Investigate the relationship between production bonuses and productivity of employees in different wage categories

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Abstract

Platinum mines in South Africa are still very labour-intensive due to conventional mining methods being used. Having employees working in tough environments might cause them to lose motivation, leading to a decrease in productivity. Financial incentives are most commonly used to motivate employees to increase their productivity.

The literature study focused on employee productivity, incentives and employee motivation. The factors that influence productivity, the types of incentives used and how employees are motivated were the main focus points. Previous studies with similar objectives were compared to determine whether the results of this study are supported by previous research.

A questionnaire was developed based on the literature study to determine which rewards motivate the most and whether production bonuses can be used to motivate employees. The questionnaire also measured the respondents' opinions regarding rewards and their influence on their productivity.

The target population was a platinum mine in the North West province of South Africa. A total of 275 questionnaires were retrieved and used for statistical analysis. Descriptive statistical analysis was done to determine whether the sample was representative of the target population and to describe the sample. Exploratory factor analysis was done to determine the number of constructs identified in this study. These factors were then used together with the frequency data to determine the differences between wage categories. Effect sizes were used to determine the size of the differences between the wage categories.

The factors that were identified were productivity, motivation, willingness to do work, section productivity, demotivation and clear targets. The results indicated that rewards had a large positive effect on productivity and motivation and a large negative effect on demotivation. It was also concluded that production bonuses can be used to motivate employees to increase their productivity. Rewards were also a large contributor to employee happiness. The study further concluded that there is a difference in how employees in different wage categories are influenced by production bonuses.

Based on the conclusions, recommendations are made to management on how they can use these results to assist in the planning and revising of production bonuses and reward systems. The study was evaluated based on the achievement of the primary and secondary objectives and whether the research question was answered. The study had some limitations, which are discussed before recommendations are made for future studies.

Keywords: Employee productivity; wage categories; employee motivation; incentives to motivate; wage level; productivity

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Chapter 1: Nature of study

1.1 Background

Companies annually spend millions on incentives, specifically bonuses, but it does not always improve employee motivation (Arnolds *et al.*, 2010; Kuranchie-Mensah & Amponsah-Tawiah, 2016). There is no law in South Africa that states that an employer should pay employees a bonus, which leaves the decision open for the employer to decide (Claassen & Du Toit, 2012).

According to Grigoriadis and Bussin (2007) 'pay for performance' is the most common approach used in the last few years. Bonuses linked to performance is one of the most effective methods that can be used to pay employees based on their performance (Rehman & Ali, 2013). A performance-linked bonus scheme motivates employees and could even reduce absenteeism (Arnolds *et al.*, 2010; Coetzee, 2013).

A production bonus is a bonus that should be measured against production targets and not company standards. The production bonus can sometimes include a quality element (Claassen & Du Toit, 2012; Van Zyl, 2015). Performance bonuses can also be seen as the recognition of the amount of extra effort employees have been putting in to achieve certain goals (Arnolds *et al.*, 2010; Coetzee, 2013). An issue that can arise from paying employees a production bonus is being rewarded for some tasks, but not all tasks, leading to them tending to neglect the tasks that do not contribute to their bonus (Gielen *et al.*, 2010; Van Zyl, 2015).

Implementing an incentive scheme, such as a production-linked bonus, can also influence safety, quality and innovation in the workplace, but it can also have other negative impacts, for example, employees rushing to finish production without paying attention to quality (Arnolds & Venter, 2007; Gupta & Shaw, 2014).

1.2 Problem statement

The debate on the effectiveness of using performance bonuses to motivate employees is one that will always continue and there will always be arguments for and against it (Shaw & Gupta, 2015). Implementing a production bonus can be effective and could lead to increased production quantity and quality, influence safety and create space for innovation, but there could be negative impacts, for example, employees rushing

to finish production before the deadline and not paying attention to quality and employees working in an unsafe environment to reach their production targets (Arnolds & Venter, 2007; Gupta & Shaw, 2014; Shaw & Gupta, 2015).

The effect that production bonuses have on employees differs between employees with different skills levels. Lower-level employees value incentives as one of the four biggest motivators in the workplace (Arnolds *et al.*, 2010; Van Zyl, 2015). The main reason for production bonuses having a bigger effect on lower-level employees is due to their responsibilities being measurable, while higher-level employees' responsibilities become less measurable against production (Coetzee, 2013; Perry *et al.*, 2009). To have an effective bonus procedure, employees should understand the level of performance required to achieve a bonus (Coetzee, 2013; Perry *et al.*, 2009).

It is stated that most companies use a financial incentive that is linked to performance to motivate their employees to perform better and more effectively in order to assist the company in staying ahead of its competition (Garbers & Konradt, 2014; Mattson *et al.*, 2014). It is clear that a production bonus can have a positive effect on employees and in return on the company. This study was needed to determine how employees of different wage levels are influenced by a production bonus.

1.3 Research question

The research question formulated for this study was: Is the relationship between the productivity of an employee and the production bonus received different for different wage categories?

1.4 Expected contribution

This study can assist management teams in revising bonus procedures. If the results show that there is a significant difference in the way different employees feel motivated by a production bonus, the production bonus procedure can be adjusted to obtain the maximum motivation from as many employees as possible. The possibility exists that management can improve the overall motivation of employees by simply adjusting the bonus procedure to ensure maximum possible motivation for each wage category.

1.5 Research objectives

1.5.1 Primary objective

The primary objective of this study was to determine whether the productivity of employees in different wage categories is influenced differently by production bonuses.

1.5.2 Secondary objectives

The secondary objectives were as follows:

- Perform a literature review to determine whether employee productivity is influenced by motivation.
- Perform a literature review to determine whether employees can be motivated by incentives.
- Perform a literature review to determine whether employees of different wage levels are motivated differently.
- Determine whether employees in different wage categories are affected differently by bonuses.
- Make recommendations on possible future research.

1.6 Research hypothesis

It was expected that employees in different wage categories are motivated by different incentives and that their productivity would be influenced by the incentives they receive.

1.7 Research methodology

1.7.1 Research approach and design

The research design chosen for this study was a quantitative, cross-sectional design. Data were only collected once from the population (see Bryman & Bell, 2014:51). The sampling method was a convenience sampling method, as the population was expected to be very homogenous (see Bryman & Bell, 2014:106).

1.7.2 Literature study

Chapter 2 reports on a literature study done to understand the concepts of productivity of employees, incentives and employee motivation. Previous studies with similar

objectives were also examined to determine what could have been expected from this study. The previous studies included the following:

- How motivation and performance are influenced by feedback, which is a form of intrinsic motivation (Sono, 2014)
- How intrinsic and extrinsic incentives influence performance when used together (Cerasoli *et al.*, 2014)
- How productivity and motivation are influenced by incentives at a commercial bank (Ahammad *et al.*, 2015)
- The influence financial incentives have on performance (Garbers & Konradt, 2014).

In the section below, the key terms and that which was researched under each term used to construct the literature study are defined.

1.7.2.1 Definitions of key terms

Employee productivity is seen as one of the most important factors that most organisations see as their key to organisational success. Productivity is also a factor that has a direct impact on an organisation's profits (Hanaysha, 2016).

Incentives can be seen as rewards or benefits that do not form part of the normal remuneration package of an employee. The driving force behind most incentive schemes is motivation, enthusiasm, productivity and performance of individual employees or groups of employees. Each organisation has its own type of incentive scheme that fits the organisation and also what the organisation wants to achieve with the incentive (Maki, 2014; Mlilo *et al.*, 2013).

According to Stajkovic and Luthans (1998), *employee motivation* is a process used to change the behaviour of individuals. Motivating employees means influencing employee behaviour to achieve a certain result (Osa, 2014). The motivation of employees is a very important task for all organisations (Zameer *et al.*, 2014). This is due to the fact that employees who are highly motivated can create a competitive advantage for the organisation, as employees are one of the biggest assets of any organisation (Zameer *et al.*, 2014). Motivation can be used to change employee behaviour and thereby increase employee productivity (Osabiya, 2015).

The keywords as stated above was used to perform the literature study. In the list below, secondary items were listed to indicate the factors the keywords should focus on.

- Employee productivity
  - Factors that impact productivity and performance
  - The benefits of improvement of productivity
  - The measurement of productivity
  - The cost of absent employees and the influence on productivity
- Incentives
  - The development of incentive schemes
  - The different types of incentives
  - The use of incentives to influence performance
  - The effect of incentives on performance
- Employee motivation
  - The types of motivation
  - Needs theories
  - Different motivators
  - Motivation through financial incentives
  - The motivation of mining employees.

1.7.3 Study population

This study was conducted at a platinum mine in the North West province of South Africa. The respondents were all working in the processing area of the mine and all shaft employees were excluded from this study. The reason for excluding shaft employees was the fact that their bonus procedure was different from the one used in the processing area.

The respondents all belonged to the wage categories from an A to a D level, which included the lowest level of employees up to engineers and operations managers. The reason for excluding the higher-level employees was that the bonuses they receive are completely different from the A to D level bonuses

It was expected that most of the respondents would be male due to the low number of female employees at mining companies. As reported by the Department of Mineral Resources (2015), only 10.5% of mining employees in South Africa are female.

1.7.4 Empirical study

1.7.4.1 Research instrument

For this study, a self-completion questionnaire was designed. The reason for choosing this type of questionnaire was easier administration due to a large number of responses required. The questionnaire contained closed-ended statements and a Likert scale was used to determine the respondents' perceptions regarding productivity based on rewards. Historical data were also collected to determine whether the current production bonus had an influence on the productivity of the employees.

1.7.4.2 Population and sample

The population was employees of a mining company in the North West province; therefore, the sample was employees working at that specific mine. The population included 1 150 employees. The sample size was calculated to be 297 employees in total using the Yamane (1967) formula, a confidence level of 95% and a population size of 1 150. After the distribution of the questionnaire, 275 useable responses were obtained.

1.7.4.3 Statistical analysis

The statistical analysis of the questionnaire data was completed by the Statistical Consultation Services of North-West University. The analysis done by the Statistical Consultation Services included descriptive analysis, frequency, reliability and validity, t-tests based on gender and ANOVA tests based on wage category and location.

The reliability of the questionnaire was determined by measuring the Cronbach's alpha coefficient, which was calculated to be 0.766. A Cronbach's alpha between 0.65 and 0.8 can be assumed to be adequate for human-based research (Green *et al.*, 1977; Spector, 1992; Vaske *et al.*, 2017). Effect sizes were also determined to show differences in the responses.

1.8 Limitations and assumptions of the study

The limitations of this study were determined to be as follows:

- Only one organisation and its employees were included in this study, which might result in the conclusions not being generalisable to other mining companies.
- As the questionnaire was based on productivity and production bonuses, the time at which the questionnaire was filled in by the respondents might have influenced the results. For example, if the month in which the questionnaire was completed had a large production bonus, they might have been more positive towards the whole study and vice versa.
- The results are depended on the respondents' honesty in the answering of the questionnaire

The assumptions of the study were as follows:

- Respondents will answer the questions honestly.
- The respondents' willingness to complete the questionnaire may be increased due to the fact that they will remain anonymous and their answers will be confidential.
- The sample of the population is representative of the entire population but may not be generalisable to other mining companies.

1.9 The layout of the study

The mini-dissertation has the following layout:

- **Chapter 1: Nature of the study**

  The introduction chapter to this study included the background, problem statement, research question, research objectives, the research methodology and the limitations and assumptions of the study, and also presented a layout of the research report.

- **Chapter 2: Literature review**

  Chapter 2 reports on a literature review that focused on employee productivity and performance and the factors that influence productivity, the benefits of increased

productivity and how to measure employee productivity. The second part of the literature review was on types of incentives and how incentives can be used to increase productivity. The last section of the literature review was on the types of motivation, needs theories, different motivators for employees in different wage categories and the use of financial incentives to motivate employees.

- **Chapter 3: Empirical study**

  The empirical study includes all the information regarding the research methodology, the measuring instrument and the data analysis. The population and sample of the study are also explained in detail.

- **Chapter 4: Results and discussion**

  The data obtained from the questionnaires and the historical information are discussed in Chapter 4. The demographic information obtained is presented, along with the analysis of the questionnaire data and the historical data.

- **Chapter 5: Conclusion and recommendations**

  In the final chapter, the overall conclusion of the study is presented. Recommendations and suggestions for future research are also made in this chapter.

Chapter 2: Literature review

2.1 Introduction

Platinum mining is a labour-intensive operation due to conventional mining methods being used. These conventional mining methods have been used since the early 1900s (Macfarlane, 2001; Rupprecht, 2017). Moving towards mechanised mining was not a good financial decision in the past, as labour was plentiful and inexpensive, ore deposits were shallow, the travel distance to the stope area was short and productivity was high. Currently, the labour force is highly unionised in South Africa and demands significant wage increases, while increased electricity and fuel tariffs over the past few years had a significant influence on the overall productivity of platinum mines (Rupprecht, 2017). In Figure 2.2 the annual average increase in cost inflation that affects the mining industry from 2008 until 2014 can be seen (Mathys, 2015).

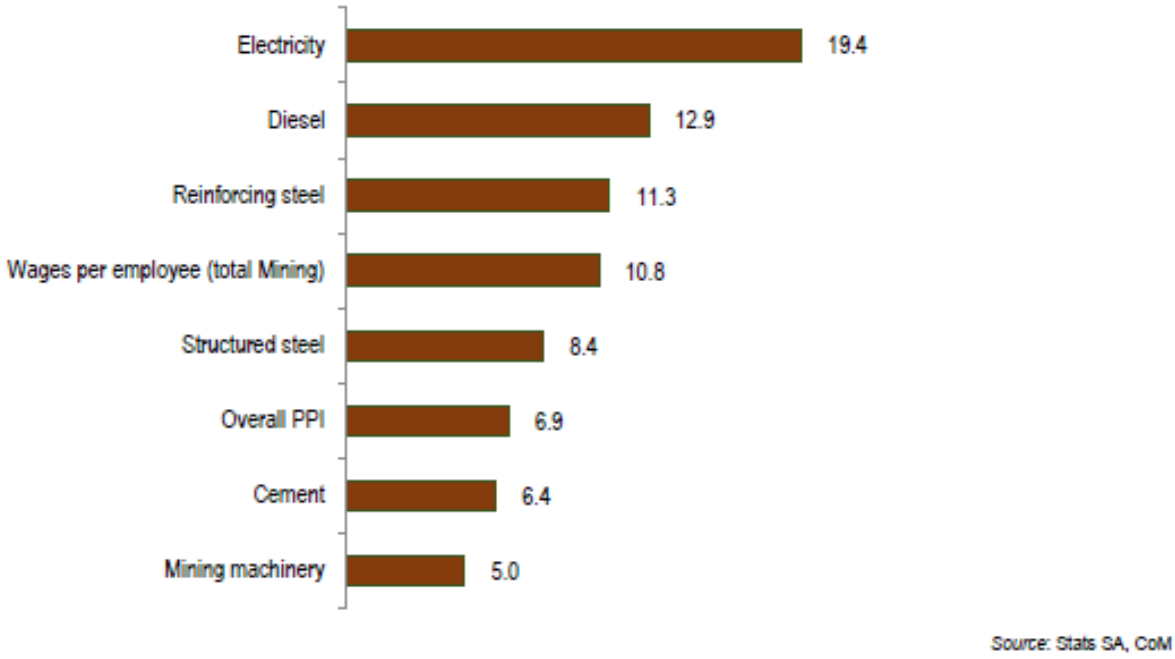

Figure 2-1: Cost inflation affecting the mining sector (annual average increase 2008–2014)

From 2017 to 2018 the input cost inflation increased with roughly 6%, as can be seen in Figure 2.2 (Minerals Council South Africa, 2019).

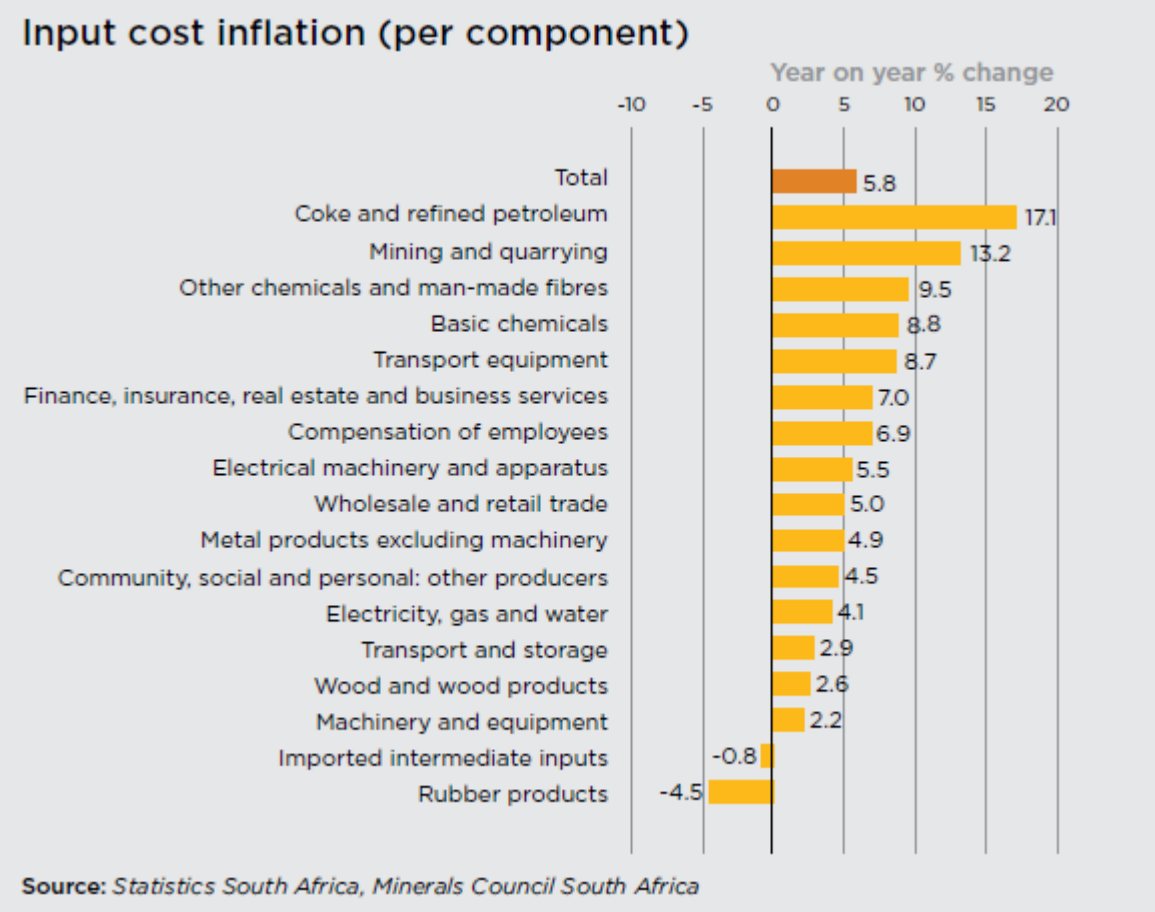

Figure 2-2: Input cost inflation from 2017 to 2018

When looking at the aforementioned information regarding the increased cost of operations, it is evident that most mining operations will have fewer profits to show for the same units of production (Minerals Council South Africa, 2019; Rupprecht, 2017). This is shown in Figure 2.1, where it can be seen that the production has remained relatively constant since 2012, excluding 2014 due to the labour strike during this time (Department of Mineral Resources, 2018).

Table 2-1: South African platinum-group metals production and sales

	Production	Local sales		Export sales		Total sales	
Year	tonnes	tonnes	R'000	tonnes	R'000	tonnes	R'000
2007	304	-	12,350,290	258	66,064,133	262	78,414,423
2008	276	-	13,448,280	223	77,904,355	223	91,352,635
2009	271	-	4,322,869	251	53,459,307	251	57,782,176
2010	287	-	7,892,570	244	65,894,341	244	73,786,910
2011	289	-	10,619,219	244	73,234,047	244	83,853,266
2012	254	-	8,285,235	211	60,918,939	211	69,204,174
2013	264	28	8,886,103	239	75,348,535	266	84,234,637
2014	188	29	10,640,749	202	66,860,760	230	77,501,510
2015	276	32	11,149,886	254	82,988,098	287	94,137,984
2016	264	31	11,093,840	250	85,318,461	282	96,412,301
2017	260	31	11,971,452	251	85,069,237	282	97,040,689

Source: *Department of Mineral Resources*

Even though production has remained the same, the significant cost increases influenced the overall profit produced. Griffith (2017), at the 2017 Rapid Underground Mine and Civil Access Conference, stated that 70% of platinum mines are operating at a loss.

The best option is to move towards a more mechanised mining operation than a conventional mining operation; however, this is a difficult task at most mining operations in South Africa due to the possibility of violent strikes by employees (Rupprecht, 2017).

An employee's motivation has a big influence on the achievement of higher production levels and economic growth (Arnolds *et al.*, 2010; Van Zyl, 2015). All companies need to motivate their employees to always perform better and more efficiently due to increased competition in their respective markets (Garbers & Konradt, 2014; Gielen *et al.*, 2010). Most companies pay their employees on a system that is related to performance because of the perception that employees will work harder if they can see the relationship between their performance and the reward (Mattson *et al.*, 2014).

The most common motivation tool used is a financial incentive plan that is linked to performance (Garbers & Konradt, 2014). A proper bonus structure can be the most

powerful tool management can use to create employee commitment to the organisation (Coetzee, 2013; Thompson *et al.*, 2007). This method also motivates employees to work for a company for longer instead of moving to a new job (Rehman & Ali, 2013).

According to Currin and McGowan (2017), a good place to start planning incentives is determining specific objectives. According to Currin and McGowan (2017), these objectives can include but is not limited to, increased sales, motivated staff, friendly workplace competition or improved team communication. If incentive plans are well executed it will include teasers and updates to ensure the momentum is maintained by the workforce (Curinn & McGowan, 2017).

It is important that managers understand what motivates their employees to work harder and more effectively, which will make them more productive (Arnolds & Venter, 2007; Van Zyl, 2015). Employees at different levels might not need the same type of motivational reward to have the same level of motivation (Arnolds & Venter, 2007; Coetzee, 2013).

The rest of the literature study focuses on employee productivity, incentives and employee motivation to understand these individual concepts before finalising the literature study with a discussion of similar studies and how they compare to this study.

2.2 Employee productivity

Employee productivity is seen as one of the most important factors that most organisations see as their key to organisational success. Productivity is also a factor that has a direct impact on organisations' profits (Hanaysha, 2016).

Knowing how productive employees are shows how capable workers are at doing certain tasks (Hossain *et al.*, 2018). Knowing the difference between employee productivity and performance is important. Productivity, according to Mathis and John (2003) and Ongaki and Otundo (2015), measure the quantity, quality, and cost of work done (Mathis & John, 2003; Ongaki & Otundo, 2015:5). Performance can be seen as the way each employee contributes to reaching organisational objectives (Sono, 2014).

2.2.1 Factors impacting employee productivity

There are various factors that influence employee productivity, some of which are discussed below.

2.2.1.1 Benefits and incentive schemes

According to Hossain *et al.* (2018) and Samnani and Singh (2014), benefits of incentive schemes can be seen as, for example, performance-related pay, where employees are awarded based on the work they have done in a certain period. This then motivates the employees to increase their productivity even further. According to Samnani and Singh (2014), enhancing performance through compensation has a positive relationship with employee productivity, Hossain *et al.* (2018) had a similar conclusion where productivity was influenced by involving employees more in the business (Hossain *et al.*, 2018; Samnani & Singh, 2014).

2.2.1.2 Communication

Hossain *et al.* (2018) state that communication can have a positive or negative impact on productivity. If communication is open in an organisation, it creates an environment where employees can raise concerns and be given information effectively regarding performance and performance objectives (Hossain *et al.*, 2018). In contrast, it can also create obstacles for employees that may cause them to feel hesitant to discuss issues that influence their effectiveness (Hossain *et al.*, 2018).

2.2.1.3 Working hours

Employee productivity is negatively influenced by long working hours. Increased working hours cause employees to feel more fatigued and create space for errors (Dall'Ora *et al.*, 2016; Hossain *et al.*, 2018). It is not always possible to have short working hours, but there are solutions to this, for example, employees were allowed to take some time during working hours to rest or relax in order to increase their energy levels (Dall'Ora *et al.*, 2016; Hossain *et al.*, 2018).

2.2.1.4 Motivation

Motivation is linked to incentive schemes: The more motivated employees feel, the higher their productivity will be (Hossain *et al.*, 2018).

2.2.1.5 Training

Employees who are trained to do a certain job will feel more confident in their job. Having more skilled and trained employees than employees who are untrained decreases the chances of making mistakes (Hossain *et al.*, 2018).

2.2.1.6 Work engagement

Work engagement depends on the perceptions employees have regarding their working experience (Hanaysha, 2016). In a study by Hanaysha (2016), it was found that work engagement has a significant effect on employee productivity. Employee productivity will decrease if employees are not engaged in their workplace (Abraham, 2012; Hanaysha, 2016; Shuck *et al.*, 2011).

2.2.1.7 Work environment

According to a study by Awan and Tahir (2015), the work environment has an influence on productivity. Supervisor support, co-worker relationships, development, incentives, recognition and workload all impact the work environment of an employee, which in return influences productivity (Awan & Tahir, 2015). If the work environment of an employee is positive, the employee will be more productive (Awan & Tahir, 2015).

2.2.1.8 Job satisfaction

A study conducted by Fu and Deshpande (2014) indicates that job satisfaction has a positive relationship with employee performance. This study confirms the results obtained by Sommer and Kulkarni (2012), which indicated that employees who had supervisors who gave constructive feedback had higher job satisfaction scores, which in turn increased employee performance, Fu and Deshpande (2014) indicated that performance is influenced by feedback (Fu & Deshpande, 2014; Sommer & Kulkarni, 2012).

2.2.1.9 Organisational commitment

Employees who perceive their organisation as having shared values and that they are cared for by the organisation have better performance and productivity, as confirmed by a study by Fu and Deshpande (2014). Other studies (Jamal, 2011; Khan *et al.*, 2010) also suggest that organisational commitment has a significant effect on employee performance.

2.2.2 Benefits of improved productivity

Productivity is important, as it is one of the two most common ways to increase profits (Parham, 2014). The second way is to increase inputs, but this will not have an effect on the per-unit production cost and per-unit profit will remain the same, as only overall profits will increase (Parham, 2014; Wroblewski, 2019). When the productivity of an organisation changes, it means that for the same number of inputs more units of outputs can be produced, or the cost to produce the same number of units will decrease (Parham, 2014; Wroblewski, 2019). This will then in return increase the profit per unit and therefore it is the most effective way to increase an organisation's profits (Parham, 2014; Wroblewski, 2019).

There are a few benefits associated with increased productivity (Parham, 2014; Wroblewski, 2019):

- Better wages for employees
- Increased profits and dividends to shareholders
- Lower prices to customers
- Environmental protection, as less pollution is possible
- Meeting obligations towards shareholders
- Remaining competitive in the market.

Hanaysha (2016) states that literature indicates advantages to having productive employees. According to Sharma and Sharma (2014), having employees with higher productivity could lead to higher economic growth and profitability. Hanaysha (2016) and Cato and Gordon (2012) state that employee productivity can be linked to organisational success. Organisations with employees with higher productivity also have a competitive advantage over their competitors, as they experience a reduction in costs and an increase in quality (Cato & Gordon, 2012; Hanaysha, 2016; Sharma & Sharma, 2014).

Some organisations have conducted studies on how to increase their employees' productivity. The main reason for this is due to all the advantages that come with increased employee productivity. Other reasons are economic growth, increased profits, employees being eligible for higher wages, improved working conditions,

employment development opportunities, reduced costs and increased quality of outputs (Baily *et al.*, 2005; Hanaysha, 2016; Hill *et al.*, 2014; Wright, 2004).

2.2.3 Measuring employee productivity

According to Hossain *et al.* (2018), a simple formula to measure productivity is units of output divided by units of input. Usually, organisations would use cost per hour, but this can be influenced by non-productive employees, hence they rather use labour per product (Hossain *et al.*, 2018). This will give a more accurate result, as it is more beneficial for productive employees to earn more than employees who are less productive. Employee productivity can be measured by dividing total outputs by the hours worked by the given employees (Hossain *et al.*, 2018).

According to Hanaysha (2016), the two measurements of employee productivity found in the literature are employee output in a specific timeframe (Piana, 2001) and being seen as physically present (Sharma & Sharma, 2014). Similarly, two measures of employee productivity are employee absenteeism (Bankert *et al.*, 2015) and the number of outputs produced per the number of inputs used (Hossain *et al.*, 2018).

2.2.4 Cost of absent employees

Because productivity is influenced by the number of employees at work, it can be stated that having employees absent from work will negatively influence overall organisational productivity (Bankert *et al.*, 2015). Bankert *et al.* (2015) used the Regional Productivity Loss Model to estimate the cost of absenteeism. Their study was done by sampling employees in three firms with a sample size of 646, 319 and 310 employees, respectively. The findings of this study showed that the per-employee output loss ranged from $1 370 to $4 604 across the three firms, which in total ranged from $0.4 million to $9.2 million lost due to absenteeism. In conclusion, this study indicated that productivity in high output per labour hour industries is highly influenced by absenteeism and could lead to significant losses (Bankert *et al.*, 2015).

Absenteeism further causes productivity losses when the unscheduled absent employee needs to be replaced for the period absent or when other employees need to do the work of the absent employee (Kocakulah *et al.*, 2016). Productivity losses due to absent employees are one of the most significant contributors that can be

measured. Measures should be implemented by organisations to ensure that absenteeism is kept to a minimum (Richardson, 2015).

2.2.5 Productivity in the mining industry

According to research conducted by Lala *et al*. (2016), the global mining operation is 28% less productive than a decade ago. One of the most common methods to increase productivity is by cutting costs, but this only improves productivity in the short run, as it costs less to produce the same amount of outputs. According to Botha (2015), labour productivity in the South African gold sector has deteriorated by 35% since 2007, but this is also seen in other countries, for example, capital productivity has deteriorated by 45% in Australia since 2000 (Botha, 2015; Martins, 2015).

Due to profitability issues most mining companies are experiencing, an increase in productivity would be beneficial. Most mining companies are trying to reduce the cost of production or to increase the output of production at no additional cost (Lala *et al.*, 2016).

2.3 Incentives

According to Maki (2014) and Mlilo *et al.* (2013), incentives can be seen as rewards or benefits that do not form part of the normal remuneration package of an employee. The driving force behind most incentive schemes is motivation, enthusiasm, productivity and performance of individual employees or groups of employees (Maki, 2014; Mlilo *et al.*, 2013). Each organisation has its own type of incentive scheme that fits the organisation and also what the organisation wants to achieve with the incentive (Maki, 2014; Mlilo *et al.*, 2013).

2.3.1 Development of incentive schemes

There are a few factors that should always be present if an organisation wants an effective incentive scheme. These factors are as follows:

- When designing or developing an incentive scheme, one of the most important aspects involved is setting the right objectives. What makes each incentive scheme different is the objective it is based on (Maki, 2014).

- When developing effective incentive schemes, the objectives must be attainable, as employees will feel less motivated if the task is unattainable and unrealistic (Amah *et al.*, 2013).
- Employee involvement when planning these schemes is very important. If employees do not accept the scheme, they will not feel motivated to work towards the objectives (Amah *et al.*, 2013).
- The size of the reward should be proportionate to the amount of effort the employee had to make to achieve the objective (Amah *et al.*, 2013).
- When working in an environment with high union activity, it is important to involve the worker unions in all the stages to ensure that the organisation has their support (Amah *et al.*, 2013; Maki, 2014).

If the organisation has an effective incentive scheme, which includes all the possible schemes discussed below, employee attitude, motivation and commitment towards the organisation will increase. The possibility of it influencing productivity in a positive way also exists (Amah *et al.*, 2013; Maki, 2014).

2.3.2 Types of incentives

Each type of incentive can be placed in three categories, being either a career development, long-term or short-term incentive scheme (Mlilo *et al.*, 2013).

2.3.2.1 Career development incentives

Career development incentives are part of the retention strategy of organisations. This is when organisations invest in employees to develop and educate them to create leadership skills and other beneficial qualities (Mlilo *et al.*, 2013).

2.3.2.2 Long-term incentives

As the name states, a long-term incentive is more focused on the needs of the organisation and employees in the long term (Mlilo *et al.,* 2013). The main focus of long-term incentives is not to reward short-term behaviour, but to retain and attract top employees, which could also be seen as a retention strategy (21st Century, 2016; Mlilo *et al.*, 2013). Long-term incentives usually include share options, long-term in-service rewards or profit-sharing schemes (21st Century, 2016; Mlilo *et al.*, 2013).

2.3.2.3 Short-term incentives

Short-term incentives are aimed at rewarding employees based on their short-term performances or needs. Most short-term incentives are monetary, such as performance bonuses or pay for performance, but they could also be non-monetary, for example, coupons or vacation days (21st Century, 2016; Mlilo *et al.*, 2013). Short-term incentive schemes are usually used to increase performance and ensure that employees are motivated (Mlilo *et al.,* 2013). This is also a tool that organisations use to align all their employees to work towards a common goal, which can then easily be adjusted if necessary (21st Century, 2016; Mlilo *et al.*, 2013).

2.3.3 Using incentives to promote performance

As incentives are usually used to improve employee performance and motivation, there will always be arguments for and against their effectiveness (Garbers & Konradt, 2014; Wynter-Palmer, 2012).

Some of the arguments against the use of incentives are as follows (Garbers & Konradt, 2014; Wynter-Palmer, 2012; Itri *et al.*, 2019):

- Employees might not work as safe due to the possibility of an incentive, as employees might rush through their work or bypass procedures to ensure they get rewarded.
- Employees may engage in behaviour that is undesirable, for example sabotaging other employees' work if they will be compared.
- Financial incentives do not increase job satisfaction or motivation and will cause dissatisfaction among employees in regard to the basic remuneration packages if the financial incentive becomes regular.

In contrast, the arguments for the use of incentives are as follows (Garbers & Konradt, 2014; Wynter-Palmer, 2012):

- Using money as an incentive is the most effective way of motivating employees.
- If business requirements and expectations are communicated to all employees and they receive incentives on the objectives, they will work to the required expectations.

- It creates an environment of involvement and commitment, which in turn increases the level of trust between the employer and the employees.

Even though there are advantages and disadvantages to an incentive scheme, it is the way it is implemented that could make it worth the organisation's efforts (Amah *et al.*, 2013). It is expected that having incentives is will positively influence organisational performance and the commitment of employees (Park & Kruse, 2014).

Garbers and Konradt (2014) conducted a study on the effect of financial incentives on performance. The results of this study indicated that with regard to the team and individual-based incentives had a consistent and positive relationship regarding employee motivation (Garbers & Konradt, 2014). One difference between the individual-based and team-based reward was that the team-based rewards led to higher individual motivation. This was the result of the rewards being equal among a team of employees (Garbers & Konradt, 2014).

Previous studies by Bartol and Hagman (1992), Kerr and Tindale (2004) and Spink (2000) also indicated that there is less motivation lost when rewards are team-based rather than individual-based, which is consistent with the results from studies conducted by Garbers and Konradt (2014), Bartol and Hagmann (1992), Kerr and Tindale (2004) and Spink (2000).

Studies by Thibault Landry *et al.* (2017) concluded that during their three studies using three different methodologies that a financial incentive that is distributed fairly has a positive influence on employee motivation and employees' overall performance.

2.3.4 The effect of monetary and non-monetary incentives on performance

Monetary incentives, also known as financial incentives, include all financial payments made by an employer. Monetary incentives include basic salary, allowances, bonus, commission, etc. (Harunavamwe & Kanengoni, 2013).

Non-monetary incentives, also known as non-financial incentives, include all rewards not linked to a financial payment. This could include flexible working hours, recognition, decision-making role, promotions, etc. (Harunavamwe & Kanengoni, 2013).

According to Waqas and Saleem (2014), even though monetary rewards are highly in use and widely accepted to motivate employees, it is evident that organisations are

recognising the possibility of using non-monetary rewards to motivate employees. The non-monetary rewards mentioned are mostly based on recognition of efforts, for example choosing an employee of the month (Waqas & Saleem, 2014). Issues that might be associated with an employee of the month rewards include unhealthy competition between employees and sabotaging of other employees' work, which might create a negative atmosphere in the workplace, and therefore most large organisations choose to reward employees equally (Woods & West, 2015:234). Waqas and Saleem (2014) further found that both monetary and non-monetary rewards have positive influences on overall firm performance.

Sukanta *et al.* (2018) studied how job performance is influenced by financial and non-financial incentives. The results of this study indicated that both financial and non-financial incentives have a significant and positive effect on overall employee work performance (Sukanta *et al.*, 2018).

2.4 Employee motivation

According to Stajkovic and Luthans (1998), changing the behaviour of individuals can be done by motivation and as mentioned by Osa (2014), motivation is to influence employee behaviour to obtain a certain result.

The motivation of employees is a very important task for all organisations (Zameer *et al.*, 2014). This is due to the fact that having employees who are highly motivated can create a competitive advantage for the organisation, as employees are one of the biggest assets of any organisation (Zameer *et al.*, 2014). Motivation can be used to change employee behaviour and thereby increase employee productivity (Osabiya, 2015).

2.4.1 Types of motivation

There are two main types of motivation namely, intrinsic and extrinsic. These two motivation types will be discussed in more detail in the section below.

2.4.1.1 Intrinsic motivation

Intrinsic motivation can be defined as behaviour that makes an individual feel competent and self-determining. This type of motivation is self-generated (Osa, 2014).

Intrinsic motivators are psychological rewards, for example, challenge and achievement, appreciation, recognition and considerate treatment (Osabiya, 2015). This is usually linked to the behaviour and action of a manager and is greatly influenced by the quality of employees' work life. This is a longer-term motivator and will have a longer-lasting effect on the employee (Osabiya, 2015).

2.4.1.2 Extrinsic motivation

Extrinsic motivation is motivation from external factors (Osa, 2014). According to Osabiya (2015), extrinsic motivation can be seen as tangible rewards, for example, pay, benefits, promotion, healthy work environment and job security. This type of motivator is usually determined by the organisation and the manager does not have a big influence on it. This type of motivation does not have a lasting effect on employees compared to intrinsic motivators, but it is still a very powerful motivator (Osabiya, 2015).

2.4.2 Needs theories of motivation

There are many theories regarding motivation and what motivates employees. Each theory indicates what employees need to be motivated and the main focus of these needs theories is to identify what motivates employees (Osabiya, 2015; Woods & West, 2015:122; Zameer *et al.*, 2014).

2.4.2.1 Maslow's hierarchy of needs

This is the prefered needs theory of all the needs theories. According to Maslow (1943), if a need is satisfied, it will no longer serve as motivation to an individual. Maslow (1943) identified five needs that motivate all individuals (Turabik & Baskan, 2015; Woods & West, 2015; Zameer *et al.*, 2014).

The five needs are the following, ranked from the lowest to the highest (Turabik & Baskan, 2015; Woods & West, 2015; Zameer *et al.*, 2014):

- **Physiological:** This can be seen as an individual's basic needs. All the needs in this category are seen as what is needed for an individual's survival, for example, hunger, thirst, sex, sleep, clothes and breathing.
- **Safety:** This is the need for security, stability, freedom and dependency.

- **Social:** This is also known as belonging needs. This is the need for love and care and is fulfilled through interactions. Examples are friendships, family and feel loved (Woods & West, 2015:122; Zameer *et al.*, 2014).
- **Esteem:** This is also known as the egoistic need. It is the need of an individual to strive towards accomplishment and competence. This need includes an individual's need for fame, glory, status, recognition and dominance (Woods & West, 2015:122; Zameer *et al.*, 2014).
- **Self-actualisation:** This is the highest need, which represents the need to fulfil potentials. Examples are morality, lack of prejudice, creativity, spontaneity and problem solving (Woods & West, 2015:122; Zameer *et al.*, 2014).

Maslow suggested that to motivate employees, needs at higher levels must be satisfied, while lower-level needs should be satisfied through job design (Woods & West, 2015:123).

2.4.2.2 Alderfer's ERG theory

Alderfer ERG theory classified human needs into three categories, namely existence needs, relatedness needs and growth needs. Existence needs are the combined physiological and safety needs of Maslow's theory, which are based on basic human survival needs. Relatedness needs are relationship needs, which correspond with Maslow's social needs. Growth needs are the development potentials of an individual, corresponding with the esteem and self-actualisation needs of Maslow's theory (Osabiya, 2015; Woods & West, 2015:123).

The main difference between Maslow's theory and Alderfer's theory is that Alderfer had no hierarchy and stated that all the needs must be satisfied at the same time, not at different times, as in Maslow's theory (Osabiya, 2015; Woods & West, 2015:123).

2.4.2.3 Herzberg's two-factor theory

Herzberg's two-factor theory is focused on what satisfies and dissatisfies employees at work (Woods & West, 2015:124). Herzberg's two factors are (Osemeke & Adegboyega, 2017; Woods & West, 2015:124):

- Factors for satisfaction are called motivators and are intrinsic factors that include achievement, promotion, recognition and responsibility.

- Factors for dissatisfaction are called hygiene factors or extrinsic factors, which include pay, work conditions and quality of work life. Employees are easily dissatisfied by these factors and they lead to demotivation. These factors are important, as they can influence overall satisfaction, as even with intrinsic motivation, employees may remain dissatisfied.

The extrinsic factors will influence employees' willingness to work, where the intrinsic factors will determine their quality of work delivered. The extrinsic factors are mainly focused on satisfaction and do not influence motivation as do intrinsic factors. The intrinsic factors motivate employees even if they are dissatisfied – the extent of motivation is just smaller.

2.4.2.4 Expectancy theory

Vroom developed the first expectancy theory, which has three main elements: expectancy, instrumentality and valance. Expectancy is the perception that effective performance will deliver the desired outcome (De Simone, 2015; Woods & West, 2015:128). Instrumentality is the perception that a reward will be given for performance (Woods & West, 2015:128). Valance is the value of the reward received. From this, Vroom suggested that employees will increase their effort if they believe their efforts will result in a good performance and that it will lead to a valuable outcome (De Simone, 2015; Woods & West, 2015:128).

Vroom developed the following equation (Woods & West, 2015:128):

$$M = E \times I \times V$$

where:

M = motivation

E = expectancy

I = instrumentality

V = valance.

The multiplier effect of this equation states that if all three factors have high readings, the overall motivation will be high and in contrast, if all three factors are low, the overall motivation will be low. This means that if an employee believes that efforts will result

in performance and there will be a reward, but the valance of the reward is zero, the overall motivation will be zero (De Simone, 2015; Woods & West, 2015:128–129).

2.4.2.5 Goal-setting theory

The goal-setting theory was first developed by Locke which stated that employee performance is affected by goal setting. Thereafter, Locke and Latham in 1978 stated that both motivation and performance are influenced by goal setting (Osabiya, 2015).

In a study conducted by Locke and Latham in 1990, as cited in Woods and West (2015:130), job performance was influenced more by employees who set goals compared to employees who do not set goals. Locke and Latham also indicated three factors that influenced the effectiveness of goals (Osabiya, 2015; Woods & West, 2015:130):

- Goals should be specific and challenging. If goals are not specific, the performance of employees will not increase and if they are not challenging, they will not lead to an increase in their performance, as employees will not have to apply any extra effort to achieve the goal.
- Goals must be measurable. If a goal is not measurable, employees will not know what level of effort to apply to reach the goal and how it is measured against their performance.
- Goals should be attainable and time-bound. Goals that are unattainable are demotivating to employees while adding a time limit enables employees to determine the amount of effort required to accomplish the goal.

There are also four factors that state how goal setting influences performance (Woods & West, 2015:130):

- By setting goals, employees' attention and efforts are directed to certain activities and therefore their behaviour is influenced by the goal.
- By setting a goal, employees energise their behaviour to achieve the set goal.
- Employee efforts are increased and prolonged, as is their persistence to achieve the set goals.
- Employees are inclined to use job-relevant strategies that can increase their chances of achieving the set goal.

However, all of the above mentioned are not enough to explain why employees will be motivated by setting goals and why not all employees are motivated similarly by setting goals (Woods & West, 2015:131). There are a few factors that can explain how employees can be motivated by goals (Woods & West, 2015:131):

- Employees should be committed to their goals. Employee commitment is influenced by the importance of the goal to the employees and their belief that they can achieve the goal.
- Feedback should be given to employees on how they are progressing towards their goal, whereby they can adjust their efforts if necessary.
- Task complexity is also important. The higher the task complexity, the more skill and strategy need to be applied to achieve the goal, which increases employees' feeling of achievement
- The last factor is beyond the employees' control, namely that job design influences the performance of an employee.

Goal-setting theory is the most influential of all the theories of motivation, but Locke intended it to rather be a motivational technique than just a theory (Osabiya, 2015; Woods & West, 2015:129).

2.4.3 Different motivators for employees of different wage levels

It is important for management to understand what motivators to use to motivate employees. According to Falola *et al.* (2014), when motivators are used that are not what employees expected, it can lead to dissatisfaction. This dissatisfaction among employees can lead to poor performance, absenteeism, high employee turnover rates and punctuality issues among employees (Falola *et al.*, 2014).

Weske and Schott (2016) conducted a study on how different employees working for Dutch municipalities are motivated. The results indicated that most employees in the public sector are motivated intrinsically, but that there were still employees motivated extrinsically (Weske & Schott, 2016). This means that employers should not find one motivator to fit all their employees. Having different types of motivators for each group of employees might be difficult if there is a large number of employees, as the larger the group of employees, the more motivators might be required (Weske & Schott, 2016).

Employees of different skills levels are influenced differently by rewards and in addition to this, it was found that employees who are less skilled are more motivated by job security, recognition, training and financial incentives, whereas higher-skilled employees receive more motivation from financial incentives (Arnolds *et al.*, 2010; Brown & Bimrose, 2018; Van Zyl, 2015).

A few studies indicated that lower-skilled employees ranked financial incentives, which are given above their normal salaries, as one of the most important motivators (Arnolds *et al.*, 2010; Brown & Bimrose, 2018; Van Zyl, 2015).

In studies among South African employees, it was found that having a combination of monetary and non-monetary incentives was more beneficial to increasing lower-skilled employees' overall motivation (Arnolds *et al.*, 2010; Van Zyl, 2015). The higher-skilled employees were very motivated by monetary incentives (Arnolds *et al.*, 2010; Van Zyl, 2015).

A study by Harunavamwe and Kanengoni (2013) found that lower-skilled employees should rather receive non-monetary rewards to show the organisation's appreciation towards the employee and that monetary rewards should be linked to compensation to have the biggest impact on employees' motivation (Harunavamwe & Kanengoni, 2013).

2.4.4 Motivation and its influence on productivity

According to Nwannebuife (2017), organisations that do not have motivated employees have lower levels of productivity and effectiveness is negatively influenced. When employees feel their desires will not be met, they become less motivated and therefore less productive (Nwannebuife, 2017).

Most organisations make use of incentives to motivate their workforce to be more productive. Nwannebuife (2017) compared results of previous studies that indicated that productivity issues are invisible in all sectors of work, from the private to the public sector. It is also stated that productivity can be positively influenced by motivating a workforce by using incentives, whether financial or non-financial (Ezulike, 2001; Iheriohanma, 2006; Mbogu, 2001; Tongo, 2005).

Intrinsic or extrinsic motivation does have an effect on organisational productivity and performance. Having either intrinsic or extrinsic motivation will influence the overall

productivity, but having a combination of intrinsic and extrinsic is shown to have the biggest influence on employee productivity (Nwannebuife, 2017).

2.4.5 The motivation of mining employees

The reason why incentives have bigger effects on employees on lower levels can be because responsibilities are measurable and concrete; the higher up you go in an organisation, the less measurable responsibilities become against production and performance (Perry *et al.*, 2009; Van Zyl, 2015).

A production bonus is incentives employees receive in recognition of their efforts to achieve a certain goal. It is reported by several authors that there is a positive link between performance and performance bonuses (Arnolds *et al.*, 2010; Bloom & Michel, 2002; Thurkow *et al.*, 2000; Van Zyl, 2015) and a reduction in absenteeism (Arnolds *et al.*, 2010; Brown *et al.*, 1999; Van Zyl, 2015).

As stated above, all employees are motivated by monetary/financial incentives and it is effective, but for some employees, it is more effective than others (Arnolds *et al.*, 2010; Van Zyl, 2015).

A study of four large mining operations in Ghana by Kuranchie-Mensah and Amponsah-Tawiah (2016) indicated that employees who were satisfied with their monthly salaries had a higher level of motivation than employees who were not satisfied. The study also indicated that intrinsic motivation had a significant influence on employees' motivation and that employees appreciated the intrinsic factors more, which increased their motivation and their overall performance (Kuranchie-Mensah & Amponsah-Tawiah, 2016).

2.5 Previous studies

Examining the most recent studies that are similar to this study and their results gave an idea of what to expect from this study. In each of the previous studies looked it there are different aspects that can be compared to this study. The previous studies included the following:

- How motivation and performance are influenced by feedback, which is a form of intrinsic motivation (Sono, 2014)

- How intrinsic and extrinsic incentives influence performance when used together (Cerasoli *et al.*, 2014)
- How productivity and motivation are influenced by incentives at a commercial bank (Ahammad *et al.*, 2015)
- The influence financial incentives have on performance (Garbers & Konradt, 2014)
- Financial incentives and the effect on motivation, performance, job satisfaction and turnover (Ahmad *et al.*, 2019).

Sono (2014) conducted a study on the influence of feedback, empowerment and motivation on performance at a steel production company. The results regarding the relationship between motivation and performance were significantly positive. In this study, feedback was used as the motivator and the results indicated that employees who received feedback had increased their performance when compared to employees who did not receive feedback. Feedback is a non-monetary incentive used to motivate (Sono, 2014). The findings of this study were also consistent with that of studies conducted by Anderson *et al.* (2009), Drake *et al.* (2007) and Tuuli and Rowlinson (2010). When comparing the results of the current study, it can be concluded that bonuses can be used to increase motivation and productivity, which is discussed in more detail in chapters 4 and 5.

Cerasoli *et al.* (2014) performed a 40-year meta-analysis on how intrinsic and extrinsic incentives jointly predict performance. They compared the results of studies spanning 40 years on the relationship between incentives and performance. In their review, they concluded that incentives (extrinsic) together with intrinsic motivation have a significant impact on performance. They also concluded that intrinsic motivation has a stronger relationship with performance regardless of extrinsic incentives being present (Cerasoli *et al.*, 2014).

Ahammad *et al.* (2015) conducted a study on the impact of incentives on productivity and motivation in commercial Banks. For their study, the Banks gave a quarterly bonus based on the performance in the fourth quarter. Their results showed that the fourth-quarter performance was significantly higher than the other quarters, even though the overall performance for the year was not influenced. This indicated that employees could possibly have held work back in the third quarter to increase their performance

for the fourth quarter. The overall conclusion from their study was that incentive schemes can be implemented to influence the motivation and performance of employees, but it might be different between high- to medium-skilled employees and lower-skilled employees. High-skilled employees took the most advantage of the performance bonus incentive in this study (Ahammad *et al.*, 2015). In this study it was proven that higher-skilled employees benefit more from bonuses, they are more motivated to work harder if rewards are low and they understand the targets they have to reach better. This is discussed in more detail in chapters 4 and 5.

Garbers and Konradt (2014) tested the effect of financial incentives on performance. They compared the effect of individual-based and team-based incentives on overall performance and motivation. The results of this study indicated that team-based rewards were more effective than individual-based rewards. This was due to higher individual motivation and lower motivation losses when the rewards were equal among team members (Garbers & Konradt, 2014). The results of this study proved that employees can be motivated by bonuses, and this is discussed in more detail in chapters 4 and 5.

Ahmad *et al.* (2019) conducted a study to measure the effect of financial incentives on employee performance, job satisfaction, motivation and employee turnover. Their results indicated that there is a strong positive relationship between financial incentives and employee performance as well as motivation and job satisfaction. They found that employee turnover rates are negatively impacted by financial incentives, indicating that employees will likely stay at their current job if they are financially rewarded (Ahmad *et al*., 2019). In this study it was proven that rewards contribute towards employee happiness, productivity and motivation are positively influenced by rewards and demotivation decrease with rewards.

2.6 Summary

In conclusion, due to the high production cost of the mining industry, it is important to work as productively as possible to increase the overall profit of a mining company (Griffith, 2017; Minerals Council South Africa, 2019; Rupprecht, 2017). As most platinum mining organisations are labour-intensive, it is important to ensure that employees are working as productively as possible (Hanaysha, 2016; Rupprecht, 2017). Having more productive employees has a few benefits, including increased

profits and competitiveness in the market (Parham, 2014). Two measures of employee productivity are employee absenteeism (Bankert *et al.*, 2015) and the number of outputs produced per the number of inputs used (Hossain *et al.*, 2018).

Incentives are the most common method to motivate employees to work more productively (Garbers & Konradt, 2014; Park & Kruse, 2014). Motivating employees is important if an organisation wants to increase its productivity, as employees not feeling motivated will lead to poorer performance, increased absenteeism, higher turnover rates and even increased costs (Falola *et al.*, 2014; Nwannebuife, 2017).

From literature it is evident that the use of intrinsic motivators will have a positive effect on employee performance (Sono, 2014), the use of extrinsic motivators together with intrinsic motivators is most effective (Cerasoli *et al.*, 2014), the use of incentives to increase productivity and employee motivation is possible (Ahammad *et al.*, 2015) and the use of equally distributed financial incentives based on a team's performance to increase productivity and motivations is more beneficial than individual performance being used (Garbers & Konradt, 2014).

There is more than enough evidence in the literature that employees can be motivated to increase their productivity. Even though the effect on how employees are motivated by incentives is not completely clear, they are all motivated if the incentive is applied correctly (Woods & West, 2015:122–134).

Literature suggests that a financial incentive, such as a performance bonus, has advantages and that most employees will be motivated and productivity would increase – for some employees it will just be more than for others (Arnolds *et al.*, 2010; Itri *et al.*, 2019; Van Zyl, 2015).

In Chapter 3, the research design, population and sample, research instrument, statistical data analysis and ethical considerations are discussed.

Chapter 3: Empirical study

3.1 Introduction

The purpose of this study was to determine whether the productivity of employees in different wage categories is affected differently by production bonuses. The literature review indicated that employee productivity might be different for lower-skilled employees. It was also concluded that different rewards, or motivators, might influence lower-skilled employees more than higher-skilled employees. The empirical study presented in this chapter focuses on the different incentives that might be used to increase the productivity of employees as well as the influence an incentive will have on their productivity.

3.2 Research design

The process followed in this research was as follows:

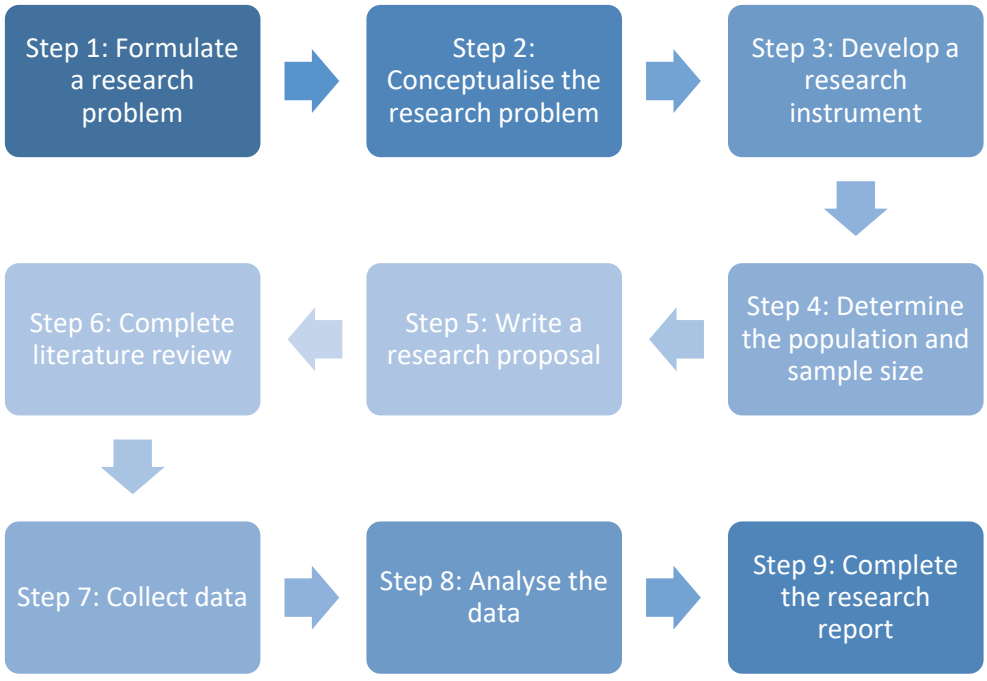

Figure 3-1: Research process followed (adapted from Kumar, 2019)

3.2.1 Research approach

Before the research approached was finalised, quantitative and qualitative research methods were compared to determine which would be best suited for this study. The table below shows a comparison between the two research methods used to determine which would be the most advantageous for this study.

Table 3-1: Comparison between qualitative and quantitative results (adapted from Surbhi, 2018):

Component for comparison	Qualitative	Quantitative
Meaning	Determine the way respondents think and feel	Generate numbers from data and use statistical tools to determine a result
Approach	Holistic	Objective
Research type	Exploratory	Conclusive
Sampling	Purposive	Random
Data	Verbal	Numerical
Hypothesis	Generated from results	Tested with data

Based on the information shown in the table above it was decided to use a quantitative research method due to the objective of this study being to determine whether the hypothesis was true or false.

In the quantitative research method, numbers and measurements, and not words, are used to get to a solution (Bryman & Bell, 2014:51; Surendran, 2019). This study compared numbers in a statistical manner to get a solution. This research was done from the researcher's viewpoint and not from the respondents' viewpoints, which is also associated with a quantitative method of research (Bryman & Bell, 2014:51; Nardi, 2018:21–22).

Theory and research have a deductive relationship in the quantitative research method (Bryman & Bell, 2014:31). Deductive theory moved from theory to data and a hypothesis was tested (see Bryman & Bell, 2014:9; Nardi, 2018:22). A quantitative research method has the following features that applied to this study and influenced the researcher to choose this method: Quantitative research allows for the testing of a hypothesis, meaning testing something that is known, for example, that bonuses

influence people (Bryman & Bell, 2014:31; McCusker & Gunaydin, 2015). The researcher can also remain objective and is separated from the respondents, as the questionnaire is from a respondent's perspective and there is little to no interaction between the researcher and the respondent (Bryman & Bell, 2014:51; McCusker & Gunaydin, 2015).

Some characteristics of quantitative research highlighted by Surendran (2019) include a structured tool being used to gather data. This research usually has a significant sample size, questions are mostly closed-ended and the results can be generalised to the entire population due to the large sample numbers (Surendran, 2019).

For this study, a cross-sectional design was chosen. The reason for choosing a cross-sectional design was that all the data were obtained simultaneously. Using a cross-sectional design assists with determining the relationship between the variables (Bryman & Bell, 2014:106; Surendran, 2019).

The questionnaires were only filled in once by the respondents to obtain their perspective on the matter. The historical data, which included monthly bonus percentages, monthly production data and employee absenteeism data, were obtained for a period of 24 months.

3.2.2 Research objective, question, and hypothesis

As stated in Chapter 1, the primary objective of this study was to determine whether the productivity of employees in different wage categories is influenced differently by production bonuses. The research question was: Is the relationship between the productivity of an employee and the production bonus received different for different wage categories?

It was expected that employees in different wage categories are motivated by different incentives and that their productivity would be influenced by the incentives they receive.

3.3 Population and sample of the study

The population targeted in this study was employees of a mining company situated in the North West province of South Africa. The targeted employees were working for the production section of the mine, which excluded the employees working at the shafts.

As all the employees worked for one organisation and had relatively the same working conditions, the population was seen as relatively homogeneous (see Bryman & Bell, 2014:177). In Table 3.2 below the total employees for the production side of the mining company is shown per wage category.

Table 3-2: Number of employees per section and per wage category

Section	Wage category				
	A-level	B-level	C-level	D-level	Total
Concentrator	41	114	68	9	232
Smelter	28	197	52	6	283
Transport	129	275	57	4	465
General and laboratory	16	70	67	17	170
Total	214	656	244	36	1 150

The total population included all 1 150 processing employees. There were 979 male and 171 female employees in the population of 1 150, which means that only 14.9% of the population was female, and therefore fewer respondents were female. It was expected that the wage distribution of respondents should look similar to that of the population to ensure that the whole population was represented. In Figure 3.2 below the expected wage distribution is displayed.

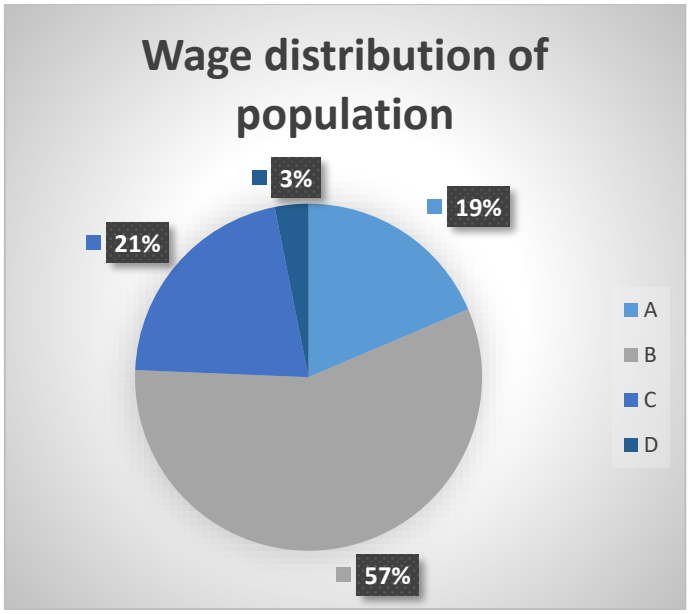

Figure 3-2: Expected wage distribution of population

Out of this population a representative sample of employees, using a convenience sampling method, was chosen to complete a questionnaire on their perspective of how a bonus influences their productivity. They were distributed evenly over the four sections and the four wage categories to ensure that the results were as representative as possible of the processing section. These results were used to determine whether the employee perspectives correlate with the historical production data.

The questionnaire measured how employees are motivated, for example through financial incentives or tangible incentives. It also measured whether employees in different wage categories were motivated differently through different incentives. The final measurement by the questionnaire was whether employees would increase their productivity if they felt more motivated.

The historical data included two years' worth of bonus data, total production data and employee absenteeism data. The data were collected for the same sections as mentioned above. The bonus and production data were taken from the company's production reports. The absenteeism of employees' data was collected from the Human Resource Department, where the total number of days employees were absent per wage category was used to determine productivity. Days at work can be calculated from the total expected working days if all employees were at work, subtracting the number of days on leave. All the bonus, production and employee data were obtained on a per-month basis and for a period of two years, which resulted in 24 data points for each wage category.

The sample size was determined to be 297 employees in total based on the Yamane (1967) formula, using a confidence level of 95% and a population size of 1 150.

The calculation was done as follows:

$$n = \frac{N}{1 + N(e)^2}$$

$$n = \frac{1150}{1 + 1150(0.05)^2}$$

$$n = 297\ employees$$

This accounts for 25.8% of the population, the expected distribution of the sample looks as follows:

Table 3-3: Expected wage distribution of the sample

	Wage category				
	A-Level	**B-Level**	**C-Level**	**D-Level**	**Total**
Population	214	656	244	36	1 150
Sample	55	169	63	10	297

As mentioned, the population was homogeneous and therefore a large sample size was not required, as it is almost impossible to sample the entire population, and using a representative sample can decrease the sample size (Bryman & Bell, 2014:177; Maree, 2009:179–180).

The sample size was a total of 297 employees. The total population for the historical data was used, which resulted in 24 data points.

3.4 Research instrument

3.4.1 Questionnaire data collection

A self-completion questionnaire was used to determine the perspective of the employees. The advantage of using a self-completion questionnaire is that it is less costly than conducting interviews with large sample sizes, the administration is easier than with interviews, using an interviewer can affect the outcome of the interview results, which is not the case with self-completion questionnaires, and it is more convenient for the respondents (Brace, 2018:30; Bryman & Bell, 2014:192). The disadvantages of using self-completion questionnaires are that respondents do not get assistance when completing the questionnaire, respondents cannot elaborate on their answers, it is unknown whether the respondents completed the questionnaire or asked someone else to complete it on their behalf, the researcher cannot ask too many questions, it could be difficult to answer if the respondents' literacy is limited, non-response rates play a factor in the study and unusable questionnaires are more likely (Brace, 2018:31; Bryman & Bell, 2014:192–194).

The self-completion questionnaires contained closed-ended statements, using a Likert scale to determine how employees felt regarding production bonuses and to determine whether a production bonus would influence their productivity.

The questionnaire asked the respondents in Section 1 about their gender, their location, their wage level, their years of service and their age. Section 2 was based on a rating given by the respondents regarding the incentives that would motivate them the most, and the questions in Section 3 focused on the employees' productivity and whether it would be influenced by rewards. The respondents had to state whether they strongly agreed, agreed, were undecided, disagreed or strongly disagreed with each statement. The questions in Section 3 were all linked to productivity, but can be divided into three main categories: productivity, motivation and other indicators. The questionnaire is attached in Appendix A.

3.4.2 Historical data collection

The historical data were collected in tabulated monthly totals. To determine the productivity of each location, the total production for each location was used as well as the number of days employees were at work. The production information was a total value for the month of the final product produced by the processing section.

3.4.3 Data gathering

The self-completion questionnaire was handed out manually. Each section has different departments with employees in each wage category. At the monthly meeting at each section, a quarter of the employees are expected to be present and the questionnaires were handed out at these meetings at each section.

With historical data, the authenticity of the data should always be kept in mind, hence using information from a source that can be trusted is of utmost importance (Hancock & Algozzine, 2006:53–54; Simmons, 2017). The historical data were retrieved from the Human Resource Department, where they drew the employee information from SAP, the Accounting Department provided the production data from their metal accounting balances and the Financial Department provided the percentage of each production target achieved from SAP.

3.5 Statistical data analysis

To determine whether the objective of this study was reached, the raw data collected with the questionnaire needed to be statistically analysed. All questionnaires were screened and questionnaires of which the demographic section was incomplete were discarded. After the screening process, 275 completed questionnaires were used to complete the statistical analysis. The statistical analysis of the questionnaire data was completed by the Statistical Consultation Services of North-West University. Advanced statistical analysis was done, and the following factors were obtained: productivity, motivation, willingness to do work, section productivity, demotivation and clear targets. The total variance and rotation sums of squared loadings of the six factors are shown in Table 3.4 below and are discussed in more detail in Chapter 4.

Table 3-4: Factor analysis total variance and the rotation sums of squared loadings

Component	Initial eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings[a]
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total
1	4.421	26.006	26.006	4.421	26.006	26.006	3.114
2	1.919	11.286	37.293	1.919	11.286	37.293	1.564
3	1.529	8.994	46.286	1.529	8.994	46.286	2.717
4	1.151	6.768	53.055	1.151	6.768	53.055	1.354
5	1.070	6.297	59.351	1.070	6.297	59.351	2.987
6	1.022	6.013	65.364	1.022	6.013	65.364	1.561
Extraction method: principal component analysis							
a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.							

3.5.1 Frequency and descriptive statistical analysis

Frequency and descriptive statistical analyses were performed on the raw data. The frequency table indicated how many times a certain level of agreement was chosen for each question. Frequency tables can indicate trends within data sets very easily and effectively. They also create the possibility of each visualisation of the data set assisting the researcher to come to a conclusion quickly (Collins, 2018).

The descriptive statistical analysis included determining the means and standard deviations of the data. The reason descriptive statistical analysis is done is to create a basis for comparison of the data (Collins, 2018).

3.5.2 Reliability and validity

The reliability and validity tests were done on the questionnaire data and the results indicated that the questionnaire was reliable and valid. The Cronbach's alpha was calculated, resulting in a 0.766 value. A Cronbach's alpha of between 0.65 and 0.80 is assumed to be adequate for research based on human dimensions (Green *et al.*, 1977; Spector, 1992; Vaske *et al.*, 2017).

For each individual question and for the factors as identified in the exploratory factor analysis, the Cronbach's alphas were calculated. These are shown in tables 3.5 and 3.6 below.

Table 3-5: Cronbach's alpha for individual questions

Question number	Cronbach's alpha
Q1	0.742
Q2	0.748
Q3	0.744
Q4	0.749
Q5	0.731
Q6	0.756
Q7	0.748
Q8	0.752
Q9	0.781
Q10	0.770
Q11	0.746
Q12	0.736
Q13	0.773
Q14	0.784
Q15	0.766
Q16	0.764
Q17	0.728

All the individual questions had Cronbach's alphas above 0.7. Therefore, the individual questions can be seen as internally consistent for this study.

Table 3-6: The Cronbach's alpha for each factor

Factor	Cronbach's alpha
Productivity	0.698
Motivation	0.414
Willingness to do work	0.725
Section productivity	0.784
Demotivation	0.698
Clear targets	0.538

Two of the six factors had lower Cronbach's alphas than 0.65, indicating that these factors had lower reliability.

3.5.3 Effect sizes

Effect sizes are used to indicate the practical significance of differences in means (Ellis & Steyn, 2003; Pek & Flora, 2018). For this study, the effect sizes between gender, wage category and location indicated significant differences between some of the groups. According to Cohen (1988), the effect size can be interpreted as shown in Table 3.7.

Table 3-7: Effect sizes (adapted from Cohen, 1998; Ellis & Steyn, 2003; Pek & Flora, 2018)

Effect size	Effect value
Small effect (hardly noticeable)	≥ 0.2
Medium effect (noticeable)	≥ 0.5
Large effect (significant)	≥ 0.8

The effect size based on gender was 0.52, indicating a medium effect. This was done using the t-test method. To determine the effect size based on the wage category, an ANOVA test was conducted. The effect sizes are shown in Table 3.8.

Table 3-8: Effect sizes between wage levels

Wage level	A-level	B-level	C-level
A-level			
B-level	0.22		
C-level	0.64	0.38	
D-level	1.17	0.82	0.47

From this table it can be seen that between the lower level and the level directly above it, there is a small effect, indicated in green; when the level is two levels above, there is a medium effect, indicated in orange; and when the level is three levels above, the effect is large, indicated in blue. This indicates that the difference between similar groups is small, but the higher the wage category, the larger the difference becomes between the lower categories.

To determine the effect size based on the location of work, an ANOVA test was conducted. The effect sizes are displayed in Table 3.9.

Table 3-9: Effect sizes between locations

Location	Concentrator	Smelter	Transport
Concentrator			
Smelter	0.02		
Transport	0.41	0.43	
General and Laboratory	0.29	0.34	0.80

From the table, it can be seen that the largest effects were between the Transport and General and Laboratory sections. Even though the effect sizes between Transport and the Concentrator and Smelter sections were medium, they were larger than the other combinations. This indicates that the Transport section might have had different opinions from the other three sections.

The results from the effect sizes indicated that there were differences between the different wage categories and between the locations of work. This is similar to the results obtained by Ahammad *et al.* (2015), where it was concluded that there is a difference between higher-skilled and lower-skilled employees and the motivation they receive from rewards. The effect sizes indicated that as the wage levels become further removed from each other, the larger the effect, meaning the lowest-level

employees and the highest-level employees had different perceptions. This is a good indication as to the main purpose of this study to determine whether there are differences between the different wage categories when looking at productivity and incentives. These differences are discussed in Chapter 4, where the results from the questionnaire are discussed.

3.6 Ethical considerations

According to Bell *et al.* (2018), the ethical principles that need to be considered when completing research can be categorised into four categories. The categories are harm to participants, lack of informed consent, invasion of privacy and whether deception is involved (Bell *et al.*, 2018). This study did not harm the respondents, it did not invade their privacy and there was no deception involved. Attached to the questionnaire was an informed consent form to ensure that all respondents knew what the study was about and that they had the option not to complete the questionnaire. These consent forms were taken in separately from the questionnaires to ensure the anonymity of the respondents. The informed consent form can be seen in Appendix A.

3.7 Summary

In this chapter, the research design and approach were discussed, and the motivation of the chosen design and approach was provided. The population for this study was defined and discussed. Reasons for choosing this specific population were provided. Detail regarding the population distribution was given. The sample size was calculated, and the expected distribution of the respondents was described. The research instrument and the data-gathering process were discussed, as were the statistical analysis process and the reliability and validity of the questionnaire. This chapter also included the effect sizes as calculated by the statistical consultant. Lastly, the ethical considerations regarding this study were stated and the process to adhere to ethical standards for this study was considered in this chapter.

Chapter 4 presents the results and a discussion thereof.

Chapter 4: Results and discussion

4.1 Introduction

This chapter presents the results obtained from the questionnaires as well as the historical data that were collected. This included demographic information, the respondents' perspectives regarding the top and lowest rewards to use to motivate employees to work harder as well as their perceptions of how rewards influence their productivity.

The statistical analysis for the study was completed by the Statistical Consultation Services of North-West University. The data were used to populate the figures and tables in this chapter.

As stated in Chapter 3, the sample size was a total of 297, but due to non-responses, only 275 questionnaires were used in the analysis. This resulted in a 93% response rate. The demographics and the distribution of the respondents are discussed in further detail below.

4.2 Demographic information of respondents

The questionnaire asked the respondents a few demographic questions. This was done to ensure that the sample was representative of the whole population.

4.2.1 Gender

As stated in Chapter 3, the population consisted of 14.9% female employees and therefore it was important to measure the number of female respondents to ensure that they were adequately represented in the sample. In Figure 4.1 below it is shown the 17% of the respondents were female. This means that the female representation was adequate.

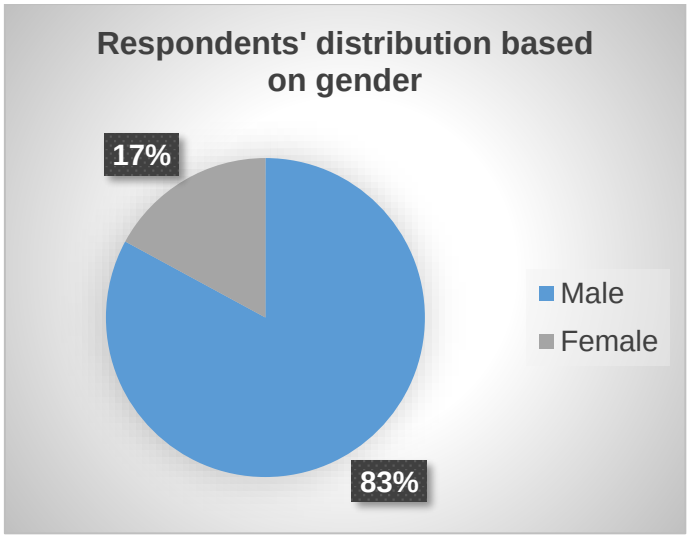

Figure 4-1:Gender distribution

A t-test was done to determine whether there were any differences between the way female and male employees answered the questions. The t-tests, two-tailed, indicated a p-value less than 0.001 with an effect size of 0.52. This means there was a noticeable difference between the way female and male employees answered the questions. It was decided not to investigate where the differences were, as the main focus of the study was on employees in different wage categories. Gender was simply used to determine whether the respondents were representative of the population.

4.2.2 Location

The location of work was asked on the questionnaire to ensure that the four main areas of the processing operations were covered and that the respondents represented the overall population. In Figure 4.2 below the population distribution based on the different locations of work is shown. It was expected that all four locations would be represented in a similar manner in the population distribution.

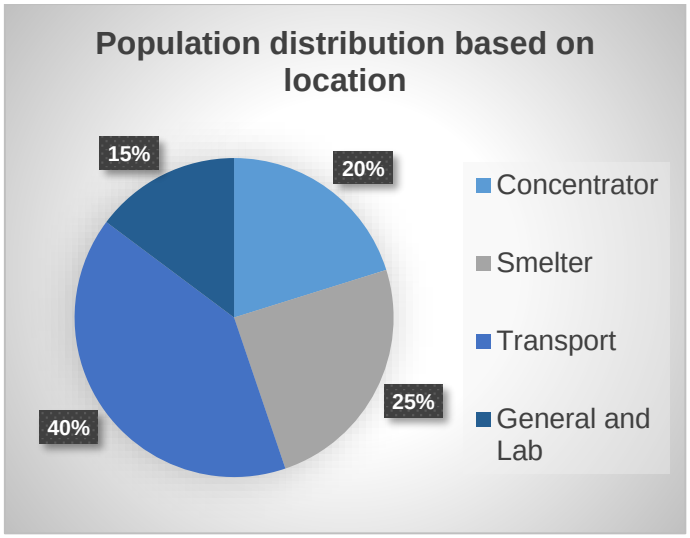

Figure 4-2: Population distribution based on location

In Figure 4.3 the respondents' distribution based on their location of work is shown. It indicates that all four sections were sampled and that the distribution was adequate. As convenience sampling was used, it was expected that some sections would be more represented than others. What makes the sample adequate is the fact that Transport remained the largest and General the smallest percentage.

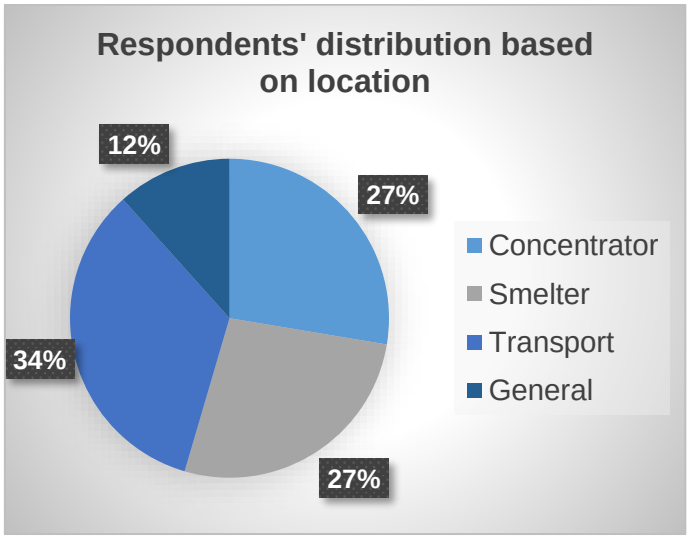

Figure 4-3: Location distribution of respondents

As indicated in Chapter 3, there were differences between the different locations of work and the way the employees answered the questions, these differences will be discussed in Chapter 4. The effect sizes indicated a significant difference between Transport and General and Laboratory at 0.80 as well as a noticeable difference between Transport and Concentrator at 0.41 and Smelter at 0.43. This could be due

to the physical location of the different sections, as the Transport section was a bit removed from the other three sections. Their management offices, as well as the employee areas, were different from the rest. The Concentrator and Smelter sections both had noticeable differences compared to the General and Laboratory section, namely 0.29 and 0.34, respectively. This could be due to the General and Laboratory employees not being located at one place like the Concentrator, Smelter and Transport employees and them moving around more, as they are more of a service department that assists all the sections. The Smelter and Concentrator employees showed no noticeable difference when looking at the effect sizes. This could be due to the fact that these two plants were located right next to each other and the employees interacted daily, as they shared change houses and clocking gates. They also talked more with one another, sharing opinions that could influence the employees in these two sections as they are more in contact with each other.

4.2.3 Wage distribution

As the main purpose was to compare the results from the different wage categories, it was important to ensure that each wage category was represented in the responses. In Figure 4.4, the expected percentage distribution of the different wage categories is shown on the left versus the actual wage category distribution shown on the right. It was expected that the B-level wage category would be the largest group, followed by C-level, A-level and then D-level. In the actual responses, the B-level and C-level were equally represented, followed by the A-level and D-level employees. The reason the actual representation differed from the expected is due to the convenience sampling method that was used.

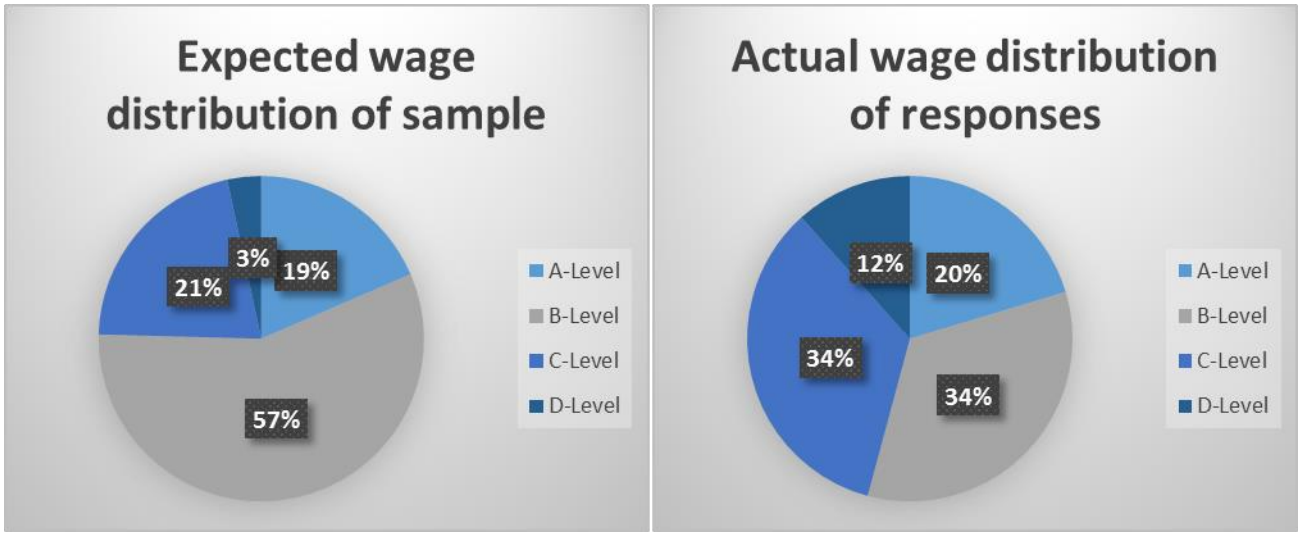

Figure 4-4: Expected versus actual responses in each wage category

What can be concluded from this is that the response rate was adequate and that each wage category was represented fairly in the responses.

4.2.4 Years in service

The years in service were asked of the employees to ensure that the distribution of the respondents included employees with a different range of experience. The majority of the employees were in the 0–5 years and 6–10 years in service categories, but all categories were represented. The representation can be seen in Figure 4.5.

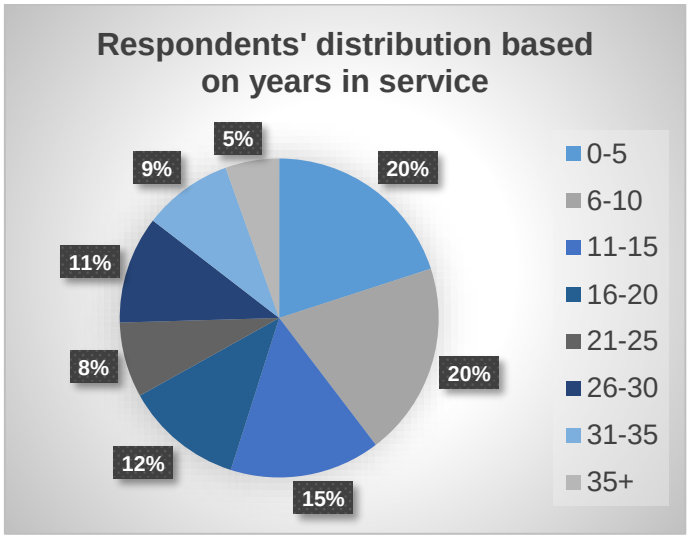

Figure 4-5: Years in-service distribution of respondents

4.2.5 Age

The employee age was asked of the employees to ensure that the distribution of the respondents included employees of all ages. Most employees were in the 35–39 age

range, but all ages were represented. The representation can be seen in Figure 4.6 below.

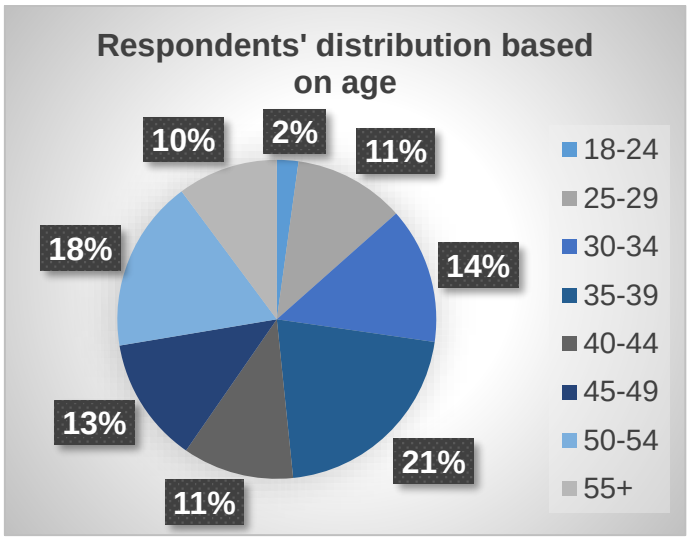

Figure 4-6: Age distribution of respondents

4.3 Results on rewards that motivate

Section 2 of the questionnaire asked the employees what rewards motivated them the most. They were asked to rate it from 1 (highest motivator) to 8 (lowest motivator). All the ratings given by the respondents in the same wage category were taken into consideration to determine the weighted average for each wage category. These averages for each reward and each wage category are shown in Figure 4.7 below. From these averages, it was determined what the overall highest-rated rewards were for each category and what the lowest-rated rewards were for each category.

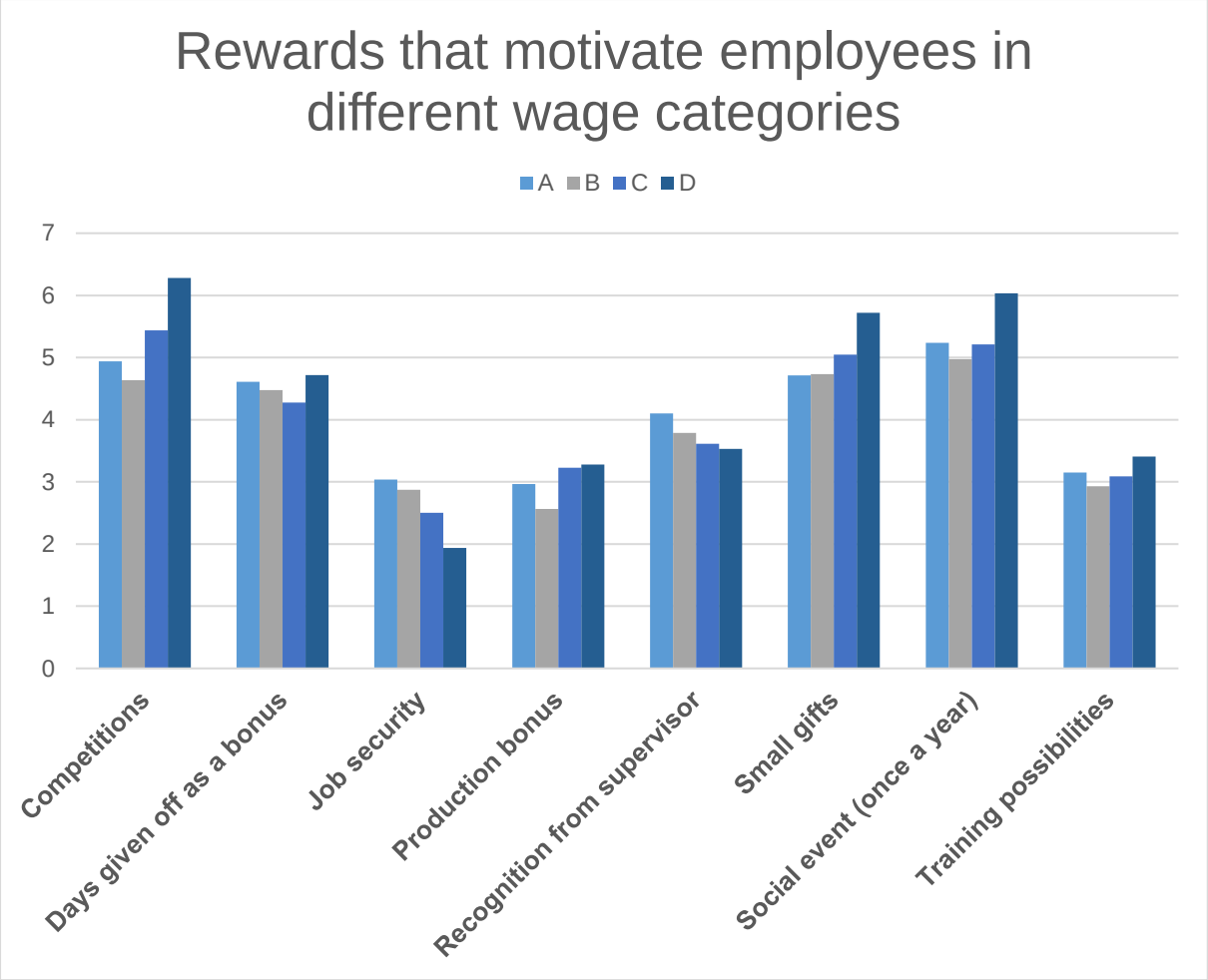

Figure 4-7: Rewards that motivate

From the figure above, it can be seen that overall job security, production bonuses and training possibilities were the rewards that received the lowest scores among all the levels. The A- and B-level employees rated production bonuses as the highest motivator, followed by job security and training possibilities. The C- and D-level employees rated job security as their highest motivator. The C-level employees rated training possibilities as their second-highest motivator, followed by production bonuses. The D-level employees rated production bonuses as their second-highest motivator, followed by training possibilities. The lowest-rated reward for the A- and B-level employees was the social event once a year. The A-level employees' second-lowest-rated reward was competitions, followed by small gifts, and for the B-level employees, it was small gifts followed by competitions. For the C- and D-level employees the lowest-rated motivator was competitions, followed by the social event once a year and small gifts.

4.3.1 Rewards that motivate the most

In Figure 4.8 below the different scores for the three top-rated rewards to use as motivators are shown. In the figure it can also be seen that these ratings were very close together. What was evident was that all four categories had the same three rewards as their highest-rating motivators, it was just the order that differed.

Figure 4-8: Rewards that motivate the most

In Table 4.1 the frequencies at which one of the three, two of the three or all three were chosen by the respondents as one of the top three motivators are shown in a percentage format. The total percentage at the end indicates the number of respondents in each wage category who rated at least one of the three as their top motivator. This means that more than 85% of the respondents rated one of these three as their highest motivator.

Table 4-1: Top three rated rewards and their frequencies:

	1/3	2/3	3/3	Total
A-level	21%	29%	36%	86%
B-level	16%	32%	42%	90%
C-level	14%	30%	41%	85%
D-level	9%	56%	28%	94%

4.3.2 Rewards that motivate the least

In Figure 4.9 below the lowest-rated rewards are shown. In the figure it can be seen that the ratings for the lowest-rated motivators were very close together. The same three rewards were chosen as the lowest motivators by the different wage categories, just in different orders.

Figure 4-9: Rewards that motivate the least:

In Table 4.2 the frequencies at which one of the three, two of the three or all three were chosen by the respondents as one of the three lowest motivators are shown in a percentage format. The total percentage at the end indicates the number of respondents in each wage category who rated at least one of the three as their lowest motivator. This means that more than 62% of the respondents rated one of these three as their lowest motivator.

Table 4-2: Lowest-rated rewards and their frequencies

	1/3	2/3	3/3	Total
A-level	20%	16%	30%	66%
B-level	15%	32%	15%	62%
C-level	16%	28%	26%	69%
D-level	9%	31%	47%	88%

4.3.3 Production bonus as a motivator

As the research question was whether employees are influenced by production bonuses to increase their productivity, the information shown in Figure 4.10 was included just for the production bonus reward as a motivator. As stated in the literature study, if motivation increases, productivity could also increase (Arnolds *et al.*, 2010; Van Zyl, 2015). Therefore, if the respondents indicated that a production bonus is a good motivator, it might increase their productivity. In the figure it can be seen that production bonuses more frequently received lower ratings, indicating that the respondents felt that it is a good motivator.

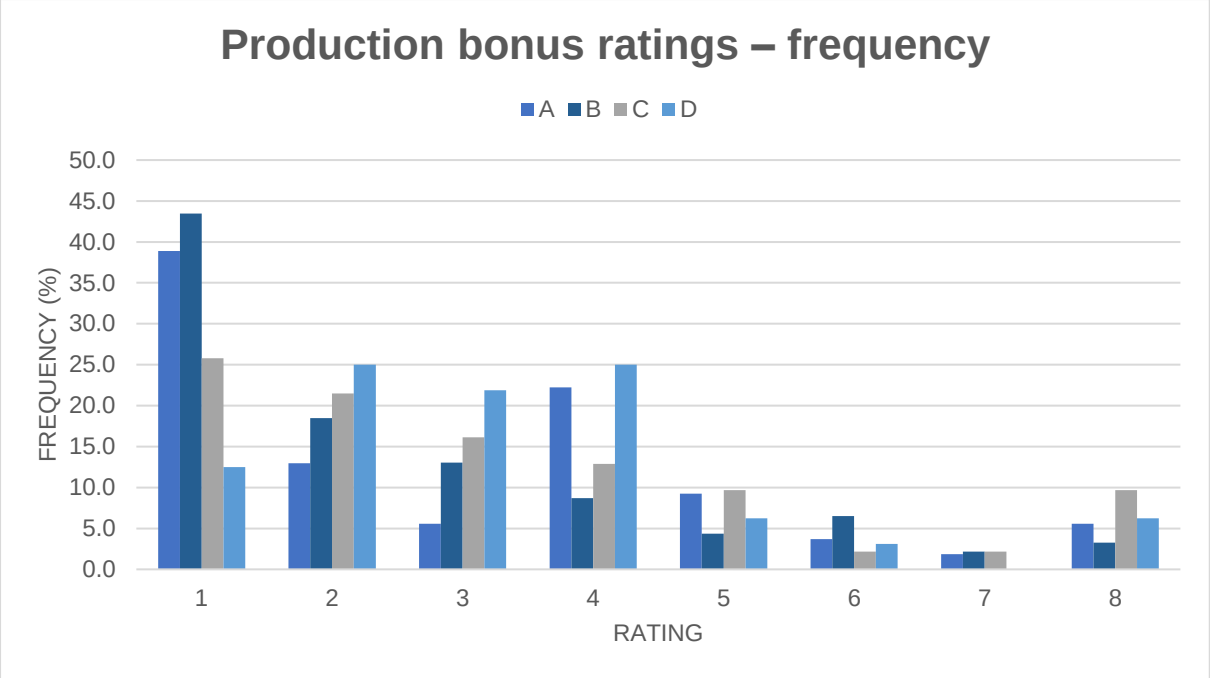

Figure 4-10: Production bonus as a motivator:

4.4 Results on productivity

Exploratory factor analysis was done to determine the categories that are discussed in the section below. The frequencies for each question were then used to determine the difference in perspective in each wage category.

To understand the figures in the section below, it is necessary to know that the level of agreement was given the ratings shown in Table 4.3.

Table 4-3: Level of agreement and the corresponding rating

Level of agreement	Rating
Strongly agree	5
Agree	4
Undecided	3
Disagree	2
Strongly disagree	1

The averages were used to determine the perception of each wage category. Higher averages, above 3, indicated agreement and lower than 3 indicated disagreement.

In the section below, each area is discussed in more detail.

4.4.1 Factor analysis

Exploratory factor analysis was done on the 17 questions in Section C: Productivity. This was done to break the data into smaller sets of variables to determine whether there are significant relationships (see StatisticsSolutions, 2018).

Before the factor analysis was done, the results had to be tested to ensure that factor analysis could be done on the data. The first tests were the Kaiser-Meyer-Olkin (KMO) and Bartlett's tests. The results are shown in Table 4.4, and revealed that the sample size was acceptable (see Statistics How To, 2019).

Table 4-4: KMO and Bartlett's tests

KMO and Bartlett's tests		
KMO measure of sampling adequacy		0.782
Bartlett's test of sphericity	Approx. chi-square	1220.845
	df	136
	Sig.	0.000

The correlation matrix revealed a determinant of 0.009, indicating no multicollinearity, as it was larger than 0.00001 (see Karytsas *et al.*, 2019).

The communality reveals the variance among the data. If the communalities are high enough, it indicates that the variance is acceptable. Table 4.5 shows the communalities for each question. Values between 0.4 and 0.7 are very common and values below 0.4 should be explored further, as it could be that that item is not related to any other items. Only one question had a value below 0.5, while above 0.5 is desirable (Taherdoost *et al.*, 2014).

Table 4-5: Communalities

	Initial	**Extraction**
Q1	1.000	0.754
Q2	1.000	0.697
Q3	1.000	0.746
Q4	1.000	0.720
Q5	1.000	0.646
Q6	1.000	0.621
Q7	1.000	0.474
Q8	1.000	0.523

Q9	1.000	0.676
Q10	1.000	0.657
Q11	1.000	0.623
Q12	1.000	0.658
Q13	1.000	0.642
Q14	1.000	0.684
Q15	1.000	0.698
Q16	1.000	0.611
Q17	1.000	0.681

The factor analysis revealed six factors, as can be seen from the scree plot in Figure 4.11:

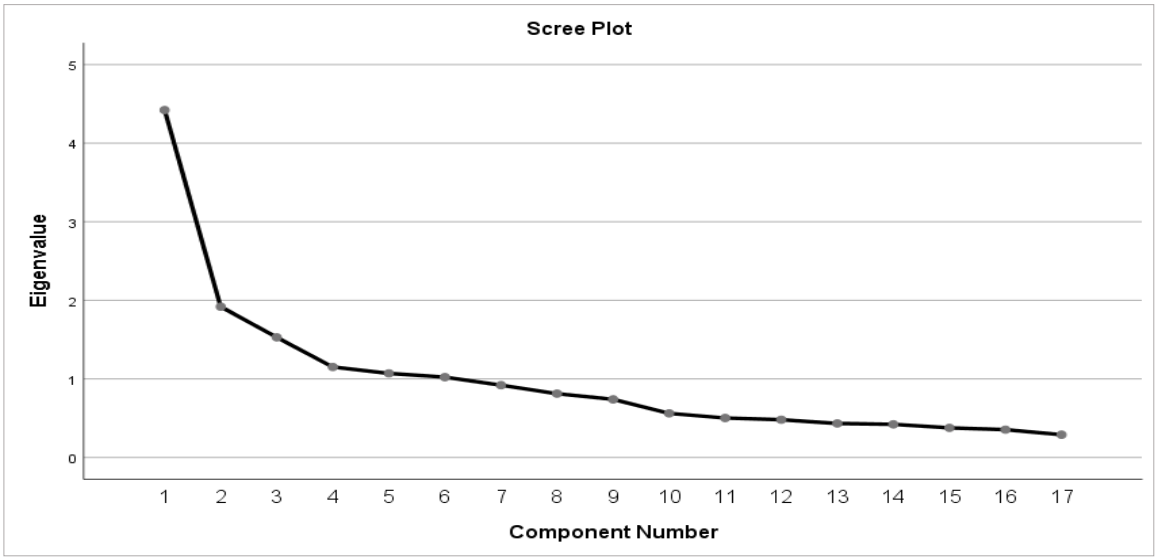

Figure 4-11: Scree plot:

In Table 4.6 below the identified factors are categorised. The correlating items are also shown in the table.

Table 4-6: Factor analysis pattern matrix:

Q	Item	Productivity	Motivation	Willingness to do work	Section productivity	Demotivation	Clear targets
10	Reward	0.373			-0.682		
11	Reward	0.664					
12	Reward	**0.728**					

17	Reward	**0.700**					
9	Work harder		**0.800**				
13	Small rewards	0.326	**0.743**				
3	Leave days			**0.850**			
4	Leave days			**0.849**			
5	Reward			0.496			
6	Do only necessary work	0.346		0.445			0.423
14	Individual contribution				**0.805**		
1	Reward					**-0.830**	
2	Happiness based on reward					**-0.849**	
7	Motivate others					-0.512	
8	Reward					-0.400	0.439
15	Supervisor motivation						**-0.801**
16	Set targets		0.417				-0.531

The loadings larger than 0.7 are indicated in bold to identify which items had large contributions at the different factors. From the factor analysis the following conclusions can be made:

- Rewards make a large contribution to productivity.
- Small rewards and employees willing to work harder are large contributors to employees' motivation.
- Leave days is a large contributor to employees' willingness to work.
- Individual contribution makes a large contribution to the sections' productivity.
- Reward and employee happiness make a large negative contribution to demotivation.
- Supervisor motivation to reach targets make a large contribution to having clear targets.

Below each factor with the frequencies based on the different questions and the different wage categories is discussed, to determine what the differences are between the different wage categories.

4.4.2 Productivity

Figure 4.12 below shows the frequencies based on the different wage categories. All these questions measured whether employees would increase their productivity if they received a reward. From this, it can be seen that higher-level employees disagreed more with the statement that rewards would increase their productivity, whereas lower-level employees agreed more with this statement.

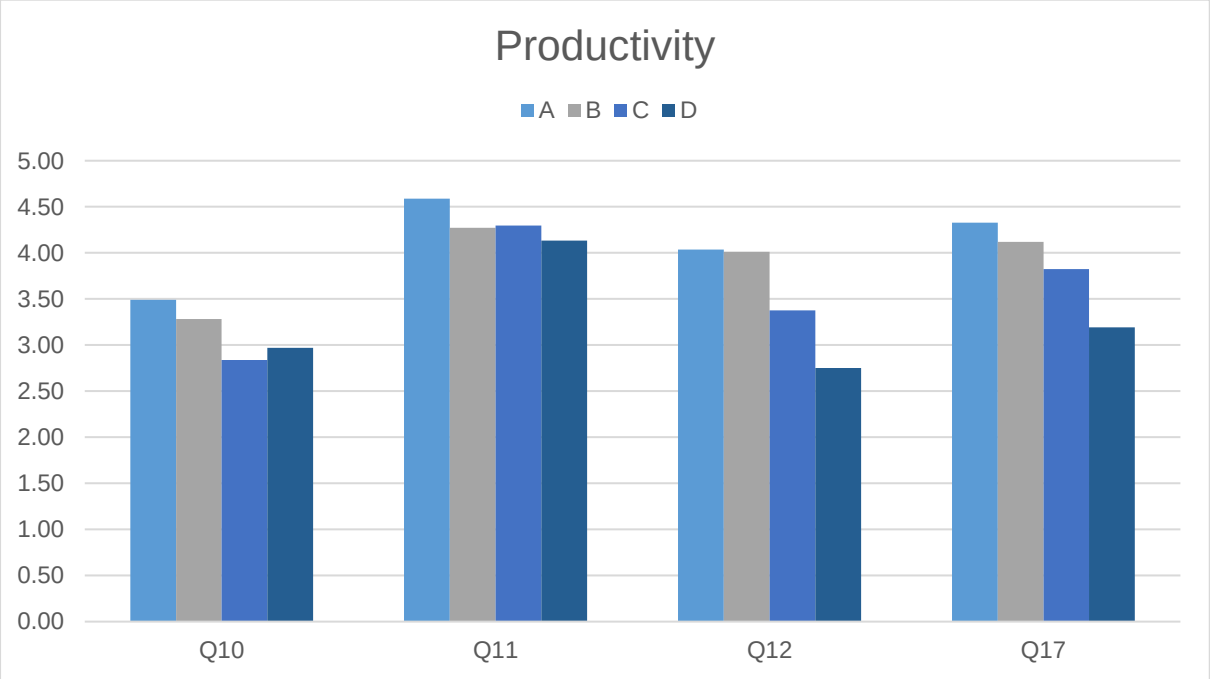

Figure 4-12: Frequency results on productivity:

4.4.3 Motivation

Figure 4.13 shows the frequencies based on the different wage categories. Question 9 asked whether receiving a low reward will motivate employees to work harder, on which the level of agreement increases while wage levels decrease, the lower levels disagreed more with this statement indicating it demotivates them to work hard. The same is seen in Question 13, where employees were asked whether receiving a small reward was better than no reward. The higher-level employees felt that small rewards would increase productivity more than lower-level employees.

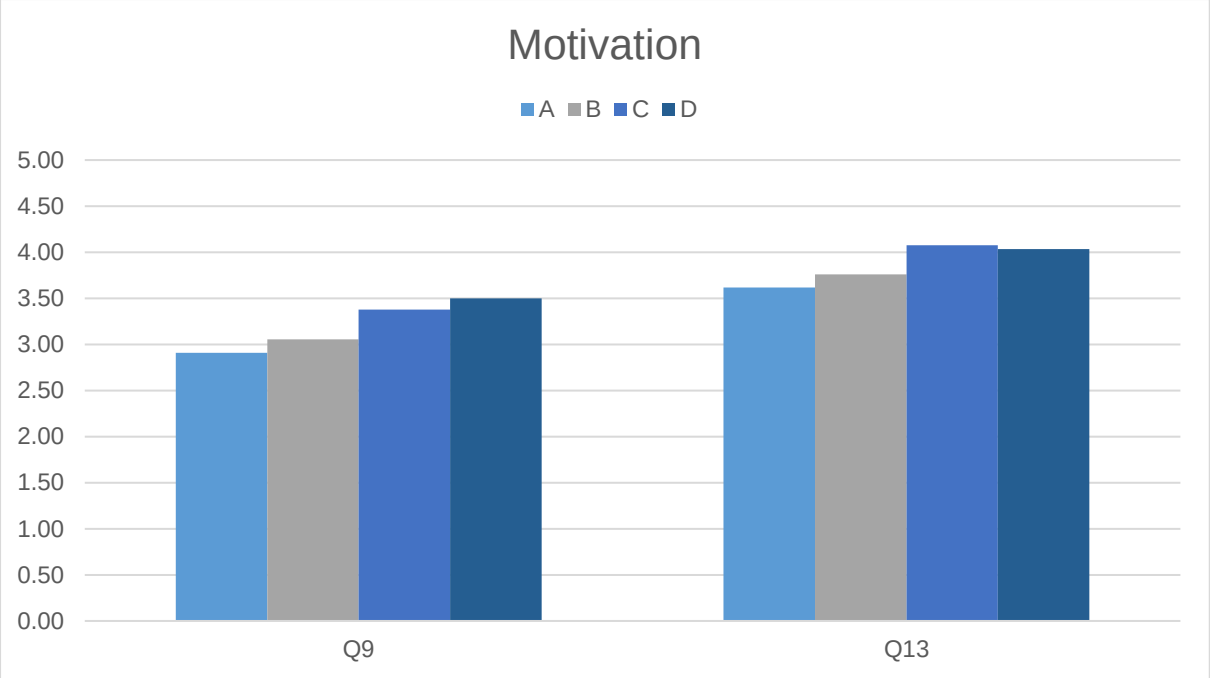

Figure 4-13: Frequency results on motivation

4.4.4 Willingness to do work

Figure 4.14 shows the frequencies based on the different wage categories. These four questions measured the employees' willingness to do their work if they received rewards. Questions 3 and 4 asked whether the number of leave days taken was influenced by rewards and whether higher rewards would lead to less leave being taken. From the figure, it can be seen that lower-level employees agreed more with these statements and the level of agreement decreases as the wage level increases. Questions 5 and 6 asked whether the employees' productivity was influenced by a reward and whether they would only do what is necessary and nothing extra if the reward was low. From the figure, it can be seen that the level of agreement decreases as the wage level increases.

Figure 4-14: Frequency results on willingness to do work

4.4.5 Section productivity

Figure 4.15 shows the frequencies based on the different wage categories. What was evident from this question was that all wage levels disagreed with the statement that their work did not contribute to their section's productivity. This indicates that all employees understood that their work influenced overall productivity.

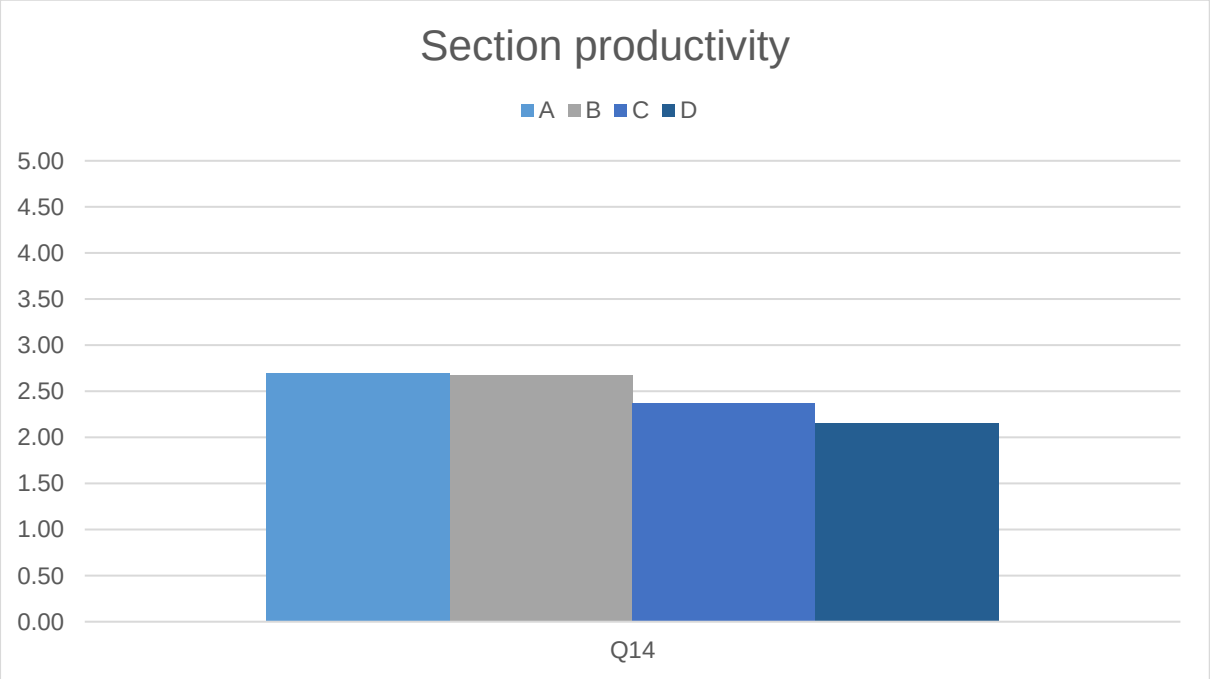

Figure 4-15: Frequency results on section productivity

4.4.6 Demotivation

Figure 4.16 shows the frequencies based on the different wage categories. All employees agreed that rewards contributed to their happiness (Question 2) and that they motivated others to reach targets (Question 7). Question 1 measured whether productivity was influenced by rewards, and lower-levels agreed more. The responses to Question 8 indicated that individuals felt demotivated when they received a low reward, on which the level of agreement decreases as employee wage level increases.

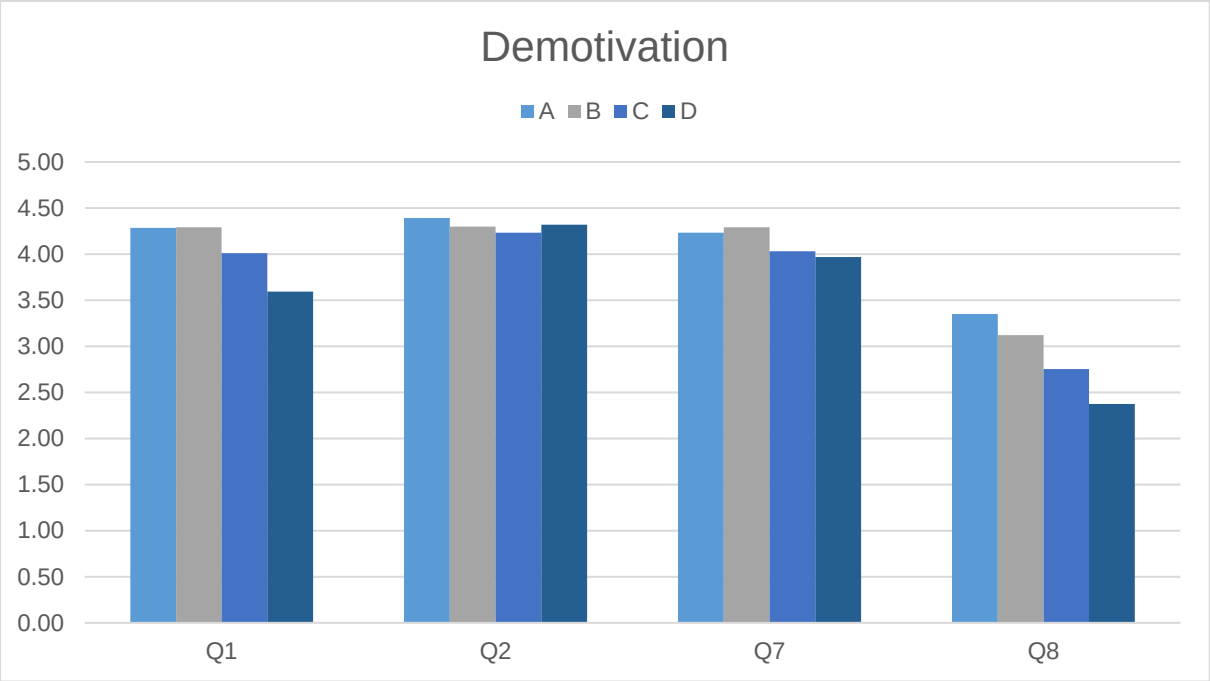

Figure 4-16: Frequency results on demotivation

4.4.7 Clear targets

Figure 4.18 shows the frequencies based on the different wage categories. All employees agreed that they were motivated to achieve their targets (Question 15), but the level of agreement that targets are clearly increased with wage level. This indicates that higher-level employees were more informed of the set targets than lower-level employees.

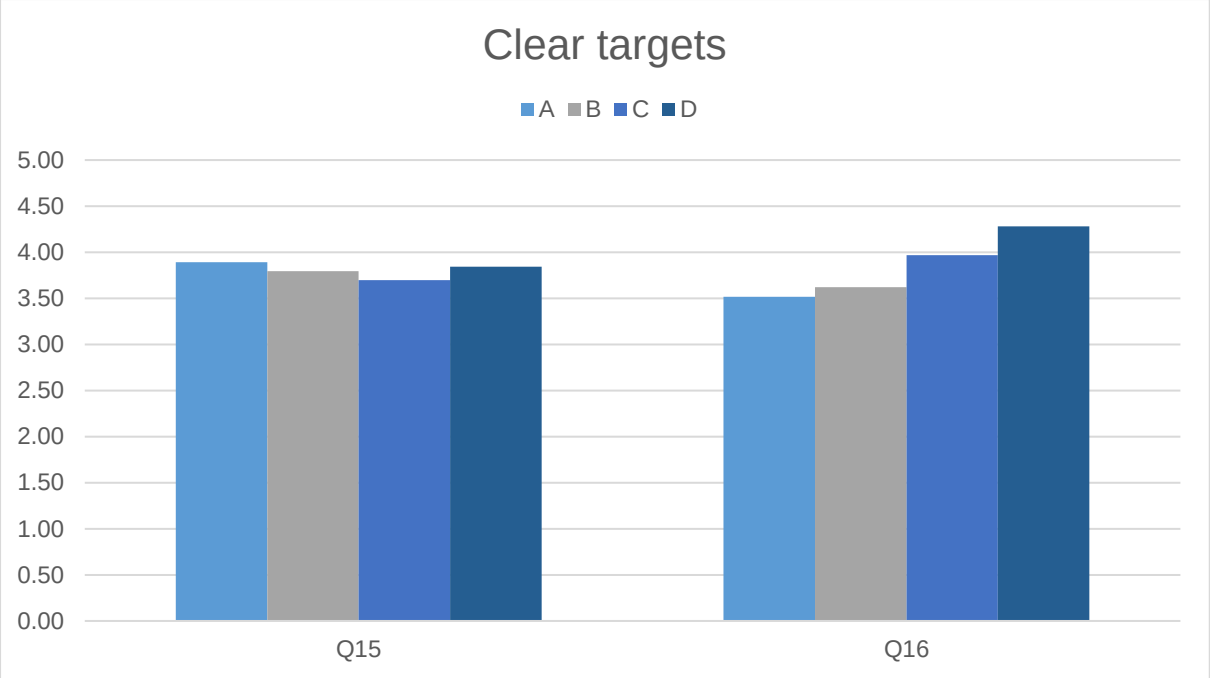

Figure 4-17: Frequency results on clear targets

4.4.8 Historical productivity and bonuses

The historical information was the actual production figures, the total number of leave days taken by each section and the bonuses received by each section. The three sections that were used to determine whether the bonuses received actually influence the productivity of the next month was the Concentrator, Smelter and Transport sections. General and Laboratory are more of a service area and no productivity could be calculated for these employees.

The productivity was calculated by determining the total number of workdays each section had for the month and then comparing these with the previous month's bonus. A trend line was drawn to determine whether a higher bonus received in one month increased the productivity of the next month. This was done for a period of 24 months for the three sections. The three graphs below (figures 4.18–4.20) indicate the trends.

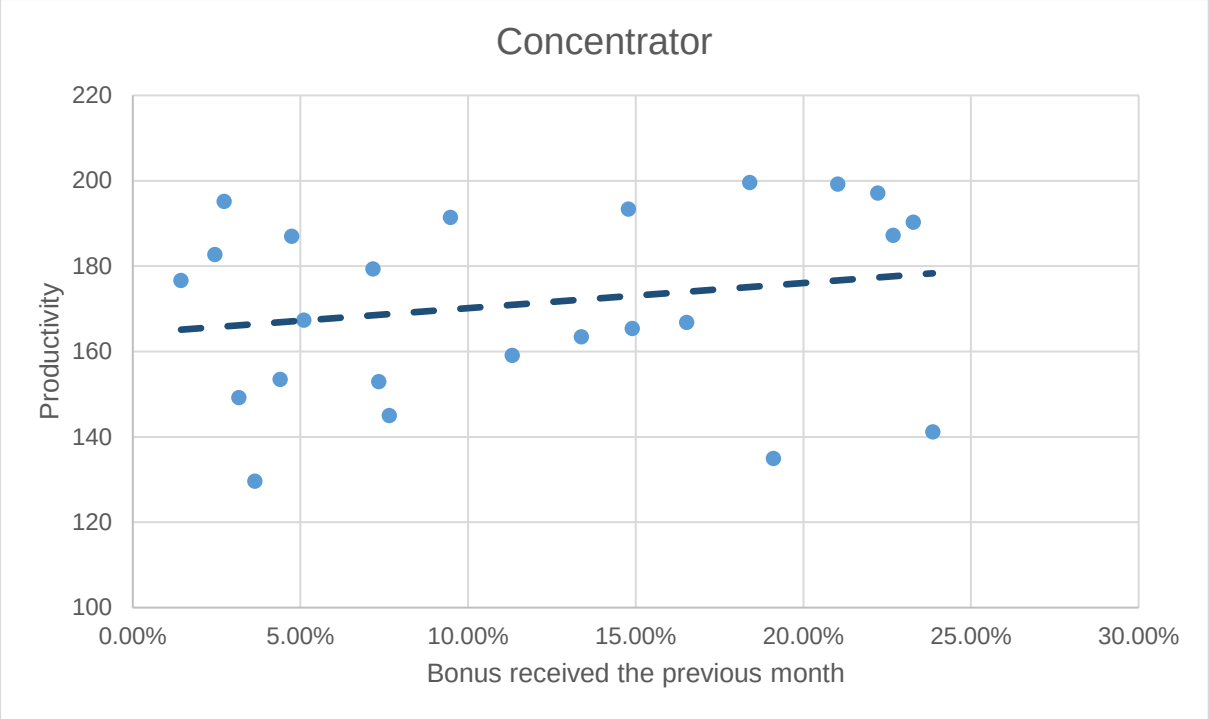

Figure 4-18: Concentrator productivity vs. previous month's bonus

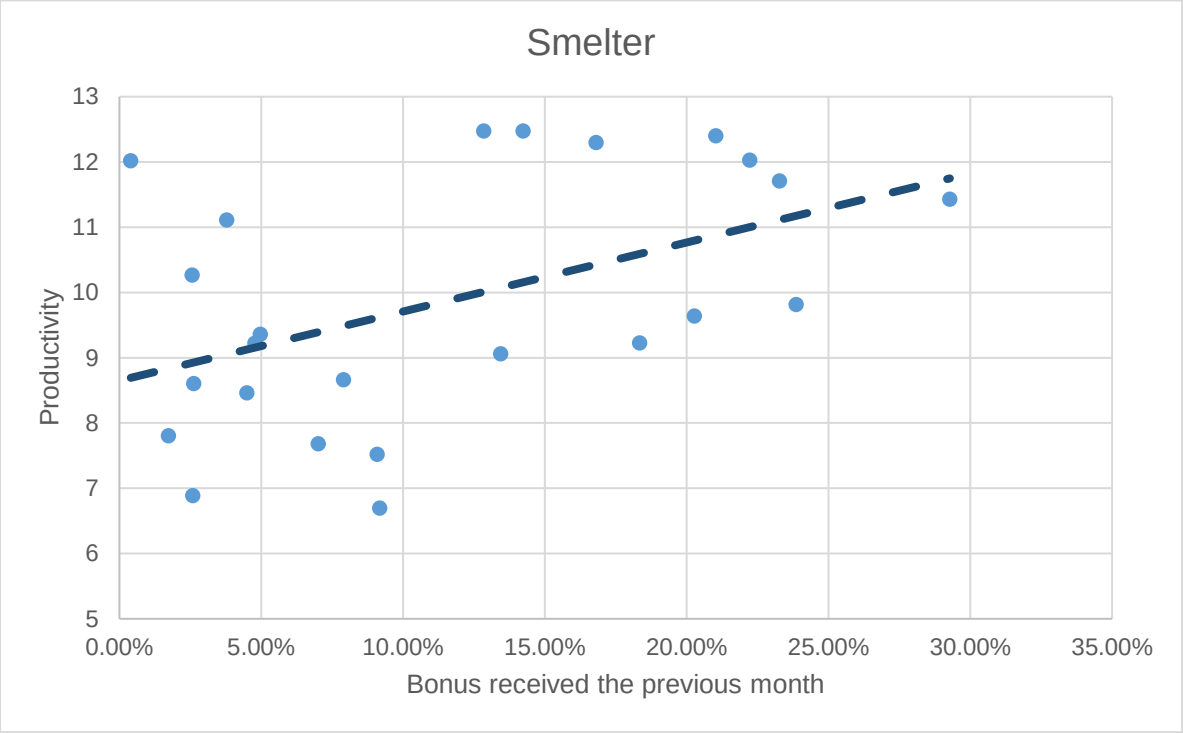

Figure 4-19: Smelter productivity vs. previous month's bonus

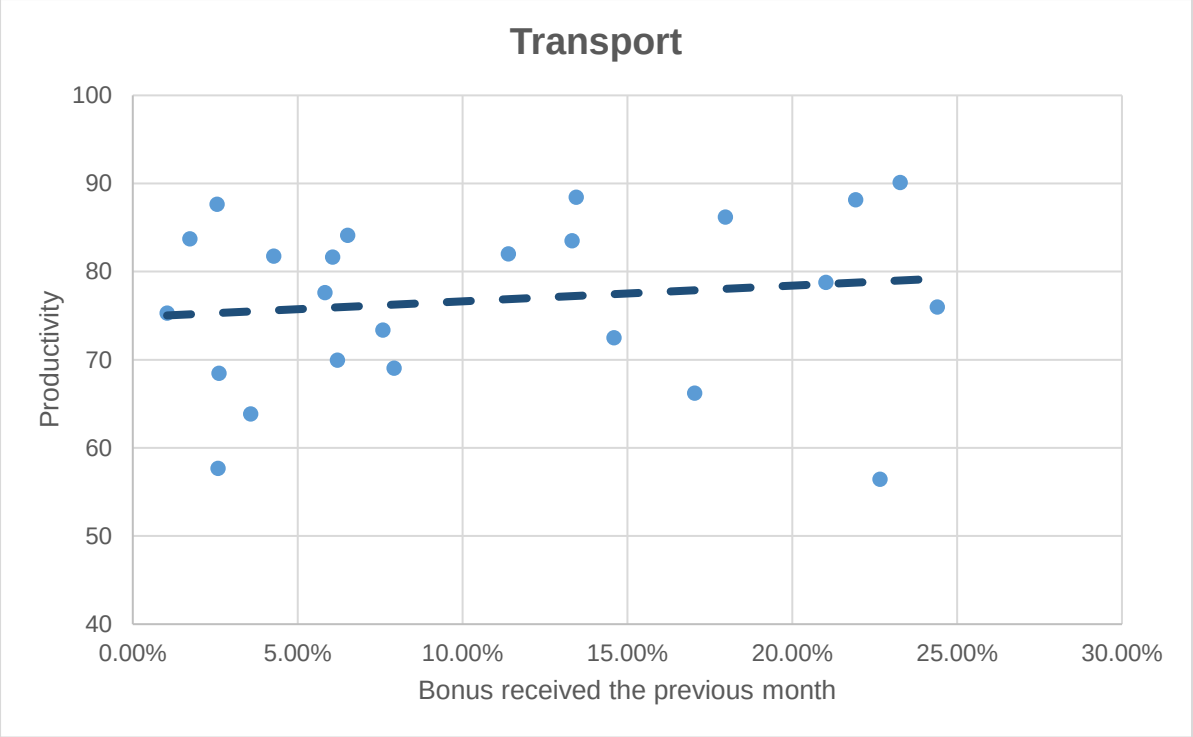

Figure 4-20: Transport productivity vs. previous month's bonus

From these three graphs, overall productivity increased if the previous month's bonus was high. This means that if employees in these three sections received a bonus in one month, they would also increase their productivity the next month.

4.5 Summary

In this chapter, the demographic information of the respondents was compared to that of the population to ensure that the sample was representative.

Rewards that motivated indicated that production bonuses are a good method to motivate employees to work harder. The same three top rewards and lowest rewards were chosen by all four wage categories, even though the order differed between lower levels and higher levels.

It was determined that productivity was influenced by rewards and that low rewards demotivated lower-level employees, while they motivated higher-level employees more. What was also seen was that targets were clearer to the higher-level employees, while low-level employees indicated that they were less clear to them.

The historical information revealed a positive trend between productivity and the size of the production bonus. This means higher production bonuses in a month could lead to higher productivity in the following month.

Chapter 5 presents the conclusion and recommendations based on the findings of this study, an evaluation of the study as well as a discussion of its limitations and suggestions for future research.

Chapter 5: Conclusion and recommendations

5.1 Introduction

The mining industry in South Africa is still very reliant on labour as labour was the cheapest form of mining in the past and unions makes it difficult for mining companies to switch to mechanized mining operations (Rupprecht, 2017). Employees working in a tough environment need some motivation to stay productive. The most common method used is financial rewards (Garbers & Konradt, 2014; Mattson *et al.*, 2014).

The primary objective of this study was to determine whether the productivity of employees in different wage categories is influenced differently by production bonuses. An in-depth literature review was done, which focused on employee productivity, incentives and employee motivation. Studies done in the past with similar objectives were also examined and the results were compared to those of this study. This literature study was reported in Chapter 2. Chapter 3 consisted of the empirical study, which explained the population, sample, methods and instrument used and the data analysis. The results obtained from the questionnaire and the historical data were presented in Chapter 4.

In this final chapter, the study reaches a conclusion and recommendations are made. The study is also evaluated based on the objectives stated in Chapter 1. Limitations of the study and recommendations for future studies are also discussed.

5.2 Conclusion

In this section, the results are concluded and compared to the results obtained in previous studies.

The factor analysis revealed that rewards had a large positive effect on productivity and employee motivation and a negative effect on demotivation. This corresponds to the study by Ahmad *et al.* (2019). What was also seen was that supervisor motivation to reach targets made a large contribution to whether targets were clear.

The research question asked whether the relationship between the productivity of employees and the production bonuses received is different for different wage categories. From the results, the following general conclusions can be made:

- Production bonuses can be used to motivate employees to increase productivity. This is in accordance with the study by Sono (2014), which found that motivation can increase productivity, and that of Garbers and Konradt (2014), which found that team-based rewards (production bonuses are team-based) are effective.
- All sections showed a positive relationship between employee productivity and the production bonus, indicating that employee productivity is influenced by the production bonus. This is in accordance with the study by Ahmad *et al.* (2019), which found that financial incentives can be used to increase performance.
- All levels indicated that rewards contributed to their happiness at work. This is in accordance with the study by Ahmad *et al.* (2019), which found that financial incentives have a positive relationship with job satisfaction.
- All levels indicated that they contributed to the overall productivity of their section.

The effect sizes indicated that there are significant differences between the wage categories, and based on the results from Chapter 4, the following conclusions can be made:

- Lower-level employee productivity is influenced more by rewards than that of higher-level employees.
- Small rewards motivate higher-level employees to increase productivity to reach the next target, whereas they demotivate lower-level employees.
- Lower-level employees indicated that their leave days are affected by the size of the reward. Lower-level employees will take fewer leave days if the rewards are high. As lower-level employees do more of the physical production work, this has a direct influence on productivity.
- Targets are clearer for higher-level employees.

When comparing these results with the study by Ahammad *et al.* (2015) that higher-skilled employees can take more advantage out of a financial incentive, they are motivated to work harder and that the targets are clearer to the higher-level employees indicate that they will be able to benefit more from the financial incentive.

From this, the conclusion can be made that there is a different relationship between the productivity of employees and the production bonus they receive, and it is different

for lower-level employees than for higher-level employees. This is similar to the results obtained by Ahammad *et al*. (2015), which indicated that lower-skilled employees are influenced differently by financial incentives than higher-skilled employees.

5.3 Recommendations

As the results indicated that employees in different wage categories are influenced by production bonuses differently, the following recommendations are made:

- Bonus structures need to be different for different wage categories.
- When revising a bonus structure, it could be beneficial to have a representative of each wage category and section present for consultation and input.
- When revising a bonus structure, it is very important to ensure that all levels understand the targets and that the targets that should be reached are clear to all.
- Supervisor motivation proved to be very important for all wage categories. This means that all supervisors should motivate their subordinates to reach their targets.

5.4 Evaluation of study

To determine whether this study was a success, it is important to evaluate it against the primary and secondary objectives and to determine whether the research question was answered.

5.4.1 Primary objective

The primary research objective of this study was to determine whether the productivity of employees in different wage categories is influenced differently by production bonuses.

The results indicated that there is a difference between higher and lower-wage categories and that the further the categories are removed from one another, the larger the difference.

5.4.2 Secondary objective

The secondary objectives, as stated in Chapter 1, were as follows:

- Perform a literature review to determine whether employee productivity is influenced by motivation.
- Perform a literature review to determine whether employees can be motivated by incentives.
- Perform a literature review to determine whether employees of different wage levels are motivated differently.
- Determine whether employees in different wage categories are affected differently by bonuses.
- Make recommendations on possible future research.

The literature study included a discussion of employee productivity, incentives and employee motivation. In the literature study conclusion, it was stated that from the literature it is evident that:

- motivation has an influence on employee productivity;
- incentives can be used to increase productivity and employee motivation, and
- different wage levels might be influenced differently by incentives.

The results in Chapter 4 and the conclusion made in Chapter 5 indicate that there is a difference in how employees in different wage categories are influenced by production bonuses.

5.4.3 Research question

The research question was stated in Chapter 1 as: Is the relationship between the productivity of an employee and the production bonus received different for different wage categories?

In terms of the primary and secondary objectives, this question was answered.

5.5 Limitations of the study

The limitations of this study were determined to be as follows:

- The results might not be generalisable to other mining companies, as only one platinum mine was used for the study.
- The results might have differed if the study had been conducted in a different month or year. For example, if a large production bonus was received in the

month in which the questionnaire was completed, employees might be more positive towards the study and vice versa.

- Some respondents refused to participate in the study, as they felt management might use it against them and that it might influence their bonus, even though the consent form indicated that this would not happen. This might also have skewed the results, as other respondents might not have answered honestly for this same reason.

5.6 Suggestions for future studies

Some suggestions for future studies are as follows:

- The target population might be increased by including more mines to expand the results to the mining industry.
- Other industries might be included to determine whether the findings are the same in other industries.
- A qualitative research approach might be used to better understand the respondents' opinions regarding production bonuses.
- A section might be added to the questionnaire that is solely focused on motivation and incentives.
- The questionnaire might be distributed more than once to measure the change in opinion and whether it is influenced by the bonus received in that respective period.

5.7 Summary

In this chapter, the overall conclusions of this study were made based on the results received from the questionnaires. The most important conclusions were that production bonuses can be used to motivate employees to increase their productivity, lower-level employees are influenced the most by production bonuses and there is a difference between how production bonuses influence employees in different wage categories.

Recommendations were made on how management can use these results in future incentive planning strategies. The study was evaluated against the objectives set out in Chapter 1 and the limitations regarding this study were discussed. Suggestions were made for future studies.

References

21st Century. 2016. Short term and long term incentives. https://www.21century.co.za/remuneration-consulting/short-term-and-long-term-incentives/ Date of access: 1 Oct. 2018.

Abraham, S. 2012. Job satisfaction as an antecedent to employee engagement. *SIES journal of management*, 8(2):27-36

Ahammad, M.F., Lee, S.M., Malul, M. & Shoham, A. 2015. Behavioral ambidexterity: the impact of incentive schemes on productivity, motivation, and performance of employees in commercial banks. *Human resource management*, 54(1):45–62.

Ahmad, M., Maochun, Z. & Rehman, A. 2019. The role of financial incentives in employee's job motivation, satisfaction, performance, and turnover: evidence from Pakistan. *Asian basic and applied research journal*: 1(2):39–44.

Amah, E., Nwuche, C. & Chukuigwe, N. 2013. Effective reward and incentive scheme for effective organizations. *Research journal of finance and accounting*, *4*(13):73-79.

Anderson, R., Swaminathan, S. & Yim, F. 2009. Psychological empowerment of salespeople: antecedents and consequences. *Journal of selling & major account management*, 9(4):28–42.

Arnolds, C., Boshoff, C., Mazibuko, N. & Klemz, B. 2010. The motivational impact of job security, recognition, monetary incentives and training on the job performance of blue-collar employees. *South African journal of labour relations*, 34(1):86–102.

Arnolds, C.A. & Venter, D.J.L. 2007. The strategic importance of motivational rewards for lower-level employees in the manufacturing and retailing industries. *SA journal of industrial psychology*, 33(3):15–23.

Awan, A.G. & Tahir, M.T. 2015. Impact of working environment on employee's productivity: a case study of banks and insurance companies in Pakistan. *European journal of business and management*, 7(1):329–345.

Baily, M.N., Farrell, D., Greenberg, E., Henrich, J.-D., Jinjo, N., Jolles, M. & Remes, J. 2005. Increasing global competition and labor productivity: lessons from the US automotive industry. McKensie Global Institute.

Bankert, B., Coberley, C., Pope, J.E. & Wells, A. 2015. Regional economic activity and absenteeism: a new approach to estimating the indirect costs of employee productivity loss. *Population health management*, 18(1):47–53.

Bartol, K.M. & Hagmann, L.L. 1992. Team-based pay plans: a key to effective teamwork. *Compensation & benefits review*, 24(6):24–29.

Bell, E., Bryman, A. & Harley, B. 2018. Business research methods. New York: Oxford University Press.

Bloom, M. & Michel, J.G. 2002. The relationships among organizational context, pay dispersion, and among managerial turnover. *Academy of Management journal*, 45(1):33–42.

Botha, W. 2015. Towards a more productive mining sector. EY. https://www.ey.com/za/en/newsroom/news-releases/news-ey-towards-a-more-productive-mining-sector Date of access: 16 Jan. 2018.

Brace, I. 2018. Questionnaire design: how to plan, structure and write survey material for effective market research. London: Kogan Page.

Brown, A. & Bimrose, J. 2018. Drivers of learning for the low skilled. *International journal of lifelong education*, 37(2):151–167.

Brown, S., Fakhfakh, F. & Sessions, J.G. 1999. Absenteeism and employee sharing: an empirical analysis based on French panel data, 1981–1991. *ILR review*, 52(2):234–251.

Bryman, A. & Bell, E. 2014. Research methodology: business and management contexts. Cape Town: Oxford University Press Southern Africa.

Cato, S.T. & Gordon, J. 2012. Relationship of the strategic vision alignment to employee productivity and student enrollment. *Research in higher education journal*, 15:1-20.

Cerasoli, C.P., Nicklin, J.M. & Ford, M.T. 2014. Intrinsic motivation and extrinsic incentives jointly predict performance: a 40-year meta-analysis. *Psychological bulletin*, 140(4):980-1008.

Claassen, A. & Du Toit, J. 2012. The payment of bonuses: end-of-year bonuses. *Professional accountant*, 4:20–22.

Coetzee, J. 2013. Perceptions of bonus incentive schemes at a major South African private bank. *Acta academica*, 45(2):200–227.

Cohen, J. 1988. Statistical power analysis for the behavioural sciences. Hillsdale, NJ: Laurence Erlbaum.

Collins, J. 2018. The purpose of statistical analysis: mean & standard deviation. Sciencing. https://sciencing.com/info-8515547-purpose-analysis-mean-standard-deviation.html Date of access: 31 Jul. 2019.

Currin, K. & McGowan, L. 2017. Staff incentives matter. *Meetings*, 72:53–53.

Dall'Ora, C., Ball, J., Recio-Saucedo, A. & Griffiths, P. 2016. Characteristics of shift work and their impact on employee performance and wellbeing: a literature review. *International journal of nursing studies*, 57:12–27.

Department of Mineral Resources. 2015. Assessment of the Broad-based Socio-Economic Empowerment Chapter for the South African mining industry. http://www.dmr.gov.za/mining-charter-assessment-report.html Date of access: 30 Mar. 2019

Department of Mineral Resources. 2018. Facts and figures 2017. https://www.mineralscouncil.org.za/industry-news/publications/facts-and-figures Date of access: 17 Jan. 2019.

De Simone, S. 2015. Expectancy value theory: motivating health care workers. *American international journal of contemporary research,* 5(2):19-23.

Drake, A.R., Wong, J. & Salter, S.B. 2007. Empowerment, motivation, and performance: examining the impact of feedback and incentives on nonmanagement employees. *Behavioral research in accounting*, 19(1):71–89.

Ellis, S. & Steyn, H. 2003. Practical significance (effect sizes) versus or in combination with statistical significance (p-values): research note. *Management dynamics: journal of the Southern African Institute for Management Scientists*, 12(4):51–53.

Ezulike, A. 2001. Evaluating productivity level in Nigerian civil service: A case study of Imo State. Unpublished Postgraduate Thesis.

Falola, H.O., Ibidunni, O. & Olokundun, A.M. 2014. Incentives packages and employees' attitudes to work: a study of selected government parastatals in Ogun State, South-West, Nigeria. *International journal of research in business and social science*, 3(1):63–74.

Fu, W. & Deshpande, S.P. 2014. The impact of caring climate, job satisfaction, and organizational commitment on job performance of employees in a China's insurance company. *Journal of business ethics*, 124(2):339–349.

Garbers, Y. & Konradt, U. 2014. The effect of financial incentives on performance: a quantitative review of individual and team-based financial incentives. *Journal of occupational and organizational psychology*, 87(1):102–137.

Gielen, A.C., Kerkhofs, M.J.M. & Van Ours, J.C. 2010. How performance related pay affects productivity and employment. *Journal of population economics*, 23(1):291–301.

Green, S.B., Lissitz, R.W. & Mulaik, S.A. 1977. Limitations of coefficient alpha as an index of test unidimensionality. *Educational and psychological measurement*, 37(4):827–838.

Griffith, C. 2017. Keynote address presented at the Rapid Underground Mine and Civil Access Conference, Emperors Palace, Gauteng.

Grigoriadis, C. & Bussin, M. 2007. Current practice with regard to short-term incentive schemes for middle managers. *SA journal of human resource management*, 5(1):45–53.

Gupta, N. & Shaw, J.D. 2014. Employee compensation: the neglected area of HRM research. *Human resource management review*, 24(1):1–4.

Hanaysha, J. 2016. Improving employee productivity through work engagement: evidence from higher education sector. *Management science letters*, 6(1):61–70.

Hancock, D.R. & Algozzine, B. 2006. Doing case study research: a practical guide for beginning research. New York, NY: Teachers College Press.

Harunavamwe, M. & Kanengoni, H. 2013. The impact of monetary and non-monetary rewards on motivation among lower level employees in selected retail shops. *African journal of business management*, 7(38):3929–3935.

Hill, C.W., Jones, G.R. & Schilling, M.A. 2014. Strategic management: theory: an integrated approach. Stamford: Cengage Learning.

Hossain, M.S., Khatun, M. & Mursalin, M.S. 2018. Does employee involvement really increase employee productivity? An employee perception based study. *GPH-international journal of business management*, 1(1):47–67.

Iheriohanma, E.B.J. 2006. Perceiving Worker's Interest in Participatory Management: Issues and Challenges. *International Journal of Social Sciences*, *5*:113-129.

Itri, J.N., Bruno, M.A., Lalwani, N., Munden, R.F. & Tappouni, R. 2019. The incentive dilemma: intrinsic motivation and workplace performance. *Journal of the American College of Radiology*, 16(1):39–44.

Jamal, M. 2011. Job stress, job performance and organizational commitment in a multinational company: an empirical study in two countries. *International journal of business and social science*, 2(20):20-29.

Karytsas, S., Vardopoulos, I. & Theodoropoulou, E. 2019. Factors affecting sustainable market acceptance of residential microgeneration technologies. a two time period comparative analysis. *Energies*, 12(17):1-20

Kerr, N.L. & Tindale, R.S. 2004. Group performance and decision making. *Annual review psychology*, 55:623–655.

Khan, M.R., Ziauddin, Z., Jam, F.A. & Ramay, M.I. 2010. The impacts of organizational commitment on employee job performance, 15(3):2-2-298.

Kocakulah, M.C., Kelley, A.G., Mitchell, K.M. & Ruggieri, M.P. 2016. Absenteeism problems and costs: causes, effects and cures. *The international business & economics research journal*, 15(3):89-96.

Kumar, R. 2019. Research methodology: a step-by-step guide for beginners. London: Sage.

Kuranchie-Mensah, E.B. & Amponsah-Tawiah, K. 2016. Employee motivation and work performance: a comparative study of mining companies in Ghana. *Journal of industrial engineering and management*, 9(2):255–309.

Lala, A., Moyo, M., Rehbach, S. & Sellschop, R. 2016. Productivity in mining operations: reversing the downward trend. *AusIMM bulletin*, August: 46-49.

Macfarlane, A. 2001. The implementation of new technology in southern African mines: pain or panacea. *Journal of the Southern African Institute of Mining and Metallurgy*, 101(3):115–126.

Maki, M.A. 2014. Factors perceived to affect employee satisfaction and productivity at a mine in the Northern Cape. (Doctoral dissertation)

Maree, K. 2009. First steps in research. Pretoria: Van Schaik.

Martins, P.M. 2015. Sub-regional perspectives on structural change. *Governance for Structural Transformation in Africa,* 15(3):37-99

Mathis, R.L. & John, H.J. 2003. Human resource management. 11th ed. Mason: OH: Thomson/South-Western.

Mathys, M. 2015. SA mining industry landscape: Credit Suisse Metals and Mining Conference. Chamber of Mines of South Africa. https://www.mineralscouncil.org.za/industry-news/publications/presentations/send/7-2015/147-sa-mining-industry-landscape-credit-suisse-metals-and-mining-conference Date of access: 30 Mar. 2019

Mattson, M., Torbiörn, I. & Hellgren, J. 2014. Effects of staff bonus systems on safety behaviors. *Human resource management review*, 24(1):17–30.

Mbogu, G. 2001. Implications of leadership styles of administrators on job performance in two selected organizations in Owerri, Imo State. *Unpublished Thesis*.

McCusker, K. & Gunaydin, S. 2015. Research using qualitative, quantitative or mixed methods and choice based on the research. *Perfusion*, 30(7):537–542.

Minerals Council South Africa. 2019. Facts and figures 2018 pocket book. https://www.mineralscouncil.org.za/industry-news/publications/facts-and-figures Date of access: 18 Oct. 2019.

Mlilo, S., Gwandure, C. & Mayekiso, T. 2013. Perceptions of organisational incentive schemes and continuance commitment in talent management among final year university students. *Journal of public administration*, 48(Special issue 1):843–866.

Nardi, P.M. 2018. Doing survey research: a guide to quantitative methods. New York: Routledge.

Nwannebuife, A.S. 2017. Effect of employee motivation on organizational productivity. Ota: Covenant University. (Doctoral dissertation).

Ongaki, N.M. & Otundo, E.M. 2015. Fringe benefits strategy on growth of employee productivity in the public sector in Kenya. EduPedia. https://books.google.co.za/books?id=7fd3CgAAQBAJ&pg=PR4&dq=employee+productivity&hl=en&sa=X&ved=0ahUKEwiXwOmx2eXdAhUPT8AKHWziCZgQ6AEILjAB#v=onepage&q=employee%20productivity&f=false Date of access: 12 Apr. 2019

Osa, I.G. 2014. Monetary incentives motivates employee's on organizational performance. *Global journal of arts, humanities and social sciences*, 2(7):61–69.

Osabiya, B.J. 2015. The effect of employees motivation on organizational performance. *Journal of public administration and policy research*, 7(4):62–75.

Osemeke, M. & Adegboyega, S. 2017. Critical review and comparism between Maslow, Herzberg, and McClelland's theory of needs. *Funai journal of accounting, business and finance*, 1(1):161–173.

Parham, D. 2014. Definition, importance and determinants of productivity. Deepa Economics.

Park, R. & Kruse, D. 2014. Group incentives and financial performance: the moderating role of innovation. *Human resource management journal*, 24(1):77–94.

Pek, J. & Flora, D.B. 2018. Reporting effect sizes in original psychological research: a discussion and tutorial. *Psychological methods*, 23(2):208-225.

Perry, J.L., Engbers, T.A. & Jun, S.Y. 2009. Back to the future? Performance-related pay, empirical research, and the perils of persistence. *Public administration review*, 69(1):39–51.

Piana, V. 2001. Productivity. Economics Web Institute. http://www.economicswebinstitute.org/glossary/prdctvt.htm Date of access: 15 Jan. 2019.

Rehman, R. & Ali, M.A. 2013. Is pay for performance the best incentive for employees? *Journal of emerging trends in economics and management sciences*, 4(6):512–514.

Richardson, L.J. 2015. A meta-analytic review of programs designed to combat workplace absenteeism. Minnesota: Walden University.(Doctoral dissertation)

Rupprecht, S. 2017. Can research, development and innovation extend the life of the PGM Mining Industry?. *The Southern African institute of mining and metallurgy. 7th International Platinum Conference, 7:249-260*

Samnani, A.-K. & Singh, P. 2014. Performance-enhancing compensation practices and employee productivity: the role of workplace bullying. *Human resource management review*, 24(1):5–16.

Sharma, M. & Sharma, M. 2014. Employee engagement to enhance productivity in current scenario. *International journal of commerce, business and management*, 3(4):595–604.

Shaw, J.D. & Gupta, N. 2015. Let the evidence speak again! Financial incentives are more effective than we thought. *Human resource management journal*, 25(3):281–293.

Shuck, B.M., Rocco, T.S. & Albornoz, C.A. 2011. Exploring employee engagement from the employee perspective: implications for HRD. *Journal of European industrial training*, 35(4):300–325.

Simmons, N. 2017. Case study research. (*In The international encyclopedia of communication research methods*). Sage Publication

Sommer, K.L. & Kulkarni, M. 2012. Does constructive performance feedback improve citizenship intentions and job satisfaction? The roles of perceived opportunities for advancement, respect, and mood, 23(2):177-201.

Sono, J.H. 2014. The effect of feedback on lower-level employees' empowerment, motivation and performance in a selected steel production company. Potchefstroom: NWU. (Mini-dissertation – MBA).

Spector, P. 1992. Summated rating scale construction. Thousand Oaks: CA: Sage.

Spink, L. 2000. Team rewards and incentives: lessons from the literature. Washington: The organizational change programme for the CGIAR centres.

Stajkovic, A.D. & Luthans, F. 1998. Self-efficacy and work-related performance: a meta-analysis. *Psychological bulletin*, 124(2):240-261.

Statistics How To. 2019. Kaiser-Meyer-Olkin (KMO) test for sampling adequacy. https://www.statisticshowto.datasciencecentral.com/kaiser-meyer-olkin/ Date of access: 14 Oct. 2019.

StatisticsSolutions. 2018. Exploratory factor analysis. https://www.statisticssolutions.com/factor-analysis-sem-exploratory-factor-analysis/ Date of access: 15 Oct. 2019.

Sukanta, I.W., Yuesti, A. & Kepramareni, P. 2018. The influence of financial incentives and non financial incentives to job performance: motivation of work as a variable of modernation in employee cooperation of save loans (Ksp). *International journal of contemporary research and review*, 9(7):20886–20900.

Surbhi, S. 2018. Difference between qualitative and quantitative research. Key Differences. https://keydifferences.com/difference-between-qualitative-and-quantitative-research.html Date of access: 18 Oct. 2019.

Surendran, A. 2019. Quantitative research: definition, methods, types and examples. QuestionPro. https://www.questionpro.com/blog/quantitative-research/ Date of access: 18 Oct. 2019.

Taherdoost, H., Sahibuddin, S. & Jalaliyoon, N. 2014. Exploratory factor analysis: concepts and theory. *Advances in applied and pure mathematics*, 375-382.

Thibault Landry, A., Gagné, M., Forest, J., Guerrero, S., Séguin, M. & Papachristopoulos, K. 2017. The relation between financial incentives, motivation, and performance: an integrative SDT-based investigation. *Journal of personnel psychology*, 16(2):61–76.

Thompson, A.A., Strickland, A.J. & Gamble, J.E. 2007. Crafting and executing strategy: the quest for competitive advantage: concepts and cases. 15th ed. New York, NY: McGraw-Hill Education.

Thurkow, N.M., Bailey, J.S. & Stamper, M.R. 2000. The effects of group and individual monetary incentives on productivity of telephone interviewers. *Journal of organizational behavior management*, 20(2):3–25.

Tongo, C.I., 2005. Public service motivation in Edo state of Nigeria. *Wither Nigeria (14th General Assembly Proceedings)*, pp.188-198.

Turabik, T. & Baskan, G.A. 2015. The importance of motivation theories in terms of education systems. *Procedia - social and behavioral sciences*, 186:1055–1063.

Tuuli, M.M. & Rowlinson, S. 2010. An exploratory study of the contextual meaning and consequences of empowerment in project teams. *West africa built environment research (waber) conference,* Ghana, 27-28 July:141-151

Van Zyl, G. 2015. The impact of incentive schemes on employee productivity in the South African workplace. *Journal of economic and financial sciences*, 8(2):633–647.

Vaske, J.J., Beaman, J. & Sponarski, C.C. 2017. Rethinking internal consistency in Cronbach's alpha. *Leisure sciences*, 39(2):163–173.

Waqas, Z. & Saleem, S. 2014. The effect of monetary and non-monetary rewards on employee engagement and firm performance. *European journal of business and management*, 6(31):73–82.

Weske, U. & Schott, C. 2016. What motivates different groups of public employees working for Dutch municipalities? Combining autonomous and controlled types of motivation. *Review of public personnel administration*, *38*(4):415-43.

Woods, S.A. & West, M.A. 2015. The psychology of work and organizations. 2nd ed. Hampshire: Cengage Learning.

Wright, A. 2004. Reward management in context. Wilshire: CIPD.

Wroblewski, M.T. 2019. The advantages of a firm of increasing productivity. Azcentral. https://yourbusiness.azcentral.com/advantages-firm-increasing-productivity-17626.html Date of access: 18 Oct. 2019.

Wynter-Palmer, J.E. 2012. Is the use of short-term incentives good organization strategy? *Compensation & benefits review*, 44(5):254–265.

Yamane, T. 1967. Statistics: an introductory analysis. New York, NY: Harper & Row.

Zameer, H., Ali, S., Nisar, W. & Amir, M. 2014. The impact of the motivation on the employee's performance in beverage industry of Pakistan. *International journal of academic research in accounting, finance and management sciences*, 4(1):293–298.

Appendix A: Informed consent and questionnaire

Informed consent

North-West University, South Africa

Master in Business Administration

Title of study: Investigate the relationship between production bonuses and productivity of employees in different wage categories

Researcher: Liezel du Plessis

Dear participant

This informed consent form is to assist you to decide on whether you would like to take part in this research project or not.

The information gathered in this study will be used in a mini-dissertation to complete my MBA degree. The information gathered in this questionnaire will be **confidential and anonymous** and all the data gathered will **only be used for this research project**.

The questionnaire consists of three sections. The first is on demographic information such as workplace and wage category, the second contains eight motivators that you need to rank in order of highest motivator to lowest motivator and the third contains 17 statements where you have to state whether you strongly agree, agree, are undecided, disagree or strongly disagree with each statement.

There will be no incentive given to any participants and all participants complete the questionnaire on a voluntary basis. Please hand in this form separately and not attached to the questionnaire.

I _____ hereby give consent to use my data in this research.

_____ _____

Signature Date

If you have any concerns you can contact me, **Liezel du Plessis**, at:

Cell: 082 780 1734

Email: liezelvanh@gmail.com

Your participation in my research is appreciated.

Section 1: Demographic information

Gender	Male	Female

Location	Concentrator	Smelter	Transport	General or Laboratory

Wage level	A-level	B-level	C-level	D-level

Years in service	0–5	6–10	11–15	16–20	21–25	26–30	31–35	35+

Age	18–24	25–29	30–34	35–39	40–44	45–49	50–54	55+

Section 2: Motivation

Please indicate which of the following incentives will motivate you and increase your work performance the most by ranking them in order from 1 (highest) to 8 (lowest) motivators.

Job security	
Production bonus (financial bonus)	
Training possibilities	
Recognition from supervisor	
Days given off as bonus	
Small gifts	
Competitions	
Social event (once a year)	

Section 3: Productivity

	Please indicate your level of agreement with the following statements	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
1	Receiving a reward will increase my productivity at work	1	2	3	4	5
2	Receiving a reward makes me happy	1	2	3	4	5
3	The number of leave days I take is influenced by the size of the reward	1	2	3	4	5
4	I am less likely to take leave days if the reward is high	1	2	3	4	5
5	My productivity is influenced by a reward	1	2	3	4	5
6	I will only do what is necessary at work and not any extra work if the reward is low or there is no reward	1	2	3	4	5
7	I motivate others to work harder if we can achieve the set targets to receive rewards	1	2	3	4	5
8	I am demotivated to work hard when I receive a lower reward	1	2	3	4	5
9	A low reward motivates me to work harder towards the next set target to increase the next reward	1	2	3	4	5
10	Receiving a reward does not influence my productivity	1	2	3	4	5
11	A reward is a good method of motivation of employees	1	2	3	4	5
12	A reward is a large contributor to my productivity at work	1	2	3	4	5
13	A small reward is better than receiving no reward	1	2	3	4	5
14	My work does not influence the overall productivity of my section	1	2	3	4	5
15	My supervisor motivates me to achieve production targets	1	2	3	4	5
16	The set targets that need to be achieved to receive the bonus are clear	1	2	3	4	5
17	Receiving a reward makes me work harder	1	2	3	4	5

Appendix B: Letter from language editor

LaetitiaBEDEKER

1 Semillon Close
Stonehaven Estate
Fish Hoek
Cell: 082 707 8428
E-mail: laetitiam@webmail.co.za

Proof of editing

8 November 2019

This letter serves as proof that the MBA mini-dissertation titled "Investigate the relationship between production bonuses and productivity of employees in different wage categories" by Liezel du Plessis was professionally copy (language) edited. The finalisation of tracked changes and comments inserted remains the responsibility of the student.

Kind regards

LM Bedeker
BA, Postgraduate Diploma (Translation) *cum laude*, MPhil (Translation) *cum laude*
Accredited member of the South African Translators' Institute (accreditation number 1001437)
Member of the Professional Editors' Group