# An investigation of buying behaviour of explosives by mines in South Africa

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# ABSTRACT

The South African Mining industry comprises diverse mining activities and minerals such as platinum, diamond, iron, uranium, coal, manganese, gold, silver, copper and others. Mines play a large role in businesses in their areas and use a lot of explosives to extract minerals. Four explosive manufacturers dominate the explosive market. This study evaluated the buying behaviour of mines when they buy explosives for commercial purposes, and attempts to identify why a mine would change from one supplier of explosives to a competitor. A sample of the mine managers, mine overseers and the explosives managers of the mines was drawn. Data was collected from gold mines (27%), platinum mines (23%), chrome mines (17%), manganese mines (10%), coal (17%) and other mines (7%). Some 83% of the mines sampled have a turnover of R100 million and 90% have more than 500 employees. A total of 36 questionnaires were circulated, of which 30 were properly completed and received; setting a response rate of 81%. The results show mines agree that safety, results, quality, support and service (including after sales support), price and supplier-buyer relationship are the drivers of the mines to purchase explosives products.



**Keywords**: Mining, explosives, South Africa, buying behaviour

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# TABLE OF CONTENTS

**ABSTRACT** ..... **ii**
**ACKNOWLEDGEMENTS** ..... **iii**
**LIST OF FIGURES** ..... **vi**
**LIST OF TABLES** ..... **vi**
**NATURE AND SCOPE OF THE STUDY** ..... **7**
**1.1 INTRODUCTION** ..... **7**
**1.1.1 The South African mining industry** ..... **7**
**1.1.2 Explosive industry in South African mining** ..... **8**
**1.2 PROBLEM STATEMENT** ..... **9**
**1.3 RESEARCH QUESTION** ..... **10**
**1.4 RESEARCH OBJECTIVES** ..... **10**
**1.5 RESEARCH DESIGN** ..... **11**
**1.5.1 Research approach** ..... **11**
**1.5.2 Research methodology** ..... **11**
1.5.2.1 Literature review ..... 11
1.5.2.2 Empirical study ..... 11
1.5.2.3 Sample ..... 12
1.5.2.4 Measuring instrument ..... 13
1.5.2.5 Research procedure ..... 13
1.5.2.6 Statistical analysis ..... 14
1.5.2.7 Ethical considerations ..... 14
**1.6 CHAPTER DIVISIONS** ..... **14**
**1.7 SUMMARY** ..... **15**
**CHAPTER 2:** ..... **16**
**LITERATURE REVIEW** ..... **16**
**2.1 INTRODUCTION** ..... **16**
**2.2 CONSUMER BEHAVIOUR** ..... **16**
**2.3 ORGANISATIONAL BUYING BEHAVIOUR**.....**17**
2.3.1 Nature of organisational buying ..... 18
2.3.2 Objectives of business to business buyers ..... 18
2.3.4 Motivation of business buying ..... 19
2.3.5 Buying situation ..... 20
2.3.5.1 Buying grid ..... 20
**2.3.6 Factors that influence organisational buying behaviour** ..... **21**

2.3.7 Buyers' decision centre ..... 23
2.3.8 Model of organisational buying behaviour……25
2.3.9 Post purchase behaviour..... 31
2.4 SUMMARY ..... 33
CHAPTER 3..... 34
RESEARCH METHODOLOGY AND RESULTS..... 34
3.1 INTRODUCTION ..... 34
3.2 RESEARCH METHODOLOGY ..... 34
3.4 RESULTS ..... 35
3.4.1 Demographics……...35
3.4.2 Descriptive Statistics ..... 37
3.4.3 Reliability and internal consistency ..... 40
3.4.4 Structure of Business ..... 40
3.5 SUMMARY ..... 41
CHAPTER 4..... 42
CONCLUSION AND RECOMMENDATIONS..... 42
4.1 INTRODUCTION..... 42
4.2 CONCLUSIONS..... 42
4.4 RECOMMENDATIONS..... 43
4.5 SUGGESTION OF FURTHER RESEARCH ..... 43
4.6 SUMMARY..... 43
REFERENCES ..... 44
APPENDIX A: QUESTIONNAIRE ..... 50
APPENDIX B: LANGUAGE LETTER..... 54

# LIST OF FIGURES

Figure 1: The location of mineral deposits in South Africa …….. 8
Figure 2: Relationship in the decision-making- unit…… 24
Figure 3: Model of organisational buying behaviour…….. 26
Figure 4: Post purchase evaluation…….. 32
Figure 4: Position of the respondents…… 36
Figure 5: Years of experience……. 37

# LIST OF TABLES

Table 1: Buying grid framework…… 21
Table 2: Factors that influence organisational buying behaviour…….. 21
Table 3: Biographical information of the respondents …… 35
Table 4: Drivers of explosives purchase…… 37
Table 5: Factors influencing the choice of explosives supplier……. 38
Table 6: Reasons for switching from one explosives supplier to another…… 39
Table 7: Cronbach's Alpha……..... 40
Table 8: Structure of Business……. 40

# CHAPTER 1

# NATURE AND SCOPE OF THE STUDY

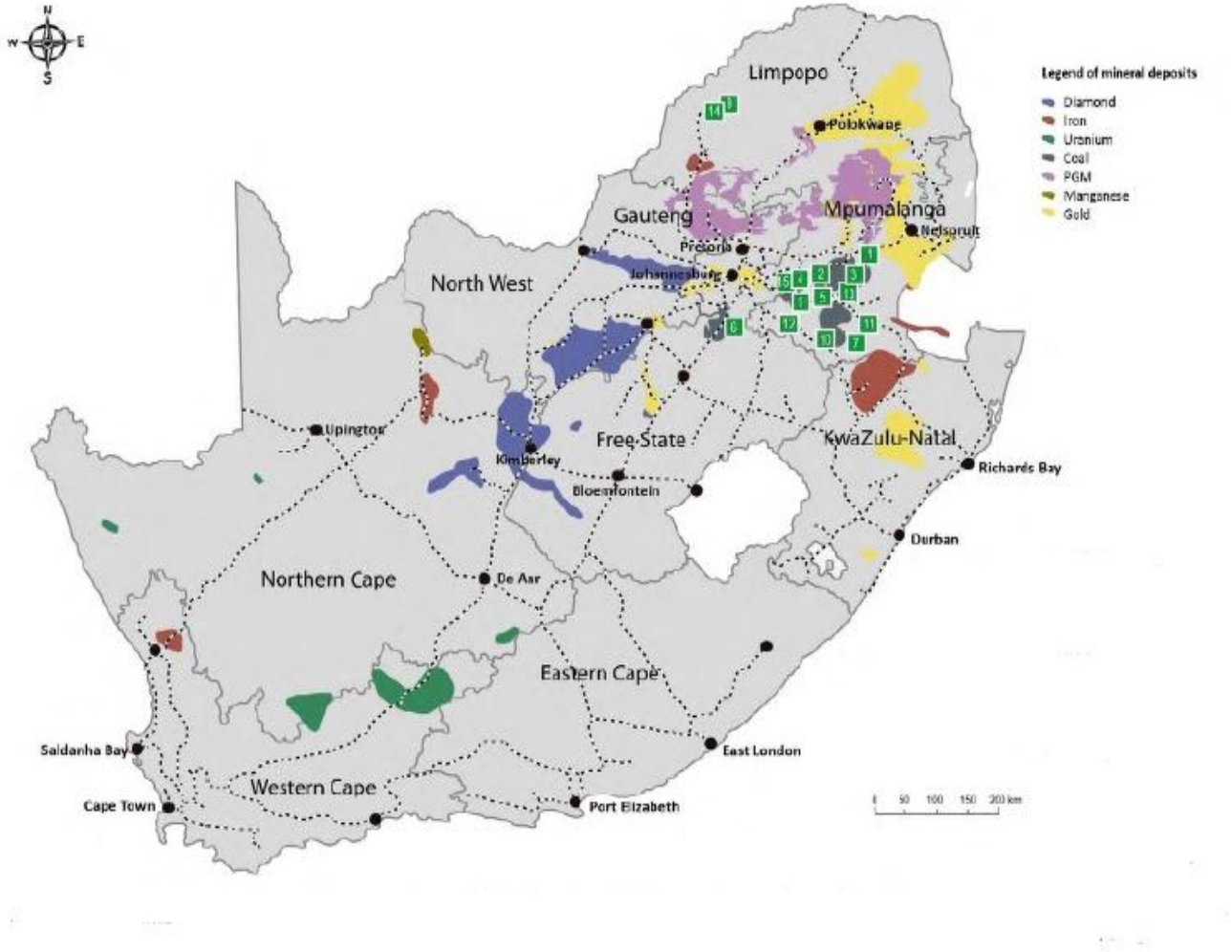
## 1.1 INTRODUCTION

### 1.1.1 The South African mining industry

The South African Mining industry comprises diverse mining activities and minerals such as platinum, diamond, iron, uranium, coal, manganese, gold, silver, copper and others. The South African mining industry is rich in resources and accounts for 88 percent of the global platinum group metal reserves, 70 percent of manganese, 72 percent of chrome, 32 percent of vanadium and 13 percent of gold (Minnit, 2014:64). Mining is also an important provider of employment and employed half a million people, representing three percent of the country's economically active population, in 2010 (Roos, 2014:13). The Chamber of Mines (2015a:6) states that in 2015 the mining industry employed 457 698 employees which represent three percent of the country's economically active population. Furthermore, 40,000 jobs were lost in 2015 due to unprofitable commodity prices.

There are mainly two types of mining in South Africa, namely underground and open cast or open pit mining. The choice between the two mining types depends on the characteristics, size and how deep the orebody is located on the surface. South African mines are generally underground when it comes to metals and open cast where coal is mined. The location of the mineral deposits in South Africa is shown in Figure 1 below.

**Figure 1: The location of the mineral deposits in South Africa**




**Source: Chamber of mines South Africa (2015b:6)**

The figure shows that the mineral deposits are mainly located in the northern and central parts of the country with very limited resources in the Eastern Cape, Western Cape and Northern Cape. The Free State, North West and Gauteng are rich in metal-group minerals such as gold, silver, vanadium and platinum, for example, while in Mpumalanga and KwaZulu-Natal more coal is mined.

### 1.1.2 Explosive industry in South African mining

Mines use explosives to extract minerals from the ground. Both open cast and underground do so. The explosives industry has originated because of the gold rush that took place in South Africa during 1886-1896 (Saayman, 2014:4). By definition, explosives

are "*materials that cause a sudden, almost instantaneous release of gas, heat and pressure, accompanied by a loud noise when subjected to a certain amount of shock pressure and temperature*" (Business dictionary, 2017).

There are four major explosives suppliers in South Africa. They are African Explosives Limited, BME Omnia, Maxam Dantex, and Sasol Base Chemicals (previously called Sasol Nitro). There are also some smaller producers of explosives components and products, serving niche markets such as civil blasters and construction (Verster, 2014:21).

## 1.2 PROBLEM STATEMENT

Explosives play an important role in the mining industry, and the mines are heavy consumers of explosives in South Africa. The nature of the orebody and mining environment necessitates the use of explosives as the rock breaking mechanism, thus making explosives an integral part of the mining cycle. Moreover, without explosives, production cannot take place (Gaula 2015:297). Also, Mining companies rely on explosives companies to supply them with explosives to blast the rock. They also need explosives that are reliable, safe and can provide the expected results. Furthermore, a constant supply of explosives is important to perform daily blasting duties in the industry.

The mining industry defines blasting customer satisfaction somewhat different than other industries. Here the product performance is not only technical but also crucial in optimising production. The performance of the explosives includes fragmentation, advances per blast, least damage to the environment, safety, service and cost. Also, service excellence is important, and mining companies expect their suppliers to be available when there is a need for them. Lu, Lu and Wang (2012:224) indicated that customers often decide to leave a supplier because of inadequate response rather than for the original reason of the dissatisfaction itself. The mining industry is no exception here, and the increased competition of suppliers to mining companies enables them to change suppliers in a short space of time, moving from one supplier to the other. This is possible because explosive products are standardised and can be replaced by a competitive product without adapting procedures (Neri, 2014:2).

Switching from one explosive to the other is simple and easy because most of the products have the same methods of application. However, changing from some products

can have a negative impact on the expected results and resistance to change from the underground employees. Retention is a major challenge as customers can easily switch from one service provider to another at low cost (Khalifa & Liu, 2003 cited by Mostaghel, 2006:19). The different reactions customers may have to service failure include loyalty, voice (complaining to the service provider or another party) and exit (Colgate & Norris, 2000:42).

Customer retention, loyalty and satisfaction are important elements in any company's strategy, especially in the highly competitive South African Explosives Industry. Understanding the various factors that could influence these constructs is therefore critical to organisational success (Neri, 2014:2). It is of importance to recognise factors which influence customer retention, satisfaction and loyalty to strategise and put necessary processes and procedures to satisfy the customer in place and increase the level of loyalty. However, this poses the problem of the study. There are limited studies on mining buying behaviour when it comes to explosives as a product. This study then aims to investigate explosives mining buying behaviour and to identify the drivers thereof. More specifically, is to determine why they change from one supplier to the next one.

## 1.3 RESEARCH QUESTION

The following is the Primary research question of this study:

- What are the factors that cause mines to change explosives companies frequently?

## 1.4 RESEARCH OBJECTIVES

The primary objective of this study is to determine the mining buying behaviour drivers of the explosives products in South Africa.

The secondary objectives are to:

- Perform a literature study to serve as basis for the behavioural analysis;
- Develop a measuring instrument to gather data on explosive buying behaviour;
- Identify why mines leave the explosives suppliers;
- Determine and identify the latent drivers of buying behaviour, and to
- Conclude and offer recommendations to marketers of explosive products in mining.

## 1.5 RESEARCH DESIGN

### 1.5.1 Research approach

The quantitative research approach was followed in this study, and it was descriptive in nature.

Quantitative research is described as a distinctive research approach that entails the collection of numerical data, regard the relationship between theory as deductive, prefers a natural science approach (and positivism in particular), and adopts an objectivist conception of social reality (Bryman et al., 2014:31).

### 1.5.2 Research Methodology

The research methodology consists of a literature study and an empirical study.

#### 1.5.2.1 Literature study

A literature study is a critical analysis of a segment of the published body of knowledge through summary, classification, and comparison of prior research studies, reviews of literature and theoretical articles. Following the guidelines by O'Leary (2014:88), the past research relies on articles published in well-established research journals. The library of the North-West University served as a primary source to locate information. Here international databases such as EBSCOhost, economic, emerald, and others in addition to the wide range of electronic journals accessible were used with the aid of specialist personnel.

#### 1.5.2.2 Empirical study

The empirical study collected primary data from the mining industry. The population in this study consists of mine managers, explosives managers and mine overseers.

In this population, mine manager means the person appointed to be responsible for the control, management and direction of a mine or a works and includes the term "general manager"; (Mine Health and Safety Act no. 29) (SA, 1996:10). A mine manager is responsible for the management of the mine including planning, budgeting, staffing, cost

containment, and profitability (Ausimm, 2016). A mine manager has mine overseers who report to him on a day to day production of their sections. Mine overseers are responsible for day to day use of explosives; they also control ordering and use of explosives. The role of the mine overseer is to manage daily mining underground operations by the management of mining activities, logistic activities and resources through planning, scheduling and communications. Mine overseers have production supervisors who report to them. Moreover, they also report discrepancies on the performance of the explosives.

Additionally, there is an explosives manager who provides service to the mine. According to the Department of Labour (2004:10), “explosives manager” means a person or persons appointed by the CEO (regarding Regulation 12.1) of a company with the competency to manage the safety and technical aspects of explosives in the danger area. Explosives managers coordinate the explosives business daily between the supplier and the mine. They also ensure that the explosives are performing to what is expected and are applying safely. An explosives manager has explosives co-ordinators who work under him who deal with day to day explosives work at the shafts.

Mine managers, explosives managers and mine overseers are the main users of explosives, and that makes them key decision makers on the purchasing of explosives. They collect all the data on the performance, cost and safety. They are also the ones who the supplier communicates with most of the time.

#### 1.5.2.3 Sample

A purposive sample was used. According to Lund’s research (2012), purposive sampling represents a group of different non-probability sampling techniques. Homogeneous sampling was used because the selected samples (consisting of three managerial groups) who are the decision makers in the selection of the explosives supplier. Homogeneous sampling is a purposive sampling technique that aims to achieve a sample whose respondents share the same characteristics or traits (Lund research, 2012).

The sample consists of key decision makers on the selection and purchasing of explosives. Mine managers, explosives managers and mine overseers monitor day to day use of explosives and they're liaising with explosives suppliers. Four people per mine are

selected and sampled; this results in a sample size of 36; 6 explosives managers, 15 mine managers and 15 mine overseers.

#### 1.5.2.4 Measuring instrument

The questionnaire was designed with the population in mind. The questionnaire utilises a five-point Likert scale (1=strongly disagree to 5=strongly agree) on which the respondents indicated their degree of agreement or disagreement with the statements measuring the variables.

According to Welman et al. (2012:142) validity is the extent to which the research findings accurately represent what is happening in the situation. Reliability is concerned with the findings of the research and relates to the credibility of the findings (Welman et al., 2012:145).

Reliability of data and validity of the questionnaires were done to ensure that accurate data were analysed. The questionnaire was subjected to experts for content and face validity to check if they measure what they are supposed to measure (Cilliers et al., 2014:256).

#### 1.5.2.5 Research procedure

There are two sources of data to be used for research which are primary data and secondary data. Primary data is data collected by researchers themselves during their own research using research tools such as experiments, survey questionnaires, interviews and observation (Welman et al., 2012:135). According to Marx and Erasmus (2006:61), secondary data is data from previous studies or data that is readily available for researchers to use. Secondary data can be in the form of articles, internet, books and all other forms of data that is ready for researchers to use.

This study used both primary and secondary data. Primary data were collected from respondents using the structured quantitative questionnaire. On the other hand, the secondary data from articles, books and the internet were used to do the literature study.

#### 1.5.2.6 Statistical analysis

Welman et al. (2012:227) state that once data have been collected, sense has to be made of it. To do so, this study organised and coded the questions to enable easy capture and statistical analysis. The data were captured and analysed by professionals at the North-West University's statistical consultation services. The Statistical Package for the Social Sciences (IBM SPSS, 2017) was used for data analysis.

#### 1.5.2.7 Ethical considerations

The study was registered with the North-West University's ethical committee and classified as a low-risk study. Hence no ethical clearance number was issued. Also, permission to conduct the study was obtained from the management and board of the participating companies. Informed consent was also distributed to each participant before completion of the questionnaire.

## 1.6 CHAPTER DIVISIONS

The chapters in this mini-dissertation are presented as follows:

*Chapter 1: Nature and scope of the study.*
Chapter 1 gives an overview on the South African mining industry and explosives industry. It also introduces the research problem, the objectives of the study and shows the research design. The chapter also introduces the layout of the study.

*Chapter 2: Literature study*
Consists of a literature review on organisational buying behaviour, factors that motivate organisational purchase and factors that influence organisational buying behaviour.

*Chapter 3: Research methodology and results*
The detailed research design and data collection methodology are shown in this chapter. The chapter presents the analysis of the data and shows the results obtained from the study. The chapter also discusses the results.

*Chapter 4: Findings and recommendations*

This is the final chapter. It concludes the results and offers some recommendations based on the conclusions. The chapter also identifies areas of future research, and finally a summary of the study.

## 1.7 SUMMARY

This chapter explains that explosives play an important role in extracting minerals from the ground and that mines purchase explosives regularly to perform blasting activities with explosives they purchase from any of the several suppliers who serve the South African mining industry. The chapter is an introductory chapter. The next chapter deals with the literature study and it shows how the buying behaviour of mining customers fit into the buying behaviour theory.

# CHAPTER 2:

# LITERATURE STUDY

## 2.1 INTRODUCTION

In this chapter, the literature study on buying behaviour is presented. More specifically, organisational or industrial buying behaviour (also referred to as business-to-business buying behaviour). The chapter entails the definitions of consumer behaviour, organisational buying behaviour, and a model of organisational buying behaviour. Here factors affecting organisational buying behaviour, the buying behaviour centre, the eight steps of the decision-making process and post buying behaviour are explained to place the literature study in context with mining buying behaviour of commercial explosives.

## 2.2 CONSUMER BEHAVIOUR

Although a customer is usually a person, a company or another entity which buys goods and services produced by another person, a company or another entity could also be described as one. Here Durmaz (2014:194) defined the consumer as a central figure in any purchase of goods and services from the market as an end-user thereof. In this study, the main focus is on the mining sector where the mines act as the consumers of the final product (explosives they purchase from explosives manufacturers). For this reason, mines are the consumers of explosives hence customers of the explosives manufacturers.

According Shin, Yu and Tseng (2015:391), consumer behaviour is directly related to the consumption of products and services which are triggered by the decision-making process before and after. Gopal and Jindoliya (2016:3385) defined buyer behaviour as how individuals, groups and organisations select, purchase, use and dispose of products, services, ideas or experience satisfactory needs and wants. Buyer behaviour is the concept which answers to what, how, when and where an individual or an organisation makes a purchase (Khaniwale, 2015:280).

Buyer behaviour is the culmination of a buyer’s attitude, preferences, intentions and decisions regarding the buyer’s behaviour in the marketplace when purchasing a product or service (Velumani, 2014:52).

Buyer behaviour studies the behaviour of the individual or the organisation, the process of purchasing, decision making, purchasing of the product and the perception of the purchaser after use. Normally the study is done to increase customer satisfaction and brand loyalty whilst striving for continuous improvement.

“Consumer purchasing decision process intervenes between the market strategy and the outcomes. Understanding behaviour of consumers is a key to the success of business organisation (Kumar, John & Senith, 2014:1).

Understanding behaviour of consumers is a key to the success of the business organisation (Kumar et al., 2014).Successful businesses they know what their consumer needs. This helps the business to meet customer expectations.

**2.3 ORGANISATIONAL BUYING BEHAVIOUR**

Organisation buying is the decision-making process by which formal organisations establish the need for purchased products and services and identify, evaluate and choose among alternative brands and suppliers (Turka & Susan, 2015:391). Mines are described as organisations.

Turka and Susan (2015:391) state that individuals or groups of individuals in organisations make buying decisions for their organisations and purchase products and services professionally. Organisational buying behaviour differs from consumer buying behaviour mainly because organisational buying involves many people in the decision-making process with complex interactions among people and individual and organisational goals (Bissasser, 2002:18). Purchases done by the organisation are derived from specific problems or needs.

According to Parkinson and Baker (1986:8), buying in the manufacturing industry includes purchases which are made for one of four basic reasons, namely:

- Items can be bought for inclusion in the end product;
- Purchases of capital equipment used to manufacture of the end product;
- Purchases of equipment which is used indirectly in the manufacture or supply of product but it is not part of the production process; and

- The purchase of services of one kind of another ranging from management consultancy to catering services.

Mines use explosives to blast solid ground to get to the minerals and to sell it to other organisations or businesses. Therefore the study is dealing with the concept of organisational buying behaviour.

Studying organisational buying behaviour helps the marketers to position the product through product use hence it is important for a marketer to understand buying behaviour. Positioning is the act of designing the company's offering and image to occupy a distinctive place in the target consumer mind (Chowdhury, 2013:57).Positioning refers to the place that the product occupies in consumer minds on important characteristics compared to rival product. The characteristic might be quality, safety and value for money depending on how the customers perceive the product.

### 2.3.1 Nature of organisational buying

Organisational buying behaviour differs with individual buying behaviour in nature. Turka and Susan (2011:391-392) hold the position that the natures of organisational buying are the following:

- It involves many persons in decision making which may be from a range of departments or different management levels;
- It is a synthetic and a pre-planned process;
- Stretched decisions are taken;
- Purchase for large volume is made;
- It is a complex process; and
- Organisational buyers are trained professionals in purchasing.

Organisational buying involves more people and regularly involves the purchase of large volumes; sometimes involving a long-term purchase and relationship between an organisation and the supplier.

### 2.3.2 Objectives of business to business buyers

As explained by Du Plessis and Rousseau (2003:148), the following are typical objectives of business-to-business customers:

- The right materials;
- In the right quantities;
- For delivery at the right time;
- In the right place;
- From the right sources;
- With the right level of service; and
- At the right price.

Du Plessis and Rousseau (2003:148) emphasise that, in many cases, the price is the last consideration, provided that all of the other requirements have been met by the potential supplier. Although the price is an important factor when purchasing a product or service, the buying decision in organisations is not highly dependent on price; the other objectives are considered to be more crucial for organisational buyers when they decide to purchase a product for industrial or organisational use. Here issues such as the requirement for suppliers to deliver right quantity, product quality and to do so at the right time, play a more important role than price to deliver value to their customers.

### 2.3.4 Motivation of business buying

According to Sethna and Blythe (2016:175), a motive is simply a reason for carrying out a particular behaviour. Mines may be motivated by different factors to purchase explosives from a certain supplier. Factors that are considered by a buying centre while selecting suppliers are:

- Reliability of delivery;
- Quality of the product and after sale services;
- Supplier’s reputation in the market;
- Sample provided by the supplier;
- Ability of the supplier to provide the product regularly;
- Flexibility in dealing;
- Credit policies;
- Cost of product;
- Rejection rate/Number of defects; and

- Relationship with the suppliers.

### 2.3.5 Buying Situation

There are three basic organisational buying situations that could present itself. They are the straight rebuy, the modified buy, and the new task purchase (Hutt and Speh, 2013:38). These situations are explained in more detail below:

- The **straight rebuy** requires no review of product or supplier, materials are recorded automatically when the need arises. Straight rebuy is often done when purchasing small products or services.

- The **modified rebuy** occurs when buyers' are dissatisfied with the current products or supplier performance and investigate alternative sources. The dissatisfaction may be poor performance, poor service and the cost of the product. Customers who are dissatisfied or not happy change or switch suppliers.

- The **new task purchase** involves evaluating product specifications and reviewing possible vendors in a purchase situation new to the organisation. For this buying situation, the buying centre is more focused on the suitable solution rather than price, and due to the lack of previous experience, the purchases involve more risks (Sandstrom & Von Walter, 2013:10).

The logical flow of buying behaviour is explained by the buying grid below.

#### 2.3.5.1 Buying grid

The buying grid was developed by Robinson, Farris and Wind as an example of a logical-flow model that relates to business-to-business purchasing (Du Plessis and Rousseau, 2003:149-150).

As depicted in the table below new task purchase tick all the blocks on the buying phases meaning that when organisations purchase new products that they never used before they follow all the buying phase steps. Furthermore, modified rebuy ticks a few of the boxes and lastly straight rebuy ticks very few boxes.

**Table 1: Buying Grid framework**

| Buy Phases | Buy Classes (buying Situation) | | |
|---|---|---|---|
| | **New task** | **Modified Rebuy** | **Straight rebuy** |
| 1. Problem Recognition | Yes | Maybe | No |
| 2. Characteristics and quantity of needed item | Yes | Maybe | No |
| 3. Description or specification of needed item | Yes | Maybe | No |
| 4. Search for and qualifications of potential suppliers | Yes | Yes | No |
| 5. Obtaining and analysing supplier proposal | Yes | Yes | Maybe |
| 6. Evaluation of proposals and selection of suppliers | Yes | Yes | No |
| 7. Selection of order routine | Yes | Yes | Maybe |
| 8. Performance and feedback evaluation | Yes | Yes | Yes |

**Source**: Du Plessis and Rousseau (2003:149-150)

The buying grid model portrays the steps businesses go through in making purchase decisions. The buying grid model reflects that when an organisation is executing a new purchase, it progresses through all phases of the buying process then when they are doing modified rebuy they go through several phases of the buying process and lastly when doing straight rebuy they go through a few phases of the buying process.

### 2.3.6 Factors that influence organisational buying behaviour

According Stenberg and Gyoakeres (2005:4) factors that affect organisational buying behaviour are divided into different categories namely environmental factors, inter-organisational factors, organisational factors, interpersonal factors, individual factors and buying situation. These factors are shown in Figure 2.

**Table 2: Factors that influence organisational buying behaviour**

| **Business environment** | **Organisational** | **Interpersonal** | **Individual** |
|---|---|---|---|
| Level of demand | Objectives | Authority | Age |
| Economic outlook | Policies | Status | Income |
| Cost of money | Procedures | Empathy | Education |
| Rate of technological Changes | Organisational Structures | Persuasiveness | Job Position |

| | | | |
|---|---|---|---|
| Change in political and regulatory development | Systems | | Personality |
| Competitive Developments | | | Risk Attitudes |

Source: Phadtare (2014)

From the table, it is clear that four groups of factors exist in industrial buying behaviour. They are environmental factors, organisational factors, interpersonal factors and then the individual factor. Each factor is clarified next.

**Environmental factors**

Environmental factors that influence the organisational buyer behaviour are level of demand, economic outlook, and cost of money, the rate of technology changes, political and regulatory development and competitive developments. Environmental factors are habitually outside a purchaser's control.

Organisational buyers are influenced by forces in the external environment; they are affected by changes in the economy, new legislation or technological development (Du Plessis et al., 2007:295). Blythe (2014:125) emphasised that law often lay down specific technical standards which affect buyers' decision. At the moment some of the mines are shut down due to weaker commodity prices and some of the mines are forced to reduce costs or scale down. Many of the Top 40 companies credit their cost-cutting programs for helping to improve returns (PWC, 2015:12). This can include moving from one supplier to the other, retrenchments, and others. Furthermore, organisations have to consider a triple bottom line. Kannan (2017:4) defines a triple bottom line as "*the creation of goods and services using processes and systems that are non-polluting, conserving energy and natural resources, economically viable, safe and healthful for employees, communities and consumers, socially and creatively rewarding for all working people*".

**Organisational factors**

Organisational factors that influence the organisational buyer behaviour are objectives, policies, procedures, organisational structures and systems. Organisational factors drive from the corporate culture as well as from the strategic decision made by senior management (Blythe, 2014:125).

**Interpersonal factors**

Interpersonal factors that influence the organisational buyer behaviour are an authority, status, empathy and persuasiveness. Interpersonal factors involve the interaction of several people of different status, authority; empathy and persuasiveness that comprise the buying centre (Holvitie, 2006:13).

**Individual factors**

Individual factors that influence organisational buyer behaviour are age, income, job position, personality and risk attitude. Individual forces are the motivations and experiences of the personnel involved in the buying process (Copper, 2014:379). Individual factors are formed from differing evaluative criteria, information processing, and risk reduction strategies (Holvitie, 2006:14).

### 2.3.7 Buyers decision centre

The term decision centre implies all members who are involved in the decision-making of the procurement of goods and services for the organisation and are part of the organisational buying process (Belulaj & Celion, 2011:14). This notion is supported by Bissasser (2002:23) who state that stemming from the decision unit, a buying centre exists that comprise several different members of the organisation who play some role in the purchase decision process. Most organisations have a decision centre; they differ in size and functions according to organisational needs. Here Hawkins and Mothersbaugh (2010:670) point out that members of the decision-making unit play various roles where they act as information gatherers, key influencers, gatekeepers, decision-makers, purchasers, or even end-users of the goods purchased.

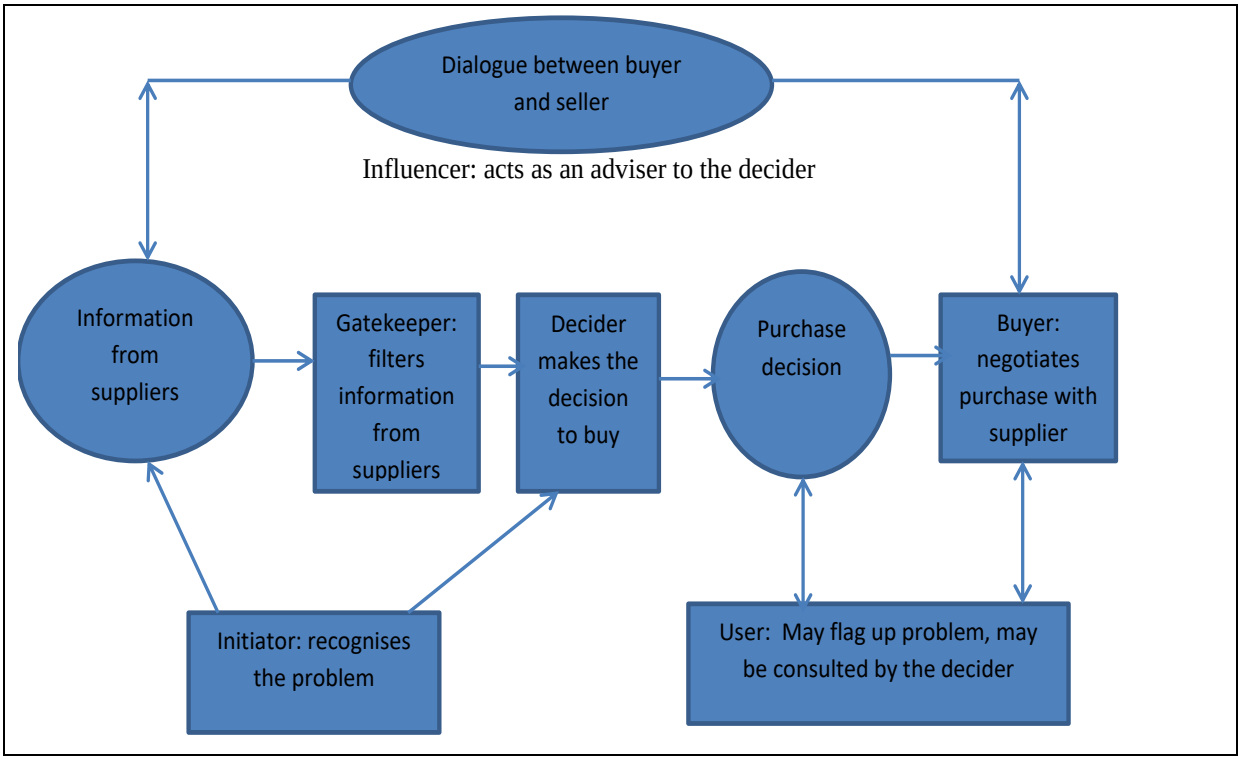
Parumasur and Roberts-Lombard (2014:308-309) continue and state that the decision-making unit contains different categories of members; these categories are listed as:

- The **initiators –** are the individuals who first realise that the firm needs a specific product or service.
- The **gatekeepers –** are those individuals who control the flow of knowledge, either by filtering it.
- The **buyers–** are the ones making the actual purchase based on information gathering.
- The **deciders –** are the people who make the final decision.

- The **users –** are the people who will be using the product which are supplied.
- The **influencers –** are trusted advisers, but from the supplying company viewpoint, they are extremely difficult to identify.

Each of these categorised also acts in a relationship with other categories. Figure 4 delineates these relations in the decision-making unit.

**Figure 2: Relationship in the decision-making Unit**




**Source**: Sethna and Blythe (2016:141)

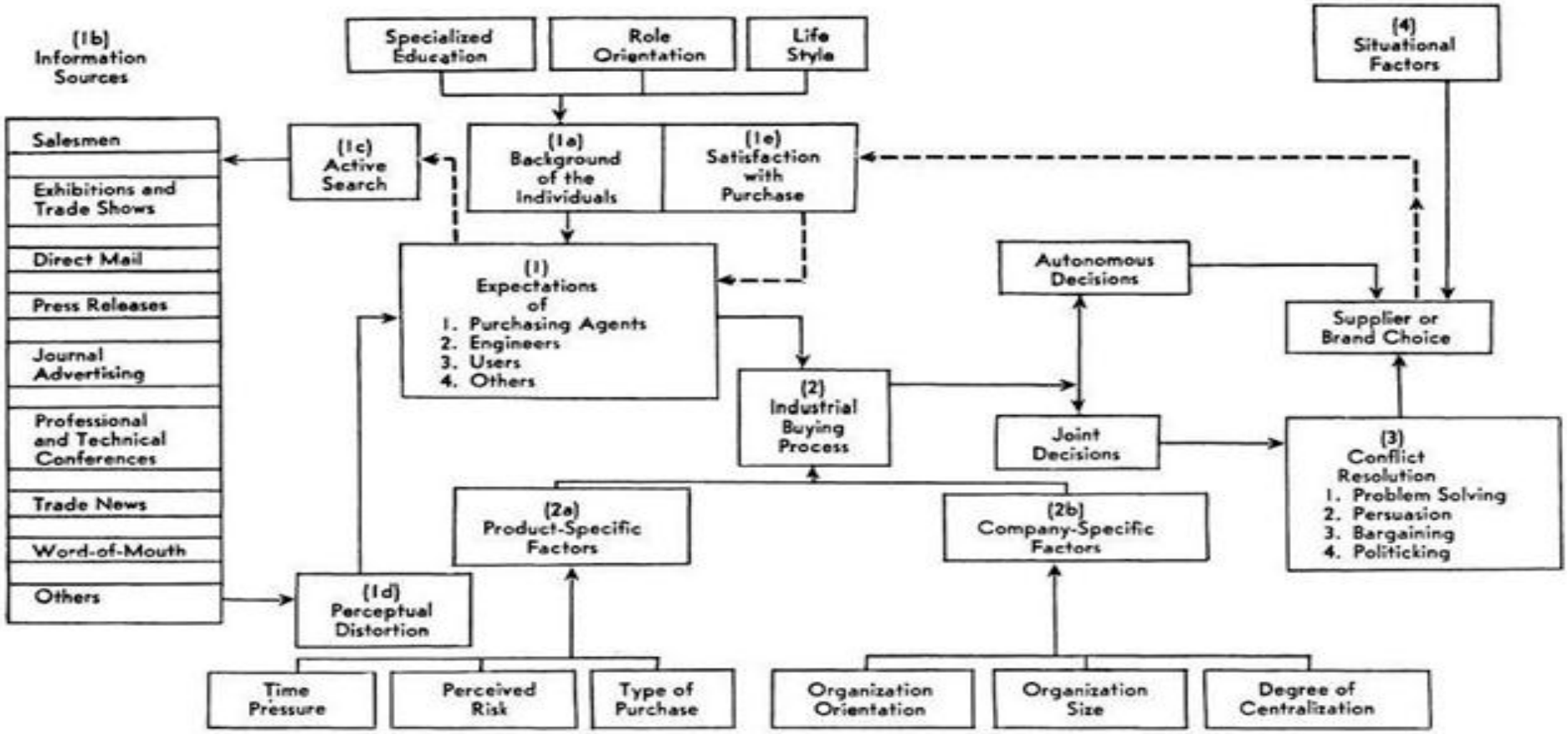
From the figure, it is evident that there is a relationship between the members of the decision-making unit. The initiator recognises the problem and searches for a supplier and the product that they need. They then send the information to the gatekeeper who filter the information and send it to the decider who makes the purchase decision in consultation with the influencer. Finally, the decider sends it to the buyer who negotiates the purchase with the supplier.

### 2.3.8 Model of organisational buying behaviour

#### *2.3.8.1 The Buying process*

“Customer purchasing decision process intervenes between market strategy and the outcomes. The firm can succeed if consumer sees a need that its product can solve and become aware of its capabilities, as a result, decide it is the best available solution then proceed to buy it and become satisfied with the results of the purchase” (Hawkins, Best & Coney, 2001:22). An organisation goes through several stages before purchasing a product or service. According to Dwyer and Tanner (2002: 73), the steps in the organisational buying model consists of eight phases leading from recognition of the need, through the purchase process and finally to the post-purchase evaluation of product performance. The model is shown in Figure 3.

**Figure 3: Model of organisational buying behaviour**




Source: Sheth (1973:51)

- **Need recognition**

  This is the first step in the buyer process where a problem or need is identified by someone in the organisation. Problem recognition is determined as the initial stage when a consumer perceives a need and become motivated to solve the problem (The sandy matt, 2012). A company recognises the need of buying explosives influenced by various factors namely internal and external factors. The lag between the customer's actual situation and the ideal situation causes this recognition. Need leads to buying of products and service. The industrial buying decision is triggered by need.

- **Definition of the characteristics of the item needed**

  In this stage members of the buying centre ask themselves the following questions, what does the company need? Which service attributes and qualities are needed? Purchasing manager, engineers, users and marketers define the needs and could use reliability, durability, prices as the characteristics (Chand, 2016). The buying centre determines the quantities that are required. Chand (2016) further stated questions that could be posed are (i) What performance specification needs to be met? (ii) What types of goods and services should be considered? (iii) What are the application requirements? And (iv) What quantities would be needed?

- **Development of the specifications**

  During this stage engineers, users and other members of the buying centre develop technical specifications according to their needs and other factors to be considered. The detailed technical specification of the products/services is presented based on the need and the nature of problem recognised. Specifications are used when searching for suppliers. This is an important stage which prepares the organisation for supplier search stage. Detailed specifications are incorporated into the tender documents and sent to prospective suppliers.

- **Search for supplier**

  An organisation searches for suppliers who can offer them what they want. Searching for suppliers may be done through tender processes and contacting suppliers who are on the organisation's database. When dealing with more complex

and costly products/services the buying organisation spends more time finding their supplier.

After the customer recognised a need, he seeks information about the problem. He will search more or less information depending on the complexity of the choices to be made but also his level of involvement. Then the customer will seek to make his opinion to guide his choice and his decision-making process with:

Internal Information is the information that a consumer already has through experience. Internal information is sufficient for a customer to purchase the products that he already knows. For example, students who are loyal to the institution are the students who have done their undergraduate studies with the institution.

Information sometimes obtained from other companies, friends, family, advertisements on TV, radio and newspapers, websites, blogs, magazines or talking of a personal experience and testing the product. The consumer utilises social media channels, online shopping sites and other media channels to learn and explore the products (Jadoon, 2016). It easy for mine managers to exchange information about services they receive from the suppliers during mining conferences and Association of Mine Managers and it may serve as another source of information.

There is a growing trend for an online search to begin on one device and be completed on another, with smartphones being the dominant starting place. One report states that 65% of people stated their online information search on a smartphone, 60% of those people continued their search on personal computers, while 4% continued on the tablet devices (The sandy matt, 2012).

Perception plays an important role in the buying decision of the consumer. Perception is defined as the process by which an individual receives, selects, organises, and interprets information to create a meaningful picture of the world (The sand matt, 2012). Quality perception is subjective; judgement of customers rather than objective reality (Schiffman, Kanuk & Kumar, 2010 as cited by Shrestha, 2013:53) meaning that quality perception is one organisation's opinion. Based on the information the organisation has received, they build a perception of a product or service. The perception is either good or bad. If the information is received from

other organisations of similar business the decision of buying will be more objective than one of internal search which is subjective.

- **Acquisition and analysis of proposals:**

  Suppliers who are meeting the requirements are chosen, and their different bids are analysed. If the buying organisations are buying more complex and expensive product/services, the suppliers need to make formal presentations of alternative solutions responding to the organisation's need.

  After collecting the information, the consumer can evaluate the different alternatives that are offered to them. The consumer uses the search attribute that he chose to evaluate the product by. The key attributes will be defined in stage 2 of the industrial decision-making process.

  This stage is similar to the previous stage and occurs almost always in parallel. However, if the buyer has very little information from the beginning, then these stages are more separable.

- **Evaluation of suppliers:**

  The members of the buying decision centre evaluate the supplier by the product/service attribute offered (which attributes matters most), brand belief (opinion about the brand).

  Consumers weigh their options to select the best product or services according to their criteria (Babin & Harris, 2009:236). Once the benefit-to-cost evaluation is deemed positive, they may be motivated to be engaged in the buying process.

  Then the company will arrive at an attitude towards different suppliers through evaluation. According to Kotler, Keller and Burton, 2009 cited by the Sand matt team (2012), attitudes are deep-seated value judgement that leads us to behave consistently towards similar object or ideas; they are very enduring. This is supported by Rousseau and Pitt (2003:260) who stated that attitudes are consumers' holistic evaluation of things concerning their qualities, attributes, perceptions and facts, resulting in a specific behaviour towards certain products and services.

Research in South Africa on the selection criteria used by members of buying centres of large organisations, when selecting a service supplier, indicated the following five critical factors (Du Plessis et al., 2007:149):

- Predicted operating capability of the service supplier;
- Perceived relative potential when compared to other service providers;
- Perceived risk of dealing with the supplier;
- Factors external to the service provider (for example, affirmative action pressure); and
- Level of transaction cost.

Other factors include the availability of products and the reliability with which vendors can supply them. Reliability of supply is extremely important because delays in the supply chain can shut down a company's production of goods and services and cost the firm its customers and reputation.

- **Selection of an order routine:**

This phase starts by sending an order to the supplier. However, the buying process is not finished until the product/service has been delivered and the buying organisation has accepted it.

After going through all the above stages, the consumer finally purchases the product or service. Chaiprademsak (2007:10) states that a purchase involves many decisions which include product type, brand, model, dealer selection, and methods of payment. Roos (2011:22-23), simplifies these processes by stating that usually, the influences to decision-makers consist of:

- Listing relevant choices;
- Identifying potential consequences of each choice;
- Assessing the likelihood of consequences actually occurring;
- Determining the importance of these consequences; and
- Combining all this information to decide which choices are the most appealing.

Also, rather than purchasing, the buyer could also decide to modify, postpone, or not to purchase based on any number of reasons. This could be due to price, quality risk

or any issue that inhibits the final choice to purchase. The buying unit of the organisation assesses all alternatives based on the information presented and considers the advantages or disadvantages of a particular buying decision. Only then will the organisation's buying unit move towards the final stage of buying; that is to prepare the order to purchase to send to the supplier, do the needed controls and evaluate the decision to purchase finally before the order is issued to activate the purchase.

- **Evaluation of product performance**

  Organisation evaluates the performance of the product at this stage. The organisation evaluates if the product has solved the problem or not. If the product solved the problem of the organisation and the organisation is satisfied they keep the supplier. However, if it did not solve the problem, the organisation rejects the supplier and searches for a new supplier.

  Most of the companies evaluate product performance by doing trial/test runs. They do trials to make sure that the product or service will give them satisfactory results and there is consistency in the performance. According to Jadoon (2016) trying out the actual product gives the customer the idea of the product and its benefits. Many mines will operate different brands of equipment side-by-side to determine the life-cycle cost thereof before repurchasing equipment in large numbers for operations (Hawkins & Mothersbaugh; 2013:668). Similarly, mines, for example, order explosive products from different suppliers and subject these products to blasting efficiency tests and trials before committing on a final provider.

  If the product does not perform well during this stage, they search for another supplier.

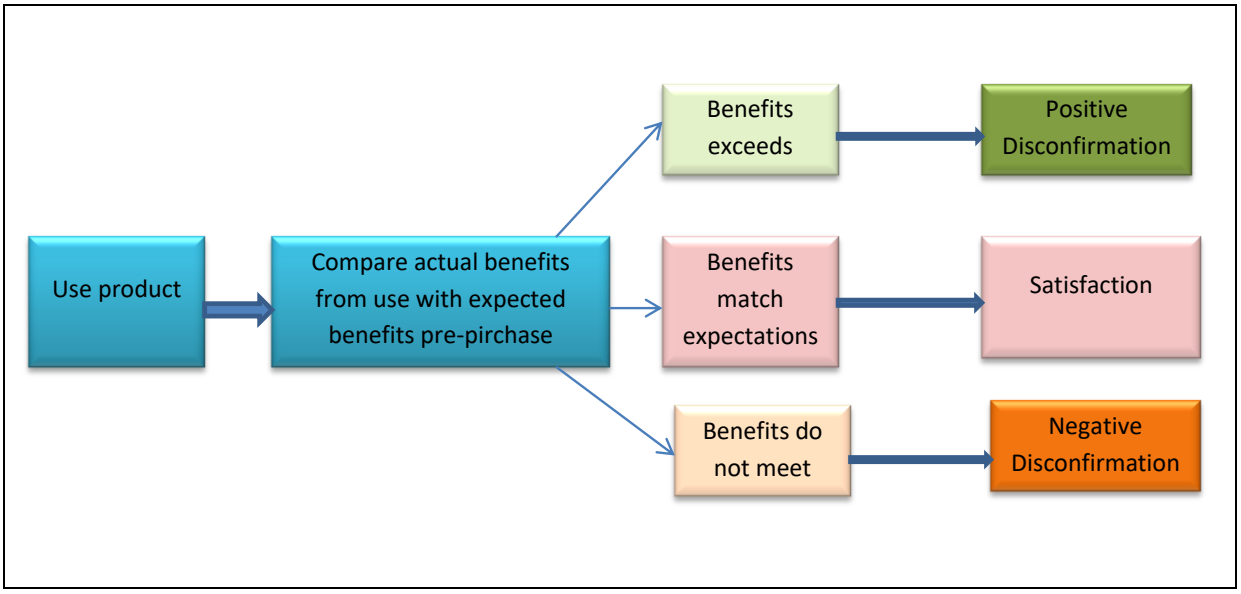
  A major component of post-purchase evaluation is the service the seller provides during and after the sale (Hawkins & Mothersbaugh; 2013:668). Organisations values products support through service during and after the sale. Services stimulate the relationship between buyer and seller and it a sign of the seller valuing their clients.

### 2.3.9 Post purchase behaviour

After purchasing the product, the buyer will experience some level of either satisfaction or dissatisfaction (Strydom et al., 2000:79). The performance of the product is evaluated after

the product or service have been purchased and used. The consumer assesses the sufficiency and compares it with his original expectations of product performance. If the performance matched the customer expectations, the customer is satisfied; additionally if the performance exceeds expectation, the customer is highly delighted (Velumani, 2014:52). A positive gap between performance and expectations leads to satisfaction; the inverse leads to dissatisfaction. This evaluation process assists the consumer to assess if the right decision has been made in purchasing the specific product according to Lamb et al. (2004:77). Here Hoyer and MacInnis (2013:275) then explain that disconfirmation occurs when there is a discrepancy, positive or negative, between the customer's prior expectations and the product's actual performance.

**Figure 4: Post-Purchase evaluation**




**Source**: Sethna and Blythe (2016:469)

According to Bhasin (2016), expectations are based on the backgrounds of those participating in the buying process, the information received, perceptions, and satisfaction with past purchases.

If the benefits exceeded customer expectation the result would be positive disconfirmation; if the benefits match the expectations, the customer will be satisfied; and if the benefit does not meet customer expectation there will be negative disconfirmation. Sethna and Blythe (2016:469) state that the greater the positive disconfirmation the greater the satisfaction and if the difference between the two is large enough, then the consumer feels delighted; additionally the lower the disconfirmation the lower the satisfaction. This in turn leads to cognitive dissonance; a psychological state where the customer now doubts the

wisdom of the purchase and fears that hard-earned money was paid for a product, not of the same value. Here Singh (2003:13) states that it appears that cognitive dissonance is likely to occur under the following conditions:

- A minimum threshold of dissonance tolerance is passed. That is, consumers may tolerate a certain level of inconsistency in their lives until this point is reached.
- The action is irrevocable. For instance, when a consumer purchases a new car, there is little likelihood of reversing this decision and getting the money back.
- There are several desirable alternatives. Today's car buyer, for example, has an abundance of choices among similar attractive models. In fact, research indicates that those consumers who experience greater difficulty in making purchase decisions, or who consider a wider range of store and brand options, are more likely to experience greater magnitudes of post-purchase dissonance.
- Available alternatives are quite dissimilar in their qualities (there is little "cognitive overlap"). For instance, although there are many automobile models, each one may have some unique characteristics.
- The buyer is committed to a decision because it has psychological significance. A large and important living-room-furniture purchase is likely to have great psychological significance to the buyer because of its dramatic reflection of the buyers decorating tastes, philosophy and lifestyle. Ego involvement will be quite high.
- There is no pressure applied to the consumer to make the decision. If consumers are subject to outside pressure, they will be pressured to allow their viewpoints or preferences to be challenged. In other words, when pressure is applied, consumers could externalise the source of their dissatisfaction rather than allow any mental unease or discomfort regarding their cognition.

An organisation's expectations are met when a result matches them and consequential the organisation will be satisfied as well as positive customer behaviour will prevail.

## 2.4 SUMMARY

In this chapter, the buying behaviour of organisations has been theoretically underpinned. The model of organisational buying behaviour was discussed and, where applicable, applied by example to the mining and explosives industries. The next chapter presents the empirical study. Here the research methodology, as well as the results, is shown.

# CHAPTER 3:

# RESEARCH METHODOLOGY AND RESULTS

## 3.1 INTRODUCTION

The methodology applied to determine the consumer buying behaviour of explosives in South African mines is identified in this chapter.

The data collected was analysed using IBM SPSS (2017) software, and the following statistical methods were applied:

- Descriptive Statistics; and
- Cronbach alpha.

## 3.2 RESEARCH METHODOLOGY

The data were obtained by using questionnaires (Appendix A). The data collected represents the consumer buying behaviour of explosives. The questionnaire used was designed based on the organisational buying behaviour model.

The sample is made up of the Mine managers, Mine overseers and the explosives managers of the mines. A total of 36 questionnaires were circulated, and a total of 30 questionnaires were completed, meaning the response rate is 81%. The questionnaires were distributed to the mines around South Africa through emails, and some were hand-delivered to the respondents.

## 3.3 STATISTICS

The Statistical Package for the Social Sciences (IBM SPSS, 2017) was used for data analysis.

The following data analyses were done:

- Descriptive statistics
- Cronbach alpha

Reliability of an instrument is referring to the suitability and measure the concept without bias and errors free (Choon Hee, 2014:773).

According to Bisschoff, Kole and Lotriet (2017:462), an alpha coefficient of 0.7 or higher is regarded as acceptable reliability.

### 3.4 RESULTS

#### 3.4.1 Demographics

Demographic characteristics of the respondents were collected using section A (Biographic information) of the questionnaire. 6 Biographic information variables were examined namely age group, gender, race group, highest academic qualification, position and years of experience. The summary of biographical information of the respondents is presented in table 3.

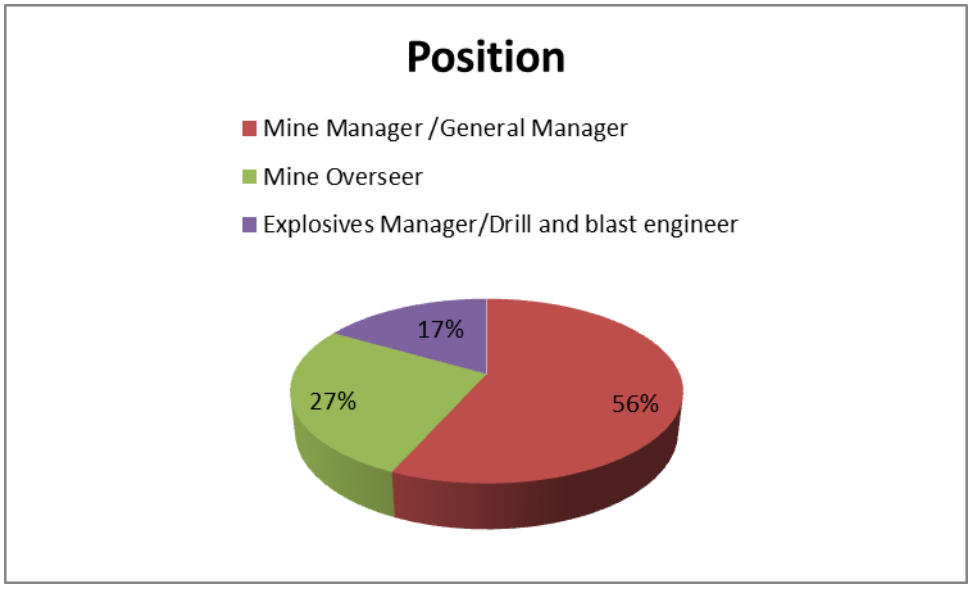
**Table 3: Biographical information of the respondents**

| Variable | Category | Frequency | Percentage |
|---|---|---|---|
| **Age Group** | ≤ 29 | 0 | 0 |
| | 30 – 39 | 16 | 54% |
| | 40 – 49 | 10 | 33% |
| | 50 – 59 | 4 | 13% |
| | 60+ | 0 | 0 |
| **Gender** | | | |
| | Male | 25 | 83% |
| | Female | 5 | 17% |
| **Race Group** | | | |
| | Black | 21 | 70% |
| | White | 9 | 30% |
| | Coloured | 0 | 0 |
| | Indian | 0 | 0 |
| **Highest Academic Qualification** | | | |
| | Lower than matric | 0 | 0 |
| | Matric | 2 | 7% |
| | Certificate | 2 | 7% |
| | Diploma (Technical College or Technikon) | 6 | 20% |
| | University degree | 20 | 67% |
| **Position** | | | |
| | Mine Manager | 17 | 56% |

| | | | |
|---|---|---|---|
| | /General Manager | | |
| | Mine overseer | 8 | 27% |
| | Explosives Manager/Drill and blast engineer | 5 | 17% |
| **Years of mining experience** | | | |
| | 1-5 | 4 | 14% |
| | 5-10 | 6 | 20% |
| | 10-15 | 7 | 23% |
| | 15-20 | 6 | 20% |
| | 20+ | 7 | 23% |

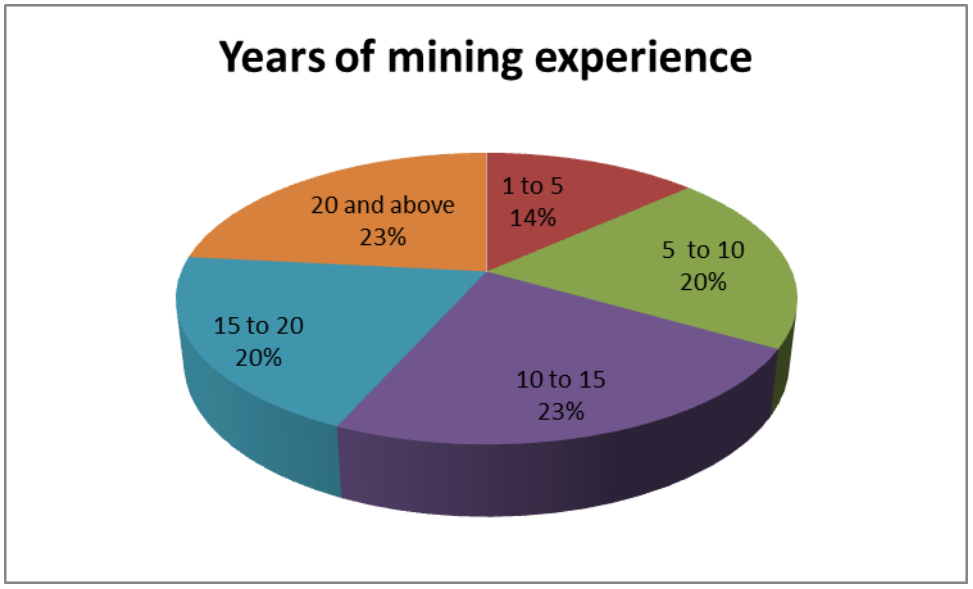
The sample comprised 25 (83%) males and 5 (17%) females.16 respondents fall within an age group of 30-39 years, 10 falls within 40-49 years, and 4 falls within 50 -59 years. 21 (70%) of the sample identified themselves as blacks followed by 9 (30%) who identified themselves as white. Two thirds (20) of the respondents have a university degree, 6 (20%) have diplomas/ Technikon qualifications, 2 (7%) have certificate, and 2 (7%) holds a matric certificate.

**Figure 5: Positions of the respondents**




Most of the respondents were mine managers with a response rate of 56%; then followed by mine overseers with a response rate of 27%; and drill and blast engineers with a response rate of 17%.

**Figure 6: Years of experience**




The graph above shows that 23 % of the respondents have 20 and above years' mining experience, similarly 23% have 10 to 15 years' of mining experience followed by 20% have 15 to 20 years, equally 20% have 5 to 10 years' of mining experience and lastly 14% have 1 to 5 years of experience.

### 3.4.2 Descriptive Statistics

To understand the buying behaviour drivers when purchasing explosives product a 5 point Likert scale was used. The results are presented below.

**Table 4: Drivers of explosives purchase**

| Variable | N | Mean | StdDev | Minimum | Maximum |
|---|---|---|---|---|---|
| Price | 30 | 3,833 | 0,913 | 2,000 | 5,000 |
| Quality | 30 | 4,567 | 0,728 | 3,000 | 5,000 |
| Safety | 30 | 4,800 | 0,551 | 3,000 | 5,000 |
| Results | 30 | 4,567 | 0,679 | 3,000 | 5,000 |
| Payment option | 30 | 3,167 | 1,147 | 1,000 | 5,000 |
| Supplier buyer relationship | 30 | 3,833 | 1,020 | 2,000 | 5,000 |
| Support/Service (after sales support) | 30 | 4,300 | 0,877 | 2,000 | 5,000 |

The table illustrates that the respondents agree that safety, results, quality, Support/Service (after sales support), price and supplier-buyer relationship are the drivers of the mines to purchase explosives products. Safety has a mean value of 4,800 meaning it is the most important factor to consider when purchasing explosives. The variable that scored a low mean value is payment option with a mean value of 3,167.

As indicated by research by Du Plessis and Rousseau (2003:148), the results point out that price is (interestingly) regarded as a less important driver in the buying of explosives than the other criteria.

From the above results it indicated that consumer buying behaviour when purchasing explosives product are safety (mean= 4,800), results (mean 4,567) quality (4,567) and after sales support (4,300).

**Table 5: Factor influencing the choice of explosives Supplier**

| Variable | N | Mean | StdDev | Minimum | Maximum |
|---|---|---|---|---|---|
| Advertisement | 30 | 2,933 | 1,112 | 1,000 | 5,000 |
| Sponsoring event | 30 | 2,733 | 1,081 | 1,000 | 5,000 |
| Reputation | 30 | 4,467 | 0,819 | 2,000 | 5,000 |
| Packaging | 30 | 4,133 | 0,819 | 3,000 | 5,000 |
| Sales person | 30 | 3,467 | 0,900 | 1,000 | 5,000 |
| Previous experience with an explosives Supplier | 30 | 4,167 | 1,117 | 1,000 | 5,000 |
| Third Party (word of mouth) | 30 | 3,333 | 1,124 | 1,000 | 5,000 |
| Law (e.g. Recommendation to change from Capped fuse to Shocktube initiation) | 30 | 4,167 | 0,950 | 2,000 | 5,000 |

The table illustrates that the respondents agree that reputation, packaging, previous experience with an explosives supplier and law are the factors which influence their choice of supplier of explosives. Interestingly reputation has a high mean value of 4.467. The variable that scored a low mean value was sponsoring events with a mean value of 2.733.

From the above results, it indicated that factors which influence respondents' choice of an explosives supplier are reputation (mean= 4.467), packaging (4.133), previous experience with an explosives supplier (mean=4.167) and the law (mean=4.167).

**Table 6: Reasons for switching from one explosive supplier to another**

| Variable | N | Mean | SE Mean | StdDev | Minimum | Maximum |
|---|---|---|---|---|---|---|
| Poor performance | 30 | 4,567 | 0,164 | 0,898 | 2,000 | 5,000 |
| Price | 30 | 3,800 | 0,155 | 0,847 | 2,000 | 5,000 |
| Supplier buyer relationship | 30 | 3,433 | 0,202 | 1,104 | 1,000 | 5,000 |
| Economic Situation | 30 | 3,467 | 0,184 | 1,008 | 2,000 | 5,000 |
| Poor Service | 30 | 4,500 | 0,171 | 0,938 | 1,000 | 5,000 |
| Late delivery | 30 | 4,267 | 0,214 | 1,172 | 1,000 | 5,000 |
| Defects | 30 | 4,400 | 0,170 | 0,932 | 1,000 | 5,000 |
| New product development | 29 | 3,862 | 0,163 | 0,875 | 2,000 | 5,000 |
| Legal (change in law) | 30 | 4,133 | 0,157 | 0,860 | 3,000 | 5,000 |
| Innovation | 30 | 4,400 | 0,132 | 0,724 | 3,000 | 5,000 |

The table reveals that poor performance, poor service, late delivery, defects, legal and innovation are the reasons why mines switch from one explosives supplier to another explosives supplier. With the mean value of 4.567, it is evident that poor performance is a number one factor why mines switch from explosives supplier. The variable that scored a low mean value is supplier-buyer relationship with a mean value of 3,433.

From the above results, it indicated that consumer buying behaviour when purchasing explosives product are poor performance (4,567), poor service (mean=4,500), late delivery (mean=4,267), defects (mean=4.400), legal (mean=4.133) and innovation (mean=4,400).

### 3.4.3 Reliability and internal consistency

Cronbach's alpha coefficient is statistically analysed to test reliability and internal consistency of the data. Data of values from 0.7 and above are reliable and have internal consistency.

Results of the Cronbach's alpha conducted on the data collected show that the data collected is reliable and has internal consistency with an acceptable Cronbach's alpha coefficient of 0.7041.

**Table 7: Cronbach's Alpha**

| **Reliability Statistics** | |
|---|---|
| Cronbach's Alpha | N |
| 0.7041 | 25 |

### 3.4.4 Structure of Business

Data were collected from gold mines (27%), platinum mines (23%), chrome mines (17%), manganese mines (10%), coal (17%) and other mines (7%). 83% of the mines sampled have a turnover of R100 million. 90% of sampled mines have more than 500 employees. Table 8 is the summary of the structure of business of the respondents who completed the questionnaires.

**Table 8: Structure of business**

| | | **Quantity** | **Percentage** |
|---|---|---|---|
| **Employees employed by the business** | 26-50 | 1 | 3% |
| | 201-500 | 2 | 7% |
| | 500+ | 27 | 90% |
| **Turnover/year** | | | |
| | R10-R50 m | 1 | 3,3% |
| | R50-R100m | 4 | 13,3% |

| | | | |
|---|---|---|---|
| | >R100m | 25 | 83,3% |
| **Commodity** | | | |
| | Gold | 8 | 27% |
| | Platinum | 7 | 23% |
| | Chrome | 5 | 17% |
| | Manganese | 3 | 10% |
| | Coal | 5 | 17% |
| | Other | 2 | 7% |

### 3.5 SUMMARY

It is clear from the descriptive statistics that safety, results, quality, Support/Service (after sales support), price and supplier-buyer relationship are the drivers of the mines to purchase explosives products.

Additionally, reputation, packaging, previous experience with an explosives supplier and law are the factors which influence their choice of supplier of explosives.

Lastly poor performance, poor service, late delivery, defects, legal reasons and innovation are the reasons why mines switch from one explosives supplier to another explosives supplier.

Data were tested for reliability, and internal consistency and the results are acceptable.

# CHAPTER 4

# CONCLUSION AND RECOMMENDATIONS

## 4.1 INTRODUCTION

The discussions of the conclusions and recommendations are in this chapter.

## 4.2 CONCLUSIONS

The primary objective of this study was to determine the mining buying behaviour drivers of the explosives products in South Africa. The literature states that the cost of product, reliability of delivery, quality of the product and after-sales services, supplier's reputation in the market, sample provided by the supplier, the ability of the supplier to provide the product regularly, flexibility in dealing, credit policies, rejection rate /number of defects and relationship with the suppliers as factors that are considered by the buying centre while selecting suppliers. The results reveal that safety, results, quality, Support/Service (after sales support), price and supplier-buyer relationship are the drivers of the mines to purchase explosives products.

The literature review indicated that the buying decision in explosives is not entirely dependent on price; the results of this study support these findings mentioned in the literature. Offering explosives at a cheaper price will not influence the mines to purchase these explosives products. Explosive products must be safe and be able to give expected results when used and has the blast capacity the mine expects from the product.

Reputation, packaging, previous experience with an explosives supplier and law are the factors which influence their choice of supplier of explosives. The supplier must have an excellent reputation for the mine to consider their product.

The second secondary objective was to identify why the mines leave the explosives suppliers. The results highlighted that poor performance, poor service, late delivery, defects, legal and innovation are the reasons why mines switch from one explosives supplier to another explosives supplier.

The limitation lies in obtaining enough respondents and obtaining all the members of the buying centre.

## 4.4 RECOMMENDATIONS

The following recommendations are based on the findings of the study:

1. Manufacturers of explosives products must make sure explosives products are of suitable quality, and that they are safe because safety is the number one drivers of explosive purchase.
2. Poor performance and number of defects are the reasons why mines switch from explosive suppliers. Suppliers must make sure their explosive products don't have defects. Moreover, they must make sure they yield expected results.
3. Suppliers must deliver correct product, quantity and on time.
4. Explosive suppliers must strive for a good reputation as it highly influences the mining choice of supplier.
5. Aftersales service is one of the drivers of the explosives products. Therefore explosives suppliers must do follow up on their products, and hence it is the results reflecting poor service as one of the reasons why mines switch from one explosives supplier to the other supplier.

## 4.5 Suggestion of further research

Wider research must be conducted, and it must include all members of the buying centre at the mines since the researcher has already focused on the mine managers, mine overseer and explosives managers.

## 4.6 SUMMARY

This chapter concludes the findings of the results and recommendations of the study based on the results that were discussed in this study.

A suggestion for future research is also discussed in this chapter.

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# APPENDIX A: QUESTIONNAIRE

Dear Respondent:

The following questionnaire is set out to aid in the study to investigate **mining buying behaviour of explosives products South Africa**.
This study is done in partial completion of my MBA studies at the North-West University in Potchefstroom. The results of the studies will be published after the completion of the study. (Note that no individual data will be made available; this is treated confidentially). The North-West University has approved the study and an ethical clearance has been issued in this regard.

This form is filled in anonymously and information supplied via this questionnaire will be standardised and kept confidential. The results of this survey are purely for academicals purposes and will in no way affect anyone's working environment.

This questionnaire is dived into three sections; all three must be completed. These sections are:

Section A: Biographical information
Section B: Drivers of explosives purchase, influences of purchase and reasons for switching.
Section C: Structure of business

Please be so kind as to return the completed questionnaires via the following email address to me:
Sivhabuk@gmail.com .

I would like to thank you in advance for your assistance in conducting the study and filling out the questionnaires. Should you require any further information or want to contact the researcher about any aspect of this study, please contact Prof Christo Bisschoff @ Christo.Bisschoff@nwu.ac.za . Thank you for taking time to read this information sheet and for considering participation in this study.

Sivhabu Khumbudzo (MBA student)

**General Instructions.**

All questions or statements can be answered by marking the relevant block with an X Where a space is given to state your posts please complete it using either a pen or electronically via the MS Word file.

Please respond to every statement and question below.

# SECTION A: BIOGRAPHICAL INFORMATION

The following information is needed to help us with the statistical analysis of the data for comparisons among different interest groups. We appreciate your help in providing this important information.

Mark the applicable block with a cross (X). Complete the applicable information.

| | | | | | | |
|---|---|---|---|---|---|---|
| A1 | Indicate your age group | ≤ 29 | 30 - 39 | 40 - 49 | 50 - 59 | 60+ |

| | | | |
|---|---|---|---|
| A2 | Indicate your gender? | Male | Female |

| | | | | | |
|---|---|---|---|---|---|
| A3 | Indicate your race group classification. | Black | White | Coloured | Indian |

| | | |
|---|---|---|
| A4 | Indicate your highest academic qualification. | |
| | Lower than matric | |
| | Matric | |
| | Certificate | |
| | Diploma (Technical College or Technikon) | |
| | University degree | |

| | | | | |
|---|---|---|---|---|
| A5 | Position | Mine Manager /General Manager | Mine Overseer | Explosives Manager/Drill and blast engineer |

| | | | | | | |
|---|---|---|---|---|---|---|
| A6 | Years of mining experience | 1-5 | 5-10 | 10-15 | 15-20 | 20 and above |

# Section B: Drivers of explosives purchase, influences of purchase and reasons for switching

1. Please indicate your level of agreement on how important the following buying behaviour drivers are when purchasing explosives products?

| | **Strongly Disagree** | **Disagree** | **Neutral** | **Agree** | **Strongly agree** |
|---|---|---|---|---|---|
| a) Price | 1 | 2 | 3 | 4 | 5 |
| b) Quality | 1 | 2 | 3 | 4 | 5 |
| c) Safety | 1 | 2 | 3 | 4 | 5 |
| d) Results | 1 | 2 | 3 | 4 | 5 |
| e) Payment option | 1 | 2 | 3 | 4 | 5 |
| f) Supplier Buyer relationship | 1 | 2 | 3 | 4 | 5 |
| g) Support/service (after sale support) | 1 | 2 | 3 | 4 | 5 |

2. Which of the following factors influenced your choice of supplier of explosives?

| | **Strongly Disagree** | **Disagree** | **Neutral** | **Agree** | **Strongly agree** |
|---|---|---|---|---|---|
| a) Advertisement | 1 | 2 | 3 | 4 | 5 |
| b) Sponsoring events | 1 | 2 | 3 | 4 | 5 |
| c) Reputation | 1 | 2 | 3 | 4 | 5 |
| d) Packaging | 1 | 2 | 3 | 4 | 5 |
| e) Sales person | 1 | 2 | 3 | 4 | 5 |
| f) Previous experience with an explosives supplier | 1 | 2 | 3 | 4 | 5 |
| g) Third party (word of mouth) | 1 | 2 | 3 | 4 | 5 |
| h) Law (e.g. recommendations for change from fuse and igniter cords to shocktube initiation) | 1 | 2 | 3 | 4 | 5 |

3. Reasons why I would switch from one explosives supplier to another supplier are?

| | **Strongly Disagree** | **Disagree** | **Neutral** | **Agree** | **Strongly agree** |
|---|---|---|---|---|---|
| a) Poor performance (advance, fragmentation, hanging wall damage) | 1 | 2 | 3 | 4 | 5 |
| b) Price | 1 | 2 | 3 | 4 | 5 |

| | | | | | |
|---|---|---|---|---|---|
| c) Supplier Buyer relationship | 1 | 2 | 3 | 4 | 5 |
| d) Economic Situations (Commodity Price) | 1 | 2 | 3 | 4 | 5 |
| e) Poor Service | 1 | 2 | 3 | 4 | 5 |
| f) Late deliveries | 1 | 2 | 3 | 4 | 5 |
| g) Defects (Misfire) | 1 | 2 | 3 | 4 | 5 |
| h) New Product development | 1 | 2 | 3 | 4 | 5 |
| i) Legal (change in law) | 1 | 2 | 3 | 4 | 5 |
| j) Innovation | 1 | 2 | 3 | 4 | 5 |

# SECTION C: STRUCTURE OF THE BUSINESS

**Mark the applicable block with a cross (X). Complete the applicable information.**

| C1 | How many permanent employees are employed by the business? | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1-4 | 5-10 | 11-25 | 26-50 | 51-100 | 101-200 | 201-500 | 500+ |

| C2 | What is the turnover of the business per year? | | | | | |
|---|---|---|---|---|---|---|
| | < R 1 m | R 1 – R 2.5 m | R 2.5 – R 10 m | R 10 – R 50 m | R 50 – R 100 m | > R 100 m |

| C3 | What commodity are you mining? | | | | |
|---|---|---|---|---|---|
| Gold | Platinum | Chrome | Manganese | Coal | Other |

## THANKS FOR YOUR TIME!

# APPENDIX B: LANGUAGE LETTER

Dynamic Language & Translation Specialists

Antoinette Bisschoff
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antoinettebisschoff@mweb.co.za
CC No: 1995/017794/23

Sunday, 03 December 2017

To whom it may concern,

**Re: Letter of confirmation of language editing**

The dissertation **An investigation of buying behaviour of explosives by mines in South Africa** by **KA Sivhabu 25693816** was language edited. The referencing and sources were checked as per NWU referencing guidelines. Final corrections remain the responsibility of the author.



**Antoinette Bisschoff**

Officially approved language editor of the NWU since 1998
Member of SA Translators Institute (no. 100181)