged that the strategic management process is the full set of commitments, decisions, and actions required for an organization to achieve competitiveness and get good returns. The organization's initial steps include the process of analyzing its external macro- and micro-environment and internal analysis to determine its resources, capabilities, and core competencies which are the sources of its strategic inputs. It was evident from literature that clear and insightful diagnosis of the organization's internal and external situations is an essential step in crafting strategies that are well matched to industry and competitive conditions. Effective strategic actions that take place in the context of carefully integrated strategy formulation and implementation efforts result in positive outcomes and superior performance. Studies have been able to provide convincing evidence of the profitability of strategy formulation and implementation. Research has also indicated that organizations using strategic-management concepts are more profitable and successful than those that do not.

A competently done evaluation of a company, capabilities and competitive strengths can help to expose the strong and weak points in the present strategy and show how attractive or unattractive the organization's competitive position is. To do cutting-edge strategic thinking about the external macro- and immediate environment, as well as the internal situation, managers must know what questions to pose and which analytical tools to use in answering those questions.

Strategic management in the mining organization is a process that acknowledges the nature of the depleting mineral asset base, the importance of a defined, but flexible project pipeline, variability in market conditions and the requirements of the operating legislative environment. It is a logic construct that translates into a defined outcome. Thus, the philosophy of strategic planning in the mining organizations is an integration of logic, process, and methodologies to facilitate long-term planning of mineral asset exploitation within a strategic and market context. The strategic plans create the link between the market requirements, business strategy, and tactical planning activities. They also form the basis for the development of a portfolio of operations, current and future, that ensures optimal resource exploitation and creates the flexibility to respond to changing economic and market conditions while operating within legislative and mandated strategic constraints.

**Conclusions regarding the specific empirical objectives.** Results of the factor analysis showed that all the factors displayed satisfactory levels of reliability with Alpha coefficients ranging from 0.91 to 0.96. The mean scores above 3 indicate that majority of the mining organizations use the strategic management process. About 20% of the mining organizations do not have any formal strategic planning processes at all. The results also indicated that some of the mines are struggling with their cash flows and are not profitable. Some were not satisfied with their current low productivity. The results also confirmed that a statistically and practically significant positive relationship with a large effect exists between strategic management dimensions and business performance.

Some of the tools such as SWOT analysis and cost structure analysis were used by many mining organizations, whereas some tools were not used to the same extent.

Most of the large mines have well-established strategic management processes compared to the smaller and medium-sized organizations. The lowest mean score for business performance was obtained for the organizations in Africa.

## Recommendations

Mining organizations should make conscious decisions about their overhead ratios. With limited revenue potential because of low commodity prices, mining organizations may seek to defend their profits by managing costs and streamlining their overhead portfolio to focus on cost categories that drive growth. Business decision-making should be forward looking, based on smarter plans and advanced business analytics. It is recommended that all the mining organizations should use formalized strategic management process and also use appropriate analytical tools for the continuous analysis of the external environment and internal resources, competencies and capabilities in order to continually review their strategic positions and remain competitive.

Using strategic management process is not the only factor that leads to business performance of the mining organizations; other contributory factors may be identified with further research. A measure of the critical success factors for this industry is recommended. An investigation is recommended about the effect of the geographic locations of these organizations and the regulatory framework in those areas on their performance.

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