

THE IMPACT OF A PIECE RATE INCENTIVE SCHEME ON EMPLOYEE OUTPUT
AT A SELECTED AUTOMOTIVE COMPANY

By

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TO WHOM IT MAY CONCERN

RE: Permission For Final Submission

This research project has been reviewed by the undersigned and hereby permission is granted for final submission.

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DEDICATION

This dissertation is dedicated to my late nephew, and godson, Dean.

ABSTRACT

This study encompasses a triangulation of research methods in order to determine the impact of a piece rate incentive scheme on employee output within the South African context. The existing body of knowledge tends to reflect the conditions found in developed countries such as the USA, Canada, and the UK, very little research appears to have been conducted in the South African context.

The study was focused on a triangulation of, a real life field experiment which included a piece rate incentive scheme intervention, a post experiment structured interview process to determine employee opinions of such a scheme, and an in-depth literature review to determine the salient findings of previous research in this regard. A single company which operates in the automotive industry was selected for the study.

The study revealed that the introduction of a piece rate incentive did have a positive impact on employee effort/output; however this was limited to only a small percentage of the population. The post experiment interview process also revealed that certain anomalies existed within the opinions of different employee groups, little explanation could be given for these anomalies. Arising out of the study a number of questions have been raised which have been clearly defined in the recommendations as areas requiring further research.

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Chapter 1

Introduction

1.1. Introduction

The use of incentive schemes as a means of employee compensation is not a new concept, for many years incentive schemes have been widely used in developed countries to motivate employees to increase effort and job performance. The most common alternative method of compensation to incentive pay and the most widely used method of payment in the South African industry, is the fixed rate time-based method. The significant distinction between these methods of compensation can be described as time-based, which is dependent on input in a given period (normally hours per day), compared to incentive schemes that are based on output.

It is this focus on output that has forced many First World manufacturing operations to move away from time-based payments to methods that create incentives for employees to increase effort. Methods such as piecework, merit pay, tournament and team-based pay are commonplace in manufacturing today.

The use of various incentive schemes as a means of compensation has been the subject of much research and resulted in a vast body of knowledge on the subject. The advocates of incentive schemes point to its many potential benefits such as increased employee effort and output in organizations that compensate through the use of incentives.

The bulk of the research has been conducted in developed countries such as the United States, Australia and the United Kingdom. There is a lack of literature regarding the effectiveness of incentive schemes in increasing employee effort in the South African context. It is this lack of literature that has prompted the current study.

1.2. Background

The literature review of studies evaluating the use of incentives to motivate employees to increase effort, provide valuable insight into the pros and cons of such interventions.

This study adds to the current body of knowledge relating to the use of incentives as a means of motivating employees to increase effort. This been achieved through the collection and analysis of primary data pertinent to incentive schemes in a South African context. The outcome of this study indicates whether the pros and cons of such schemes hold good in the South African context and develops questions for further research in this regard.

The study and collection of primary data was conducted at a leather manufacturing company for the international automotive industry. The reason for this selection was because the company competes globally for business in a labour intensive industry and the company compensates employees using the time-based method of payment. It was also assumed that the company, as a supplier to the international automotive industry, would be technologically advanced and applying manufacturing best practices to maintain global competitiveness. The researcher was also aware that the company wished to investigate alternative methods of compensation with the primary objective of motivating employees to increase effort, which would hopefully result in increased output.

1.3. Objectives of the study

The objectives of the study focus on determining if a relationship exists between employee effort/output and incentive schemes. The study was also interested in determining the critical factors that contribute to the introduction of such a scheme and the success or failure that arise there from.

1.4. Research design and methodology

The study will be based on the mixed method of research called triangulation. The use of triangulation allows the study to combine multiple observations, theories, and empirical material to help overcome the problems inherent in single method, single observer and single theory studies.

The nature of this study facilitates the triangulation of the following research methods:

- An in-depth literature review to identify the theories and concepts relating to incentive schemes.
- A quantitative field experiment to determine if a relationship exists between employee effort/output and incentives schemes.
- Post experiment structured interviews from a sample of the research population.

1.4.1. Sampling design

The sampling design has been chosen in line with the requirements of the nature of the research and its objective. The collection of primary data is divided into two categories: the field experiment and the structured interviews, each with different sampling

requirements. The field experiment makes use of the entire population of production operatives (n=58) and therefore requires purposive sampling to take place. Normally, it is impractical to include the entire population in research, but in this case it is, and the inclusion of the entire population will provide more reliability to the findings of the research.

The structured interview process makes use of the purposive sampling method. The sample size was 10 groups from a total of 58, proportionately split between those who increased output and those that did not. Random sampling determined each group.

1.4.2. Data collection method

Quantitative data will be collected from each machine operation by means of measured output. The purpose of the experiment is to measure output as it relates to performance incentives. The company under study has a very sophisticated system for measuring output based on pieces/hides produced per day, per machine operation. The same method of data collection from each machine operation will be applied to this experiment and will be identical to how the pre-test or historical data was previously collected at the company under study.

Qualitative data will be collected via in-depth, structured interviews with the groups of those whose output increased, as well as, those whose output did not increase. Because group sizes differed between four and seven members, the interviews will follow the focused group method of data collection.

1.4.3. Data analysis

The quantitative objective of the experiment is to determine if a relationship exists between employee effort and incentive schemes. The data from this experiment will be analyzed using Pearson's correlation coefficient. This statistical method determines the degree of relationship between the two variables. Appropriate statistical test methods will be used to determine if scores differ between groups because of single variables. The variables that will be examined include age, number of years service, gender, union membership and rates of pay.

With the qualitative purpose of the study being descriptive, the researcher will attempt to capture and describe the thoughts and the experiences of the individual/group participants as disclosed in the focused group interviews.

The choice of data methods is inline with that found in previous research literature. The literature review has highlighted the need for this study to focus on real world data for empirical analysis.

Application of the methods as described above, was done to ensure validity, reliability and consistency of the data collected. The end result being a reliable assessment of the effectiveness and compatibility of incentive schemes in the manufacturing of automotive leather, with cognisance of the limitations of the study as noted below.

1.5. Limitations of study and assumptions

The limitation of this study is that the primary research has been carried out at one company only. Furthermore, the capabilities of employees at the company have not been determined prior to this study. It is possible that the ability of employees is already at its maximum and that no further extension of effort or output is attainable irrespective of the introduction of incentives as a means of motivation.

A further assumption is that the company chosen is influenced by the international automotive industry, and therefore already implement best practice in the field of manufacturing in order to remain globally competitive. A further assumption is that the employees and their respective union representatives will be receptive to the introduction of incentives as a means of employee motivation.

1.6. Overview of the study

Chapter 2 presents a literature review introducing the concept of incentive schemes as a means of motivating employees to increase effort, leading to higher output. It also describes and explains the concepts of motivational theory. Arguments relating to the need to achieve global competitiveness through effective resource utilization are put forward.

In Chapter 3 the broader aspects of incentive schemes will be focussed on to introduce the specific type of incentive at the chosen company. Arguments supporting this choice of incentive will be highlighted.

In Chapter 4 an in-depth presentation of the research methodology will be discussed and arguments supporting the choice of methodology put forward.

Chapter 5 presents the findings of the data collected in order to determine the relationship between incentive schemes and employee effort and output. It also describes the role incentives play in motivating employee effort.

Chapter 6 concludes the study by describing the achievements of the research conducted, detailing the caveats of the study and presenting questions and recommendations for further research.

1.7. Conclusion

An introduction to the study has been presented. The background and focus of the study has been described and the objectives have been presented. The research methodology describes the research design, sampling method and methods of data collection to be used. The limitations and assumptions of the study have been established.

The next chapter provides an overview of the concepts of incentive schemes.

Chapter 2

Literature review on incentives and compensation methods

2.1. Introduction

This chapter provides the context to which the following chapters should be viewed. This chapter presents and discusses the concept of incentives. It includes an overview of the most common compensation method used and also briefly discusses the various types of incentive schemes currently found in business today. Theory supporting the use of incentive schemes as a means to motivate employees to increase effort, will be presented.

The challenges facing South African export orientated firms will be discussed and the international competitiveness of South African labour presented.

2.2. Background

Pay systems are a vehicle for rewarding employees for their contribution to the organization. Compensation is a significant factor that affects work relationships, which in turn, can impact the overall performance of an organization. The level and distribution of pay can have a significant effect on the morale, efficiency and productivity of a workforce in any organization. Therefore, it is vital for organizations to develop pay systems that are valued by both organization and employees and that reward employees fairly for their work effort.

Pay systems linking worker effort and earnings have attracted increasing attention from economists, industrial relations specialists and practitioners (Blinder, 1990). Drago and

Heywood (undated) identified that words such as ‘productivity’ and ‘competitiveness’ came into vogue because employers and employees were concerned about their survival and welfare, thus prompting researchers to analyze wage incentive schemes and their potential for improving economic performance.

The Wikipedia Encyclopedia (2005) describes an incentive as any factor, financial or non-financial, that provides a motive for a particular course of action, or counts as a reason for preferring one choice to the alternatives. Incentives can be classified into three broad classes according to the different ways in which they motivate agents to take a particular course of action. They can be remunerative, moral or coercive.

Remunerative incentives exist where an agent can expect to receive some form of material reward, normally money, in exchange for acting in a particular way. Moral incentives occur where a particular choice is widely regarded as the ‘right thing to do’ and are rewarded with admiration or a sense of self-esteem. Coercive incentives exist where it is expected that the failure to act in a particular way will result in punishment of some form (Wikipedia Encyclopedia, 2005).

The study of economics in modern societies is mostly concerned with remunerative incentives rather than moral or coercive incentives, not because the latter two are unimportant, but rather because remunerative incentives are the primary form of incentives employed in the world of business. The researcher has chosen to focus on remunerative incentives as opposed to moral or coercive incentives for the purpose of this study.

Incentive remuneration plans are considered powerful motivational tools to achieving overall organizational objectives. Incentives can focus employee attention towards reaching the short and long-term organizational goals and reward employees accordingly. However, employee reward depends on certain outcomes such as improved commitment, effort and contribution to the organization's overall success being met (ACAS, 2005).

Free-Essay (2005) defines incentive remuneration as, "...remuneration that is linked to performance by rewarding employees for actual results achieved instead of seniority or hours worked". They claim that incentive remuneration schemes allow organizations to increase their remunerative competitiveness relative to other organizations, thus signalling to employees the organization's willingness to reward high performance.

Wozniak (1996) claims traditional, automatic tenure-based pay increases are no longer adequate methods to motivate and direct employee behaviour. Furthermore, the author claims that the allure of pay for performance is increasing but it has yet to achieve what it was intended to do, change employee behaviour. This has been attributed to the difference between a raise for outstanding performance and one for satisfactory performance that is insufficient to influence worker behaviour and performance.

The use of the traditional basic pay method is common in South African industries. The researcher has made this assumption based on informal discussions about payment methods used by customers and suppliers in the automotive leather sector. This assumption was further supported by the response of local industry in the Ladysmith area

(Lindsey 2005), and members of the Durban Automotive Cluster when asked to comment on their chosen method of remuneration (Frigerio 2005).

Basic rate schemes are straightforward and easy to manage, however they may not provide incentives to individual workers. Under basic rate schemes, a worker is paid in relation to a given period of time such as an hourly rate, weekly wage or an annual salary. These rates are generally established up-front through union bargaining councils and apply to all workers in a specific category, operation or machine function. These type of schemes have little or no scope for any deviation from the set rates determined by the industry bargaining council and are therefore strongly adhered to by both employer and employee representatives, leaving little room for creative remuneration.

In their advisory booklet, ACAS (2005) claims that it is easy to understand why companies choose to use the basic rate scheme, it is relatively simple and cheap to administer, it also allows for labour costs to be forecast with a large degree of accuracy. Furthermore, it is claimed that base rate schemes lead to stability in pay that are easily understood by the workforce and deliver fewer labour disputes and grievances than under schemes that link pay to performance/effort.

ACAS (2005) claims that although employers may prefer basic rate schemes because of their simplicity, by definition, basic rate schemes do not provide direct incentives to improve productivity or performance. However, it would also be unfair to state employers do not use other methods of remuneration irrespective of the simplicity of basic rate schemes.

In order to alleviate a tight labour market and to boost organizational performance, many manufacturing companies are using various forms of incentive schemes to motivate hourly paid workers (Imberman, 1998). Van Reenen (2003) identified various ways to provide remunerative incentives to increase employee motivation. This can be done through piece rates as opposed to time-rates, group-incentive pay and profit sharing, efficiency wages, deferred compensation, promotions and tournaments. ACAS (2005) adds to the list of incentive methods with schemes such as payment-by-results, i.e. bonus, piecework and commission, work-measured schemes, measured day work, appraisal related pay and competency-based pay. This list of alternative remunerative incentives will be further discussed in the next chapter.

2.3. Motivational theory

From a theoretical point of view, when are rewards likely to have a strong effect on a workers motivation and effort? Katz (2000) states that the dominant model for understanding and predicting whether a reward is likely to affect worker motivation and effort is Vroom's expectancy model which decades of research has substantiated for accuracy and robustness.

Vroom asserts that the strength of a reward's impact on worker motivation and effort are a function of three factors: expectancy, instrumentality and valence. Expectancy is the worker's perception of the strength of the link between effort and performance.

Instrumentality is the worker's perception of the strength of the link between performance and reward, and valence is the value a worker places on the reward (Katz, 2000).

Vroom's model highlights the observation that, in order for an incentive scheme to have a significant impact on worker motivation and effort, the worker must believe that effort will lead to performance, that performance will generate reward, and that the reward will be both worthwhile and desirable.

Igalens and Roussel (1999) assert that motivation is a process that drives employees to voluntarily produce effort in his [or her] work. The authors also note that most cognitive choice theories of motivation theory can be traced to Vroom's expectancy theory.

Lowery, Petty and Thompson (1995) provide a similar explanation of this theory.

According to their research, employees expect that a certain amount of effort will deliver a certain level of performance. These employees also expect that a certain performance will result in a particular reward. Thus, for workers to be motivated towards high performance they have to believe their efforts will lead to improved conditions and their performance will be justly rewarded.

An alternative motivational model to Vroom's expectancy theory is Adams' equity theory.

Adams equity theory posits that motivation is a function of fairness in social exchanges.

Central to understanding Adams' equity theory is an awareness of key components of the individual-organizational exchange relationship. Adams points out that the two primary components in the employee-employer exchange are inputs and outcomes. An employee's inputs include education, experience, skills and effort. On the outcome side of the exchange, the employer provides elements like pay, fringe benefits and recognition (Buelens, Kinicki and Kreitner, 2002).

Risher (2004) states that one danger in the application of incentive schemes is the possible negative effect of equity theory on motivation. Employees provide their labour in exchange for a variety of returns including cash compensation and they tend to compare their own return-to-input ratio with what they perceive as the ratios of other employees. When employees feel their work efforts are not adequately rewarded they will tend to reduce their effort. Kim (2002) therefore suggests that incentive schemes must be implemented with fairness, consistency and transparency in an attempt to control the negative effects of Adams' equity theory.

Maslow's hierarchy of needs theory postulates that individuals are motivated to satisfy unfulfilled needs, and that these individual needs form a hierarchy (Salem undated). In applying Maslow's theory to organizational behaviour, the theory implies that base pay must be sufficient to satisfy basic needs and that the incentive pay affects the employee at the esteem and recognition level. Allen (1998) puts forward a similar theory in the content approach to motivation by focusing on the assumption that individuals are motivated by the desire to fulfil inner needs. Allen (1998) claims that a satisfied need is not a motivator: the most powerful employee need is the one that has not been satisfied.

Heller (2002: 168) describes the impact motivation has on employees as:

“Being motivated is more than just being happy or satisfied in a job. Motivated people want to do the very best they can – not for you, but for themselves. Motivation is a feeling within a person, not something you can impose”

It can be assumed from the above literature that an individual's choice or reaction to an incentive will be influenced to some degree by one of the above theories.

This study will endeavour to identify some of these influencing factors and report accordingly.

2.4. The drive to be globally competitive

The current research has been conducted at a company that produces upholstery leather seat components for local, as well as, international car manufacturers. The company exports its products to Spain, Germany, Turkey, Australia, Austria, and the UK, as well as, supplying local South African based car manufacturers. The automotive industry in itself is a very competitive industry and competition comes from both developed and developing countries. The need to be globally competitive is of foremost importance to this company.

Based on research conducted by Edwards and Golub (2004) it is noted that the national competitiveness of the South African automotive industry is high. This research found that the transportation equipment and component industries have been among the top five performing South African industries during the 1990's from a global competitiveness viewpoint when benchmarked against the same industries in developed and developing countries. This assumption is further supported when benchmarked against the national competitive advantage theory of Michael Porter. Hill (2005) states that four broad attributes of a country shape the environment in which local firms compete. These attributes are factor endowments, demand conditions, relating support industries and firm rivalry. Firms are most likely to succeed in industries where these attributes are most favourable.

The South African automotive industry is well developed in areas such as communication, infrastructure and technological expertise. The domestic demand for its product is focused on quality and sophistication. Firm rivalry is strong and the industry is well supported by local component manufacturers (Frigerio, 2005)

Understanding the phrase 'competitive advantage' is an on-going challenge for many decision makers. Historically, competitive advantage was thought of as a matter of position where companies occupied a competitive space and built and defended their market share (Brewster *et al*, 2003). However, with rapid competition appearing the belief that position was 'competitive advantage' outlived its popularity and a new meaning of the phrase 'competitive advantage' emerged.

Barney (1991: 101) defines competitive advantage as follows:

"A firm is said to have a competitive advantage when it is implementing a value creating strategy not simultaneously being implemented by any current or potential competitors. A firm is said to have a sustained competitive advantage when it is implementing a value creating strategy not simultaneously being implemented by any current or potential competitors and when these firms are unable to duplicate the benefits of this strategy".

The above definition would suggest that company resources have a major role to play in obtaining and maintaining competitive advantage. Brewster *et al.* (2003) claim that companies cannot create strategies for competitive advantage if they do not utilize their resources in the process. It is further claimed that companies are a bundle of resources that enable them to conceive and implement strategies that will lead to above average industry returns.

A resource which has become a topic for much research in recent times, is the cost of labour in South Africa. In a world where labour is the key productive resource, cross-country differences in relative prices are due to differences in labour requirements (Bruce-Brand and Kohler, undated). Edwards and Golub (2004) found that South African unit labour costs are high in comparison with other newly developing countries with which they compete and that further improvements in competitiveness are needed. This claim is further supported by a World Bank (2005) report that states that South African firms are paying higher than normal wages to unskilled workers and an artificially high premium on skilled labour. Furthermore to remain competitive South African firms must be considerably more efficient.

Edwards and Golub (2004) claim that there is considerable evidence to suggest that South African exports respond to relative unit labour costs and that export growth is linked to a combination of moderate wage growth and improved productivity. Attempts to raise wages without increases in productivity could be highly detrimental to global competitiveness, exports and employment.

Bruce-Brand and Kohler (undated) claim that the difference in commodity prices from country to country are the basic cause of trade and these differences are reflected in the costs of production. They explain what comparative cost theory states is that each country will have a comparative advantage and will export those commodities for which its relative output per employee exceeds its relative wage rate in the respective industry. Furthermore, comparative cost advantages play a significant role in determining a country's trade flow, particularly from manufactured commodities.

The principle of the base rate pay system does nothing to support this relationship, hence the reason why companies that depend on exporting manufactured commodities look for alternate compensation methods that link pay to performance in order to remain globally competitive.

2.5. Conclusion

In this chapter, the most commonly used compensation method in South Africa has been discussed. It described the concept of incentive schemes and provided a brief overview of what types of incentive schemes are currently used in business today. A theoretical explanation of employee motivation was presented as they related to the use of incentives. Arguments relating to the international competitiveness of South African labour were presented.

The following chapter analyzes by means of a literature review, the most commonly used incentive schemes. This broad overview will be narrowed down to focus on the specific type of incentive introduced at the chosen company and arguments supporting this choice of incentive presented.

Chapter 3

The structure of organizational incentives

3.1. Introduction

The previous chapter introduced the concept of incentives within the context of today's business environment. This chapter describes the characteristics of the most commonly used methods of incentive compensation. Arguments supporting the benefits of incentive schemes will be presented and discussed. This chapter identifies the factors that led the company under study to evaluate the impact of a piece rate incentive scheme on employee output.

If organizations are to improve productivity then the means to achieve this is through an increase in performance. Rewarding for performance is concerned with rewarding those who have made a contribution to taking the business forward and, conversely, not rewarding those who have not done so. Managing the reward that employees receive so that they can determine a direct relationship between reward and effort; is managing performance through reward (Keith, 2003).

There have been a few attempts to examine the choice of payment scheme and its affect on output. In large part, the lack of literature is a direct result of lack of data (Lazear, 1996). Empirical work in economics often suffers from a lack of experimental data. Comparing worker productivity across compensation systems is no different in this respect. That firms may choose their compensation systems suggests that the observed

compensation system maybe endogenous and this can cause biased results (Paarsch and Shearer, 2000).

3.2. Methods of incentive compensation

There are many methods of incentive compensation applied in today's business environment. In a survey of 427 manufacturing companies in the USA, Imberman (1998) found that almost all were using some kind of positive incentive bonus plan to motivate employees to increase output in order to meet customer demands. This chapter will present the main characteristics of eight variations of incentive compensation, namely, profit sharing, deferred compensation, promotions and tournaments, work-measured schemes, appraisal related pay, competency based pay, gain-sharing and piece rate schemes.

3.2.1. Profit sharing

Profit sharing cash plans usually distribute a part of the organizational profits to the employees either annually in cash, or under deferred versions such as trust funds or retirement funds (Carlson, 1982). Imberman (1998) states that there are two main reasons why companies use profit sharing. Firstly, the use of profit sharing stabilizes the employment situation for older workers who have built up a respectable sum in a deferred fund. Hence, employees do not seek employment elsewhere. Secondly, executives like profit sharing because they have some form of control over activities that generate profits. However, plant employees regard profit sharing as a reward at the year's end for company performance rather than as a daily motivator for plant output. Imberman (1998) claims that profit sharing is more popular with executives than employees and that while this type

of incentive does motivate executives to increase effort and work smarter, the plan has no effect on motivating the efforts of plant employees.

3.2.2. Deferred compensation

With deferred compensation it is said that the worker 'posts a bond' that gets repaid over the course of the relationship (Van Reenen, 2003). Simplified deferred compensation is where a portion of employee earnings is paid out at a later stage, normally in the form of pension funds where the company contributes a monthly or annual amount to the fund for the period of employment. Imberman (1998) found that in the 427 companies surveyed, the use of deferred compensation as an incentive has increased 40% over a 30 year period, between 1968-1998. Van Reenen (2003) noted that deferred compensation is like all long-term arrangements: particularly vulnerable to employer abuse where the employer has the prerogative to fire the employee or induce the worker to quit before the bond is repaid. Imberman (1998) claims that, like profit sharing, deferred compensation is popular with executives but does not necessarily motivate employees.

3.2.3. Promotions and tournaments

Ryvkin (undated) states that a tournament acts as a mechanism that reveals the ranking of players who are then rewarded with predetermined incentives or prizes. Tournament theory focuses on wage growth associated with promotions, promotions are responsible for a large proportion of wage growth thus employees need to change the type of job they do in order to earn a future wage higher than they currently earn (Lazear, 1999).

Ryvkin (undated) states that tournaments are common place in labour market principal-agent games. The author presents reasons as to why tournaments are used in these

situations. Tournaments sort out more able workers while simultaneously providing incentives to perform better. Because rewards are fixed in advance it is harder for employers to under-report workers performance and thus save wages. Promotion to a higher position usually implies more responsibility, therefore when a higher wage is linked to a higher position it discourages less able workers from seeking higher positions.

Van Reenen (2003) states that tournaments are best focused on internal labour markets because it is easier to collect information on workers within the organization. This method is often used as an efficient way of selecting managers. Incentives can then be provided through performance based promotions and a sequence of jobs within the organization.

Advantages of tournaments as an incentive device are said to be the low cost of evaluation as measurement of relative performance is only required at a few points in time.

Managers or owners are prevented from 'cheating' because the reward is predetermined and fixed. Tournaments also negate the effect of the common error in performance (Van Reenen, 2003).

The disadvantages of tournaments as an incentive device are that they cannot be used at the top level, if promotion is the only incentive scheme those at the top have no incentive to perform above current levels of output. Mis-assignment of workers to jobs might result or lead to employees being promoted to their level of incompetence. Competition between workers may be counter-productive and a cause of mistrust between employees (Van Reenen, 2003).

3.2.4. Work measured schemes

Work measurement is often used to determine target performances and provides the basis for many performance based reward schemes for shop-floor workers. In these schemes, a standard output level is set by a work study or rate fixers for a specific task. Work studies typically set a basic time for a task through a combination of observation and laid down theoretical methods. Incentive payments are then linked to performance or output measured against the standard or to the time saved against the standard (ACAS, 2005).

Payment is set at a predetermined starting point. Output at, or below, this level attracts no additional payment, but performance above the starting point attracts additional payment at a proportion of the basic wage or bonus calculator. Most work measured schemes work on straight proportional increments which allow the reward to rise in direct proportion to the rise in output (ACAS, 2005). Work measured schemes are generally found in companies that work on short-cycle repetitive work, where hold-ups and down-time are rare, and where management has been successful in managing the scheme to increase productivity.

3.2.5. Appraisal related pay

Appraisal related pay is based on an underlying view of motivation which suggests that employee effort is improved through the establishment of a “clear” link between effort and reward (Kessler & Purcell cited in Goss 2001). Appraisal related pay is generally used to link an upward movement through a pay band to an assessment or appraisal of an employee’s work performance during a given period. This assessment is usually done annually but may also occur quarterly. Assessments usually relate to employee

achievements set against agreed goals and objectives relating to output and quality of work (ACAS, 2005).

Appraisal is the process of identifying, evaluating and developing the work performance of employees in the organization in order to achieve organizational goals and objectives while at the same time benefiting employees in terms of rewards and recognition (Goss, 2001).

Appraisal related pay awards are typically based on an annual appraisal rating against a predetermined rating scale, which maybe supplemented by other considerations. The most common forms of appraisal related payments are a combination of lump-sum bonuses and merit increments (Goss, 2001). Ball (2001) writes that appraisal systems are often misunderstood and mismanaged, especially if they form part of the duties of lower level managers who do not understand the background or objective of the formal appraisal.

The advantages of appraisal related pay are that it provides a 'felt fair' system of rewarding employees according to their individual contribution. It provides a tangible method of recognizing employee achievements and the link between extra pay and extra performance is clear to all. Furthermore, people understand the performance requirements of the organization, which in turn can lead to higher performance within the organization (ACAS, 2005).

The disadvantages of appraisal related pay are such that many schemes involve an annual assessment with reward which, in the long run, can weaken the incentive effect. Linking pay to appraisal can also have the disadvantage of the assessments focusing on the past, leading to employees becoming defensive about unachieved objectives, as opposed to looking forward and agreeing new objectives. If a worker receives a below average appraisal rating and receives no increase at all, the risk exists that employee motivation and morale will be adversely affected and future performance compromised even further (ACAS, 2005).

3.2.6. Competency based pay

Competencies are the knowledge, skills and the attitude needed by any individual employee to carry out their job effectively. These can be incorporated into a pay system to reward employees who positively contribute to the overall goals and objectives of an organization. Competency based pay rewards the way people work, not just recognizing what they can deliver.

Competency based pay makes reference to a pay system in which pay increases are linked to the variation and number of skills or competencies an employee acquires and applies on the job. These increases are in addition to, and not in lieu of, the general annual pay increase employees receive. Competency based pay is a person-based and not a job-based pay system. It rewards the individual for what they are worth, not what the job is worth (de Silva, 1998).

ACAS (2005) and Phillips (2003) describe competency based pay as a system that measures inputs and what the individual is bringing to the job. This is unlike traditional performance based systems which measure outputs. In a recent study, Phillips (2003) found that the introduction of a competency based pay system at a company that produced crushed stone, resulted in an overall reduction of labour cost per ton of stone produced, a reduction in employee turnover and the reduction of levels of pay from 12 to 5, with larger differentials between levels.

The advantages of competency based pay include increased skill and flexibility in the workforce, a reduction in traditional demarcations between management levels, increased efficiencies, and tangible benefits for workers in return for changes in working practice (ACAS, 2005).

The disadvantages of competency based pay are increased payroll costs as workers gain higher rewards for increased skills. Increased training costs and queuing for training will occur as workers request more skills training. Employers may pay for skills or competencies rarely used, and highly trained workers become more marketable and subject to poaching from competitors (ACAS, 2005).

De Silva (1998) suggests that competency based pay is most appropriate to organizations that depend on a high level of skills and in which labour costs are a small portion of total costs. An example put forward by de Silva (1998), is the banking and airline industries where competency based pay is used to encourage employees to work in areas where manpower is most needed due to customer requirements.

3.2.7. Gainsharing

Gainsharing is a form of added-value pay scheme linking workers pay to the achievement of organizational goals by rewarding performance above a predetermined level. The reward may be in the form of a share of the profits generated by additional sales or a measure of customer satisfaction, but is almost always led by measures of performance, productivity gains and quality products produced (ACAS, 2005).

Imberman (1995) describes gainsharing as a group system and not an individual piecework system that encompasses a group bonus in which the entire organizational workforce shares as a result of improving productivity above a predetermined level. The author adds that a successful gainsharing scheme relies on two factors: formula and training. A sound formula based on past performance is the level from which the gain is measured and payout is distributed. For the scheme to work, all levels of the workforce must be educated about their respective roles in the gainsharing through proper training methods.

Weckmann (2004) suggests that gainsharing works best when company performance levels can be easily quantified, and that employee involvement significantly enhances the effectiveness of incentive pay. The author claims that gainsharing schemes are used in more than a quarter of Fortune 1000 companies as well as many smaller firms and public sector organizations. The Employment Policy Foundation (1998) claim that when used in a combination with employee involvement, the benefits of gainsharing can be further advanced. The Foundation suggests that increases in productivity of up to 26% have been recorded under gainshare schemes.

The advantages of gainsharing are that employees become more involved in the productivity gains made by the employer, along with employees sharing in the benefits of employee sponsored improvements. Gainsharing enhances employee commitment to organizational goals and helps companies achieve sustained increases in productivity (Weckmann, 2004).

The disadvantages of gainsharing are that it requires a shift to a more team-based management style. The formulas and programme might be difficult for all employees to understand if not clearly explained (Weckmann, 2004).

In a recently conducted personal interview with the Managing Director of a prominent shoe manufacturing company in the Pietermaritzburg area, it was discovered that the company had introduced a gainsharing scheme in 2001 that has resulted in both gains for the employees as well as the company, beyond all expectations (Moodley, 2005). Figures revealed by the Managing Director show an increase in output per employee from a pre-introduction level of eight pairs of shoes per man/day to the current levels of 22 pairs of shoes per man/day. Employee income has increased on average by 42% with the most productive employees generating income increases of up to 75%. Further benefits of the scheme has seen 'work in progress' decrease from levels of 30,000 pairs of shoes to the current levels of 5,000, and delivery times reduced from 40 days to the current level of 3 days. Absenteeism has also decreased from levels of 10% to below 1%.

The scheme adopted at this shoe factory is very simple. The company costs a pair of shoes using three main elements: raw materials, labour, and manufacturing overheads.

It builds into its costing model a labour cost based on a standard-time to produce a pair of shoes and recovers a portion of overhead per pair of shoes manufactured based on a maximum output capacity of 1900 pairs per day. Raw material is basically fixed and cannot be influenced by employees. If output exceeds 1900 pairs per day, the extra pairs are classified as a gain and the savings generated by the gain are split between the company and the employees. The employees receive the value of the labour saving based on the standard labour cost per pair of shoes and the company receives the overhead portion of the saving. The Managing Director indicated that as employee earnings increased, the profitability of the company also increased, and that the success of the scheme can firmly be attributed to two things: a simple formula for splitting the gain, and on-going education and training of employees (Moodley, 2005).

The description and information provided from the above mentioned personal interview has put the use of gainsharing into a South African context and has also highlighted the opportunity that exists for South African companies to test the viability and use of gainsharing and similar incentive schemes in order to increase employee effort and output.

3.2.8. Piece rate schemes

According to ACAS (2005), piecework is the simplest method of performance based pay. Workers are paid at a specific rate for each 'piece' of output produced. This means that the system is simple and straightforward and easy to operate and understand. Piece rate schemes are easily managed and are applicable to both individual and group-based methods of manufacturing. A negative consequence of such a scheme could be that

quality and safety standards are compromised by certain employees wanting to attain a higher output to receive the pay reward.

In formal organizations and particularly in work teams within organizations, the following two situations often occur. In the first, one can observe or measure the output of the worker group only, but not the contribution of each member. In the second, the output of each member depends not only on their own effort but also on the efforts of the other workers. The problem that arises in both situations is how to construct reward or incentive schemes that are fair in all instances. In the first case, one cannot tie individual rewards to individual outputs. In the second case, one may do so, but the tie between individual effort and output is blurred by the interdependencies. Group piece rates are suggested remedies in both situations, Petersen (1994), however, in research by Petersen (1994) it was claimed that group piece rate schemes were susceptible to free-rider problems, and that under group piece rate schemes each worker has an incentive not to work hard, since their contribution to the group is of the order $1/n$, where n is the group size.

Petersen (1994) found through empirical analysis that group target schemes on average lead to higher wages than group piece rate schemes and that individual target rate workers earned between 6 and 8% more in pay than piece rate workers.

Paarsch and Shearer (2000) analyzed secondary data provided by a firm operating within the tree planting industry in British Columbia, and concluded that workers are more productive under piece rate than under fixed rate systems. The increase in productivity

was classified in two categories: all trees planted, and all trees that were classified as being planted well. The increase for all trees planted was 22%, and the increase for all trees that were classified as being planted well was 14%.

Lazear (1996) tested the theory that when a firm switches from a fixed rate to a piece rate system of payment, the average output per worker and average ability should rise. The analysis was conducted on secondary data provided by Safelite Glass Corporation, who during 1994 and 1995 operated fixed wage and piece rate payment systems. The results from the analysis of the Safelite glass corporation data reveals an increase in some worker's output by 36%, an average increase of 20%, and an increase of 9.6% in worker earnings. Further benefits from this analysis indicate a reduction in absenteeism and that the variance of output per worker increased from 2.02 to 2.53. Lazaer further claims that the results strongly indicate that incentives do matter, and the effects of the switch from fixed wage to piece rate compensation are large, and statistically precise. The company gradually moved to a piece rate method of compensation.

Imberman (1998) states that piece rate schemes provide excellent incentives for productivity improvement, and in labour intensive manufacturing this type of compensation scheme is popular with employees. A benefit of piece rate schemes over some other types of incentive schemes, is that the payments for increased output are made immediately so there is no waiting period for employees as is the case with profit share schemes.

3.3. Overview of the company under study

The company under study is a supplier of upholstery leather to the automotive industry to local and international manufacturers. The company has been supplying the automotive industry for the last 16 years and operates from a single manufacturing facility situated on the outskirts of a large northern KwaZulu Natal town. The company employs 450 personnel and draws its workforce from two local townships. The average tenure is 5 years with some employees having been with the company since its inception.

The products produced by the company are marketed worldwide. The main competition comes from companies with operations in East and Western Europe, North and South America, Asia and Australia. The need to be globally competitive is of foremost importance to this company and cost reduction through increased productivity, is one way of insuring that it remains globally competitive.

The manufacturing process is very labour intensive due to the fact that each hide is handled individually through each process. Output is measured on a 'hides produced per day' basis. The entire production workforce is paid on an hourly basis and the rate for each operator is based on the skill required and complexity of the operation being performed. These rates are set by the national bargaining council for the leather industry, of which the company is a member.

It is not uncommon in organizations that use the hourly paid method of compensation, to find that the payment is linked to a minimum target of output. The danger of this is that,

over time, the minimum becomes the maximum, and employees become unwilling to produce any more products.

Over the last few years the company has looked at many ways to increase worker output, all to no avail. The harder management tried to induce greater worker effort, the more reluctant the workforce became. The current situation is that previous minimum targets have become the maximum daily output. Requests for increased productivity are met with a “pay us more and we will do more” response irrespective of machine capacity. Due to the need to find a solution to this resistance, the company has decided to explore alternative compensation methods and test the findings and claims that the introduction of an incentive scheme would encourage greater worker effort.

3.4. Selection of incentive for evaluation

In order to evaluate the use of incentives, the company had to choose an incentive scheme that was simple, easily understood and easily implemented. The scheme was required to be a close fit with the company’s current measurement system in order to allow a fair comparison to take place after the implementation of the incentive scheme.

The company chose to evaluate the piece rate incentive scheme primarily because it met the conditions of simplicity, understandability, and the fit with the company’s current measurement system of output. Arguments as put forward in literature by Imberman (1998), Lazear (1996), Paarsch and Shearer (2000), and Petersen (1994) strongly support the use of piece rate schemes as a means to induce greater employee effort. The results provided by the above research were sufficient to convince senior management at the

company to test the claim that piece rate incentives would, in fact lead, to greater employee effort leading to higher output.

3.5. Conclusion

This chapter presented and described the most commonly used incentive schemes in the broader context of compensation methods used in business today. It offered explanations as to the working mechanisms of the various schemes and the potential benefits that can accrue to those companies and organizations that apply such incentives. The disadvantages of the various schemes were also addressed. Arguments relating to the success of incentives as a means of increasing employee effort and output were presented.

This chapter provides the context of the study within which the chapters that follow should be viewed. The following chapter presents the methodology of the study which was carried out at the company.

Chapter 4

Rationale and methodology of study

4.1. Introduction

The previous chapter described the concept of incentives as a means to induce greater employee effort. It also provided an outline of the current study. This chapter describes the rationale and methodology of the field experiment undertaken by the company and provides the context in which the following chapters should be viewed.

4.2. Rationale of field experiment

Over the last few years the company under study has looked at many ways to increase worker output, all to no avail. The harder management tried to induce more worker effort, the more resistant the workforce became. The current situation is one where previous minimum targets have become the maximum daily output, and any request for management to increase worker effort is met with 'pay us more and we will do more'.

This study experiment tested the claim by workers that if they are paid more than they currently receive under the hourly pay method, they will do more. The experiment also tested the assumption that predicts that employees will increase their output when they are switched from an hourly paid system of payment to a piece rate system of payment for output produced.

There is little evidence to be found in literature that a study like this has ever been carried-out in South Africa. It would be untrue to say that piece rate systems do not exist in

South African industries, but little empirical evidence exists to determine the success or failure of such systems.

There is significant evidence that states that the South African manufacturing sector is lagging behind its global competitors when it comes to output (Edwards and Golub, 2002). This study helped to draw conclusions on the ability of a section of the manufacturing sector to increase output under certain conditions.

The study field experiment also generated valuable information on worker behaviour. Should the finds of previous research be proven to be correct and worker effort does improve, then it could be suggested that money has the potential to be a motivating factor in the South African manufacturing sector. However, should the findings of previous research be disproved, further research would need to be carried out to determine why a workforce, when offered more money to do extra work, did not respond to such an opportunity.

4.3. Research design

The current study focused on determining critical factors that contributed to the success or failure of the introduction of a piece rate incentive scheme. The use of triangulation allowed the researcher to combine multiple observations, theories and empirical material to overcome the problems of a single method, single observer, and single theory studies. The use of triangulation or mixed research methods is well supported in a recent paper by Olsen (2004).

The nature of the study facilitated triangulation of the following research methods:

- A quantitative field experiment to determine if a causal relationship between worker effort/output and piece rate incentives exists.
- Post-experiment structured interviews of a sample of the population.
- An in-depth literature review identifying the theories and concepts relating to piece rate incentive schemes.

The use of triangulated research methods in many forms of research in today's business environment is wide. Exemplars of triangulation methods of research are Delphy and Leonard (1992), Folbre (1994), Paterson (2001), and Fagan and Ward (2003). Olsen (2004) argues that triangulation, or mixed methods of research on a single study topic carries far more value than single based research methods since triangulation offers two or three viewpoints on the topic under study.

4.3.1. Field experiment

In order for the field experiment to take place the researcher was required to consult and convey the mechanism and intention of this study to all employees and their respective unions. The researcher discussed with each group of employees the rate of pay per piece (Table 4.1) they would receive and the minimum output target (Table 4.2) that would need to be achieved before the piece rate payment would take effect.

The field experiment took place over five consecutive days during April 2005. Each group had the opportunity to make their own decision on the level of output produced during this five day period. The researcher intended to gain consent from each group on

their participation and willingness to try and exceed the current levels of output before the intervention was introduced. Although all groups indicated their willingness to participate during pre-experiment discussions, when the intervention was introduced the participation level was completely different and a lot lower to that of the initial response from the workforce.

Use of the quasi-experimental research method and an interrupted time-series design was made in order to generate pre- and post-intervention measures of output. These two methods were chosen because the complexity of the manufacturing process would not allow true experimental research to take place without causing bias. The use of this research approach is well-supported by Clementi *et al* (1993).

It was not possible to select employees randomly as this approach could have led to employees performing tasks outside of their skills level. The use of true experimental research methods was not an option as it would have placed too much risk on product quality due to the possibility of all the skilled workers being randomly selected into the same groups.

Although there is a certain amount of multi-skilling at the company under study, not all workers are at a skills level that allows them to perform tasks to which they are not accustomed. As an example, the spraying operation is performed by a team of five employees, namely, a colour matcher, senior operator, operator, and two general workers. The skills level of the colour matcher is far higher than that of the general worker because of the complexity of the work which they are required to deliver. Although two teams of

spray-line operatives exist at the company, simple random sampling could not be used because of the risk of both colour matchers and both operators ending up in the same group, which would have thwarted the experiment entirely.

The use of the interrupted time-series design allowed the researcher to make use of the large volumes of historical data on current and past output as the pre-test measurement. These pre-test measurements were reliable and suitable for the experiment. The interrupted time-series design method allowed the research to be carried out without the need to randomly select an experimental group and a control group from existing groups, thus preventing any worker claiming that favouritism had taken place in the selection of the experimental group. However, an experimental and controlled group did develop unintentionally during the experiment due to the decisions taken by each group to support or decline the opportunity to exploit the piece rate incentive intervention. Groups that increased output automatically became the experimental groups while those that maintained current levels of output became the control groups. The interrupted time-series design also catered for employees who carried out an operation on a machine where only one machine of that type existed at the company, to take part in the experiment. This approach is in line with that of Lazear (1996) and Paarsch and Shearer (2000) where a large volume of secondary data was used to determine the impact of piece rates on glass fitters at Safelite Glass Corporation and tree planting in British Columbia, respectively.

The quantitative objective of this experiment was to determine if a causal relationship existed between worker effort/output (the dependent variable) and the intervention of a piece rate incentive scheme (the independent variable). However, the researcher made

provision in the research design to deal with the possibility that if the experiment did not support previous research and theory in this regard, then the qualitative post-experiment interview process would be conducted to identify reasons for this outcome.

According to Trochim (2005) there are three criteria that would need to be satisfied before a claim of a causal relationship. These are:

- Temporal Precedence
 - Cause happened before effect
- Covariation of the cause and effect
 - If X then Y, if not X then not Y
- No Plausible Alternative Explanations
 - Rule out all other alternatives, prove internal validity.

The researcher achieved the first and second criteria through the control and administration of the experiment as there was full control over when the experiment started, how the piece rate variable was introduced and when the variable was removed.

The use of the interrupted time-series design helped to eliminate some of the threats to the third criterion, because any confounding variables that existed, were present in both the pre-test and post-test responses. The triangulation research method was selected primarily to deal with the problems associated with this third criterion.

4.3.2. Post experiment structured interviews

Prior to the intervention the assumption was made that the experiment would produce two sub-populations: a sub-population made up of groups/teams of employees who increased output and a sub-population of groups/teams of employees who did not increase output.

In order for this study to add as much knowledge to the existing body of knowledge the author carried out structured interviews with a sample of each sub-population using a 20 question questionnaire.

4.3.2.1. Sampling design for structured interviews

The author had identified the population to be $n=211$ individuals, however these individuals work in groups/teams where $n=58$. Because participation and any attempt to exceed current levels of output was a group decision, the researcher chose a purposive non-probability sampling method. Purposive sampling involves choosing individuals or groups from a population based on certain characteristics. The assumption was made that this experiment would produce two sub-populations, as mentioned before. Based on this assumption the researcher provided the opportunity in the sampling design to interview a sample of the groups who increased their output and a sample of the groups who maintained current levels of output during the experiment. The sampling size was 10 groups from a total of 58, proportionately split between those employees who increased output and those who did not. Sampling of each group was random. The use of purposive sampling allowed for the categorization of the groups/teams followed by random sampling to select a proportionate sample from each sub-population. It was not

possible to interview all 58 groups consisting of 211 individuals, as it would have been to costly and time consuming.

Random sampling is not normally associated with non-probability sampling methods. However, in this case it was critical for the researcher to interview a sample of each sub-population and purposive sampling guaranteed this. Simple random sampling would not have created this opportunity and the study could have been biased to one group or the other.

The sampling size chosen helped to reduce the standard error of the mean of the population (Kruger and Welman, 2001: 64). Qualitative research suggests that this sampling methodology is appropriate and is well supported in recent research by Babbie and Mouton (2001).

4.4. Data collection method

Quantitative data was collected from each operation by means of measured output. The company under study operates a very sophisticated system for measuring output, which is based on hides produced per day, per operation. The same method of data collection from each operation was applied to this experiment and was identical to how the pre-test or historical data was previously measured. The reliability of the data which is collected on a daily basis with some operations collecting hourly, is continually checked and cross-referenced and in certain processes these measurements are carried out via electronic means using specific equipment. The data was assumed accurate and reliable and well suited for the purpose of this experiment.

Qualitative data was collected through in-depth structured interviews with groups from both sub-populations, those that increased output and those that did not. Because group size was between four and seven members the interviews followed the focused group method of data collection.

4.5. Data analysis

The quantitative objective of the experiment was to determine if a causal relationship exists between the dependent variable, output, and the independent variable, piece rate incentives. The data from this experiment was analyzed using Pearson's correlation coefficient to determine the degree of the relationship between the two variables.

Descriptive statistics were used to determine if scores differed between groups because of single variables such as age, number of years service, gender, membership of a particular union, or rate of pay.

With the qualitative purpose of the study being descriptive, the researcher attempted to capture and describe the thoughts and the experiences of the individual/group participants as disclosed in the focused group interviews.

The choice of data analysis used is in line with that of previous research literature. The literature review highlighted the need for this study to focus on real world data for empirical analysis. Previous researchers have focused their literature on providing empirical analysis based on secondary data, whereas this study focused on primary data and used the same analytical methods to determine the significance of piece rate incentive schemes on output. This type of objective is also clearly found in the literature reviewed.

However, little or no attention has been given to the human behavioural side of these experiments. This research is designed to generate contributing factors to the current body of knowledge that go beyond the results of empirical analysis.

Chapter 5

Data analysis

5.1. Introduction

The previous chapters have presented the concept of incentives as a means of employee compensation, explained various types of incentives and their uses, discussed research findings on the topic of incentives schemes in First World countries and presented the rationale and methodology for the study.

This chapter presents primary data collected from a real life field experiment at a South African automotive leather company in order to determine the applicability of a piece rate incentive scheme as a means of motivating employees to increase output.

5.2. Data collection

The data was collected from two sources: the field experiment and the post-experiment structured interview process. The data was collected by means of systematic observation during a five day field experiment and post experiment personal interviews using a 20 item questionnaire on a sample of both sub-populations.

Although the main focus of this study was to determine the impact of piece rate incentives as a means of motivating employee effort, the analysis of both sets of data is equally important in providing recommendations for further research. The following sections provide analysis of both sets of data collected from this study.

5.3. Data analysis

5.3.1. Field experiment

This section analyzes the data collected from the field experiment. It discusses the participation rate of the population of groups dividing the population into two sub-populations: those groups of employees who increased output and those who did not. It discusses the strength of the relationship between the dependent variable (output) and the independent variable (piece rate incentives), using Pearson's correlation coefficient. It discusses and presents possible reasons for the outcomes of the field experiment using single variables such as age, number of years service, gender, membership of a particular union or rate of pay.

5.3.2. Participation rate

In total five groups out of 58 decided to make use of the opportunity to increase earning through increased effort leading to higher output. This equates to 8.6% of the total number of groups and 12.8% of the total number of individuals employed. This participation rate is lower than what was anticipated and not reflective of the degree of willingness to participate as indicated in the pre-experimental discussions held with the workforce. Nevertheless, the data provided from these five groups is sufficient to determine a causal relationship between piece rate incentives and output. It is interesting to note that the five groups who did participate worked in the same department, which represented a 72% participation rate from that department. The other two departments had no representation in this regard.

5.3.3. Analysis of primary data

The literature review indicated an increase in both employee output and earnings when companies moved from a basic rate system of compensation to a piece rate system of compensation. The analysis of the data generated from this field experiment supports previous findings in this regard.

The five groups that switched to piece rate compensation increased their output ranging from a 4%, to a 27.5%. Employee earnings across the five groups also increased within a range of 4% to 30%.

This would indicate that, in a South African context, employees who participate in a switch from base rate compensation systems to piece rate systems derive similar benefits to those employees in First World countries. These results could be an indicator that piece rate schemes could be successful in South African industry.

The following table provides statistical analysis using Pearson's correlation coefficient for output and compensation for the five groups concerned.

Table 5.1 Correlation of output and compensation

Employee Group	n	r	p
Spray machine	10	0.94	0.000
Embossing	20	0.90	0.000
Measuring machine	15	0.76	0.001
Syncro roller coater	17	0.35	0.166
Reverse roller coater	17	0.28	0.282

The above table can be simplified and reported as follows:

In the case of the group who operate the spray machine, the r value of 0.94 would indicate a very strong positive correlation between output and piece rate compensation. The p value is 0.000 which means that the correlation is statistically significant at the 1% level. This group was the most consistent group in the experiment increasing output above historical output on each of the five days.

In the case of the group who operate the embossing machine, the r value of 0.90 would indicate a very strong positive correlation between output and piece rate compensation. The p value is 0.000 which means that the correlation is statistically significant at the 1% level. This group increased output on four of the five days and generated the largest total increase in output of 27.5%.

In the case of the group who operate the measuring machine, the r value of 0.76 would indicate a very strong positive correlation between output and piece rate compensation. The p value is 0.001 which means that the correlation is statistically significant at the 1% level. This group also increased output for four of the five days with an overall increase of 14%.

In the case of the group who operate the syncro roller coater, the r value of 0.35 would indicate a moderately strong correlation between output and piece rate compensation. The p value is 0.166 which means that the correlation is not statistically significant. This group increased output for three of the five days generating a 7.5% overall increase in output.

In the case of the group who operate the reverse roller coater, the r value of 0.28 would indicate a weak positive correlation between output and piece rate compensation. The p value is 0.282 which means that the correlation is not statistically significant. This group increased output on only one of the five days and had the lowest overall increase in output of 4%.

The quantitative objective of this experiment was to determine if a causal relationship exists between worker effort/output, and the intervention of a piece rate incentive scheme. The above results indicate that in the five groups who switched from base rate compensation to piece rate compensation that this holds true and that a causal relationship exists between worker effort and the introduction of a piece rate incentive scheme. The three criteria required to satisfy and claim that a causal relationship exists would also appear to have been met: the cause happened before the effect, output Y increased when X was present and output Y returned to normal when X was removed. No other plausible alternative to this change was discovered.

However, with only five groups out of the total of 58 groups making the switch to the piece rate scheme, it may not be fair to claim categorically that the introduction of a piece rate scheme at the company under study induced greater worker effort. While it certainly holds true for the five groups that increased effort it may not for the 53 groups who did not participate. In order to further understand the group dynamics of the two sub-populations the researcher analysed the group differences using the variable of union membership, gender, service, hourly rate of pay and age, in order to generate additional information that

could provide a better understanding of why the groups who made the switch did so in the first place.

5.3.3.1. Union membership

The company under study has two unions representing the workforce and the membership ratio is split 60/40 between the two unions. The analysis of the two sub-population groups showed a similar ratio split, with 64% of the group who chose not to increase output belonging to the strongest represented union. In the group who did increase output, 59% of the group belonged to the strongest represented union. These figures would indicate that union membership bears no influence on the decision of the employees to increase output or not.

5.3.3.2. Service

In order to evaluate the impact of years of service on participation in the experiment the following values were determined:

Table 5.2 Years of service

Employee	n	Mean	StdDev
All employees	211	8.51	4.29
Increased output	27	9.59	5.30
No increase	184	8.35	4.11

The statistical analysis indicates that the two groups are not statistically significantly different in terms of their mean scores on service ($t=-1.16$; $df=30.76$; $p=0.253$). It would

appear that years of service was not a major influence on the decisions made by both groups.

5.3.3.3. Age

In order to evaluate the impact of age on participation in the experiment the following values were determined:

Table 5.3 Employee age

Employee	n	Mean	StdDev
All employees	211	37.47	7.24
Increased output	27	39.26	7.54
No increase	184	37.21	7.18

The statistical analysis indicates that the two groups are not statistically significantly different in terms of their mean scores on age ($t=-1.37$; $df=209$; $p=0.171$). It would appear that the age of employees was not a major influence on the decisions made by both groups.

5.3.3.4. Gender

The gender profile of the population at the company under study is 56% female and 44% male. The analysis of the two sub-populations indicate a similar ratio in the group that did not increase output with 51% female and 49% male ratio. However, in the group that did increase output the ratio was 93% female to 7% male. The statistical analysis indicates that the two groups are statistically significantly different at the 1% level in

terms of their mean scores on gender ($t=-6.56$; $df=57.69$; $p=0.000$). It would appear that gender has influenced the decisions made by both groups.

5.3.3.5. Rate of pay

In order to evaluate the impact of rate of pay on participation in the experiment the following values were determined:

Table 5.4 Rate of pay

Employee	n	Mean	StdDev
All employees	211	17.76	2.07
Increased output	27	17.10	2.08
No increase	184	17.86	2.06

The statistical analysis indicates that the two groups are not statistically significantly different in terms of their mean scores on rates of pay ($t=1.78$; $df=209$; $p=0.076$). It would appear that the different rates of pay of employees were not a major influence on the decisions made by both groups.

5.3.4. Summary of field experiment

The data collected indicates that a causal relationship exists between piece rate schemes and increased output. However, this was apparent only in a small percentage of the population. Further investigation into the dynamics of each sub-population groups has revealed interesting information about the profiles of the groups. The one significant factor of the group that increased output was the fact that 93% of this group were female.

Other factors relating to the group that increased output, that were not statistically significant, but are worth noting, are the mean values of service, age and rate of pay. This group was made up of older employees with the longest service and the lowest rates of pay. Although these facts are interesting they do not provide a basis to answer why the other 53 groups made the choice they did.

5.3.5. Structured interview process

This section will analysis the data collected from the structured interview process. It will discuss the response rate, employee opinions on the concept of piece rate schemes, opinions on pay as a motivator, general feedback on the understanding of piece rate schemes and personal views on current output levels. It will present the views of a sample of employees from both sub-populations.

The data was collected using a 20 item questionnaire: six questions dealt with the concept of piece rate schemes, eight questions dealt with pay as a motivator and six questions dealt with general issues. The data from the questions on the concept of piece rate schemes and pay as a motivator, was analysed using a five point Likert attitude scale, 5 represents strongly agree, 1 represents strongly disagree. The data on general issues was analysed using the mean score of a yes/no response.

5.3.5.1. Response rate

In total, 10 groups were randomly selected for the interview, nine groups from the sub-population who chose not to increase output and one group from the sub-population who chose to increase output. A total of 31 individual employees were interviewed.

A response rate of 100% was achieved based on the sampling plan, with no employee refusing to take part in the interview process.

5.3.6. Data analysis

The data collected from the interviews was analysed using the mean, standard deviation, median, and minimum and maximum scores from the two sub-population group responses. The analysis is split into three sections, the concept of piece rate schemes, pay as a motivator, and general issues.

5.3.6.1. Concept of piece rate schemes

The literature review indicated that the concept of piece rate schemes was essentially a good one. Answers given to the interview questions relating to the principle of piece rate schemes revealed strange and unexplainable results. When asked if the groups thought that the principle of piece rate schemes was essentially a good idea, the group who increased output responded as follows:

Table 5.5 Principle of piece rate schemes (1)

Mean	Std Dev.	Median	Minimum	Maximum
2.33	1.75	1.5	1	5

The above values indicate that although this group increased output, the group's opinions vary widely. Based on a mean score of 2.33, the opinion of the group indicates that this group disagrees with the statement that piece rate schemes are essentially a good idea.

The minimum and maximum scores recorded could offer some explanation for this result.

It could be claimed that the individual who strongly agreed that piece rate schemes are a good idea, influenced the group into the decision taken to increase output. However, the researcher cannot provide any other factors that add support to this claim with the exception that when asked if the group understood the scheme that was introduced, 50% of the group stated they did not understand the scheme.

Answers given to the same questions by the groups who did not increase output offer equally confusing results as presented below:

Table 5.6 Principle of piece rate schemes (2)

Mean	Std Dev.	Median	Minimum	Maximum
2.96	1.62	3.0	1	5

The above values indicate that although these groups did not increase output the group's opinions vary widely. The mean score of 2.96 and the median score of 3.0 indicate that the opinions of the different groups was split equally between those who agreed that piece rate schemes were essentially a good idea and those who disagreed with this statement.

Again, these results are difficult to explain and the researcher can only assume that the more influential group members swayed the decision made by these groups.

This data was related to questions 1, 5, and 12 of the questionnaire.

The literature review indicated that the overall performance of a company would increase after the introduction of a piece rate scheme. Answers given to questions relating to the improvement of overall performance of the company if a piece rate scheme was introduced provided the following results from the group who increased output:

Table 5.7 Performance improvement (1)

Mean	Std Dev.	Median	Minimum	Maximum
2.50	1.51	2.5	1	5

The above values indicate that the group who increased output disagreed with the statement that the overall performance of a company would improve after the introduction of a piece rate scheme.

Answers given to the same questions by the groups who did not increase output are presented below:

Table 5.8 Performance improvement (2)

Mean	Std Dev.	Median	Minimum	Maximum
2.76	1.42	3.0	1	5

The above values indicate that these groups had similar views to the group who did increase output and also disagreed with the statement that introduction of a piece rate scheme would improve the overall performance of the company.

This data was related to questions 2, and 11 of the questionnaire.

The literature review indicated that companies that introduced piece rate schemes discovered that as volumes increased employee numbers remain static as output per employee increased.

Answers given to a question asking if the groups felt that piece rate schemes prevented the company from employing more people as volumes increased, received the following response from the group who increased output:

Table 5.9 Future employment (1)

Mean	Std Dev.	Median	Minimum	Maximum
3.66	1.21	3.5	2	5

The above values indicate that the group who increased output has the opinion that piece rate schemes prevent companies from employing more people.

Answers given to the same questions by the groups who did not increase output are presented below:

Table 5.10 Future employment (2)

Mean	Std Dev.	Median	Minimum	Maximum
2.92	1.15	3.0	1	5

The above values indicate that the groups who did not increase output have a split opinion on whether piece rate schemes prevent companies from employing more people as volumes increase.

This data was related to questions 6 of the questionnaire.

5.3.6.2. Summary of finding on the concept of piece rate schemes

The above findings provide information that is contradictory to what actually occurred during the experiment. One would not have expected that the group which increased output would have the opinion that the principle of piece rate schemes was essentially not a good idea. This response poses the question why they actually chose to increase output when they felt that piece rate schemes were not a good idea.

Both sub-populations had similar views on the use of piece rate schemes as a means of improving company performance and felt that piece rate schemes prevented companies from employing more people. These views would indicate that the employees of the company under study do not see improving productivity as a means of improving the overall performance of the company. These opinions do not agree with the literature which claims that one of the most significant ways of improving company performance is through improved productivity. The assumption can also be made that the current employees feel that as volume increases more people should be employed to handle the increase in requirements.

5.3.6.3. Pay as a motivator

The literature review provided mixed views on whether pay could really be claimed to be a motivator. The section will provide opinions from the sample groups.

Answers given to questions relating to whether piece rate schemes motivated employees to produce more provided the following results from the group who increased output:

Table 5.11 Employee motivation (1)

Mean	Std Dev.	Median	Minimum	Maximum
2.83	1.72	2.0	1	5

The above values indicate a large spread in the opinions of this group. The mean value of 2.83 indicates that the group was split equally in its opinion, however, the median value of 2 indicates that the central location is skewed and that a high percentage of this group disagreed with this statement.

When asked the same questions the group who did not increase output responded in the following manner:

Table 5.12 Employee motivation (2)

Mean	Std Dev.	Median	Minimum	Maximum
3.12	1.54	4.0	1	5

The above values indicate that the groups were split in their opinion on whether piece rate schemes motivate employees to produce more. However, the median value would indicate that there were more employees who agreed with this statement than those employees who disagreed with the statement.

This data was related to questions 3, 7 and 10 of the questionnaire.

Answers given to questions related to the current method of payment and current rates of pay provided the following results from the group who increased output:

Table 5.13 Methods and rates of pay (1)

Question	Mean	Std Dev.	Median	Minimum	Maximum
4	3.84	1.47	4.5	2	5
9	4.33	0.52	4	4	5

The above values indicate that it is the opinion of this group that the current method of payment is the best and the company should continue to use this method. This group also indicated that the job they most prefer is the job that pays the highest hourly rate of pay.

This is dealt with in question 9 of the questionnaire.

The same questions were asked to the groups who did not increase output and the following results were found:

Table 5.14 Methods and rates of pay (2)

Question	Mean	Std Dev.	Median	Minimum	Maximum
4	3.28	1.37	3.0	1	5
9	3.28	1.17	4	1	5

The above values indicate that the groups were split as to which type of pay scheme was the best. The mean and the median response to question 4 support this claim. The groups had similar opinions on the question on rates of pay. The mean value indicates that the groups are split in their choice of job and rate of pay, however, the median would indicate that most group members would like the job that pays the highest hourly rate of pay.

Answers given to questions relating to output and whether this group felt that employees could actually increase output provided the following results from the group who increased output:

Table 5.15 Current levels of output (1)

Mean	Std Dev.	Median	Minimum	Maximum
3.33	1.21	3.5	2	5

The above values indicate that it is this group's opinion that employees cannot increase output above current levels irrespective of the type of payment method used by the company.

The same questions were asked to the groups who did not increase output and the following results were obtained:

Table 5.16 Current levels of output (2)

Mean	Std Dev.	Median	Minimum	Maximum
2.88	0.97	3.0	2	5

The above values indicate that these groups are equally divided in their opinion on whether employees can increase output above current levels or not.

This data relates to questions 8, 13, and 14 of the questionnaire.

5.3.6.4. Summary of findings of pay as a motivator

The above information on pay as a motivator has provided valuable insight into employee views and opinions. Again, the response when asked if they felt that piece rate schemes motivated employees to product more, the response from the group who increased output contradicts their actions during the experiment. Their responses remain unexplainable. Likewise, the groups who did not increase output had opinions that also contradict their actions during the experiment. The researcher can only assume that more influential group members guided the other group members in the decision making process.

Furthermore, the findings indicate that the majority of the groups prefer the current hourly pay method of payment as opposed to piece rate schemes. The majority of the groups indicated that they would like the job that has the highest hourly rate of pay. This view

could be interpreted as meaning that pay has a link to motivation, however, it does not provide sufficient support to the claim that additional pay motivates employees to produce more products.

Most of the employees interviewed stated that they could not increase output above the current levels. This contradicts what happened during the experiment. Nevertheless, if the opinions are a true reflection of reality, then neither money nor any other incentive method will be sufficient to encourage these employees to change their attitudes towards increasing output.

5.3.6.5. General opinions

This section provided data based on six general questions that required a simply 'yes' or 'no' answer. Both sub-populations were asked the same questions.

When asked if all groups understood the piece rate scheme that was introduced, 50% of the group who increased output and 76% of the group who did not increase output, claimed they did understand the system that was introduced. These statistics add some weight to the researcher's assumption that the more influential group members were the decision makers during the experiment.

When asked if the groups thought that a second experiment would receive a more favourable response from the workforce, only 33% of the group who increased output felt that a second experiment would receive greater support, compared to 60% of the groups who did not increase output. An explanation for these opinions could be that 67% of the

group who did increase output felt that the reward was not sufficient to warrant extra effort during a second experiment, and that 60% of the groups who did not increase output would like a second opportunity to earn more money. However these opinions contradict the view of the majority of the groups that claim that cannot increase output irrespective of incentives.

When asked if the groups would prefer to work overtime as opposed to the introduction of a piece rate scheme, 83% of the group who did increase output and 84% of the groups who did not increase output stated they would rather work overtime then have a piece rate scheme introduced at the company.

When asked for the group's opinion on how piece rate incentives should be measured, 50% of the group who did increase output and 80% of the groups who did not increase output felt that piece rate pay should be based on individual performance and not group performance. This would suggest that the groups would not be able to deal with the 'free-rider problem' from within the group and that an easy solution to this problem would be individual performance measurement as opposed to group performance. When asked if the groups felt that the current level of output was as good as the company's competitors, 100% of the group who increased output and 48% of the groups who did not increase output, felt it was as good.

When asked if the group felt that the introduction of the experiment was just a trick by the company to increase the daily targets of output, 83% of the group who increased output and 72% of the groups who did not increase output, felt it was a trick by the company to

change the daily targets after the experiment was completed. The company did try to negate this belief by issuing a written statement to all employees stating that targets would not be changed irrespective of the results of the experiment. However, it is observed from these opinions that this statement carried now weight and a lack of trust existed on this issue between employees and employer.

5.3.6.6. Summary of general opinions

These general questions have provided valuable information in so much as they have highlighted that a clear understanding of the experiment was lacking prior to its taking place. This is evident in the responses to the understanding of piece rate schemes and to a large degree in the mistrust of management and its intention of the experiment in the first place. There would appear to be a link between the wish of employees to work overtime rather than have a piece rate scheme introduced and individual performance measurement. It would appear that employees would rather be independent than dependent on others when it comes to their ability to earn more money, hence their choice of overtime which is an individual decision making process as opposed to a group decision.

Finally, it would appear that under current conditions there is little will by these employees to increase output irrespective of incentives or not.

5.4. Conclusion

This chapter presented data that supported the claim that a causal relationship exists between piece rate incentive schemes and increased employee effort/output at the company under study. However, the data has shown this relationship to exist only in a

small portion of the population. Based on this it would be incorrect to infer these findings across the entire population. Nonetheless, the experiment has, through the analysis of primary data, contributed to the current body of knowledge on this subject in a South African context.

The structured interview process has identified a number of areas of concern which need to be taken into account should further studies of this nature be undertaken and this process has also contributed in a qualitative way to the current body of knowledge.

The research objectives have to a large degree, been answered in so much as a causal relationship has been proven to exist between a piece rate intervention and employee effort/output, as identified in the literature review. The structured interview process has provided valuable insight into finding which determining factors, as detailed in the questionnaire, have influenced the employee decision making process in this regard.

The following chapter provides conclusions and recommendations on this study in line with the objectives of this triangulated research.

Chapter 6

Conclusions and Recommendations

6.1. Introduction

An established company manufacturing leather for the automotive industry was selected within which to conduct this study. The company was chosen primarily because the author was aware that the company was actively exploring alternative methods of compensation in order to motivate employees to increase output. Also due to the fact that the author was employed by the company at the time of the study, it was easy for the study to be overseen by the author from within the organization without dependence on company staff to provide data which might then have to be classified as secondary data.

The objectives of the study were to determine if a relationship exists between employee effort/output and incentive schemes. The study was also interested in finding out the critical factors that contribute to the success, failure, or introduction of such a scheme. The study was also designed to find out, who, what, where or how much these factors influence employee decision making in this regard.

The data was collected by means of conducting a field experiment and through a post experiment, structured interview process using a questionnaire containing questions derived from factors identified in the literature review. An analysis of the quantitative data collected from the field experiment revealed the existence of a relationship between piece rate incentive schemes and increased employee effort leading to higher output, similar relationships were identified in the literature review.

An analysis of the qualitative data collected revealed anomalies in the responses and opinions of the two sub-population groups which contradicted what actually happened during the field experiment. These contradictions cannot be explained fully, however the assumption has been made that more influential group members swayed the decision of the group to their personal preferences.

6.2. Caveats

The primary research has attempted to determine whether a causal relationship exists between piece rate incentive schemes and employee output, as identified in the literature.

A limitation of the primary research was that worker ability was not determined prior to the experiment taking place. It is possible that the current targets set by the company are just within the ability of the employee's and no further increase of this is possible.

A further limitation of the primary research was that the design required the researcher to advise all employees of the content of the experiment. This knowledge could create a situation that brings the Hawthorne and John Henry effects into the experiment.

Another limitation of the primary research was the inclusion of a guaranteed pay structure. The use of such a structure could cause the groups to work very hard on day one to earn extra money and on day two work a lot slower and do less than the minimum target, yet still receive full pay for less output.

Another limitation of primary research is that one study may be insufficient to determine with any reliability that the conclusions drawn from the experiment are justified. There may be a need to carry out more than one study of this nature.

A further limitation of the primary research was the time taken to explain to the employees the content and the purpose of the study. An unclear understanding of the study would certainly create confusion for the employees which could lead to employees performing as normal and ignoring the study completely.

Finally the questionnaire consisted of closed ended questions only. No provision was made to ask open ended questions that would have allowed employees to express their views in a more explicit and personal manner.

6.3. Achievements of study

The objectives of this study were achieved through a real life field experiment, a structured interview process, and an in-depth review of literature. It is the researcher's opinion that this study has achieved two of the three objectives as set out above and that this study contributes to the existing body of knowledge on this topic.

6.3.1. Field experiment

One of the key questions that the research intended to answer, was the impact of piece rate incentives on employee effort/output. It has widely been claimed in the literature that the introduction of such schemes leads to improved output and higher earnings. The purpose

of the field experiment was therefore to determine if a relationship exists between employee effort/output and a piece rate incentive scheme in the South African context.

The findings of the experiment, although not conclusive, support the claims that when piece rate incentive schemes are introduced, employee effort increases. Although only 8.6% of the total number of groups (n=58), increased output, the fact that output increased by as much as 27.5% and earning by as much as 30% would indicate that when employees choose to switch from base rate pay schemes to piece rate incentive schemes, effort/output and earnings increase accordingly.

However, the unanswered question that this experiment has produced is: why only 8.6% of the total number of groups decided to make the switch? This unanswered question is worthy of further research.

The objective of determining whether a relationship exists between employee effort/output and the introduction of a piece rate incentive scheme has successfully been determined and achieved by this study.

6.3.2. Structured interview process

The purpose of the structured interview process was to provide information on the thoughts and opinions of a sample of the employees at the company under study in order to determine the factors that influenced the groups in the decision making process.

The anomalies produced from the responses to the questionnaire are confusing and contradictory to what actually happened during the experiment. The analysis of the information does not provide any direction as to why the employees made the choices they made. Although some valuable information has been forthcoming from this process, the relevance of this information is questionable when compared to the results of the experiment.

It is the researcher's opinion that the objective of determining what influenced employees during the decision making process has not been achieved and that further research should be carried out in this regard. The possibility of extending the questionnaire to the entire population should be considered. Amendments to the questionnaire should also be considered to include open ended questions.

6.3.3. Literature review

The purpose of the literature review was not only to provide insight into previous studies of this nature, but to also highlight factors that contribute to the successful introduction of incentive schemes in general. The literature review highlighted the lack of a study of this nature in a South African context, however it did provide valuable information that will guide further studies of this nature and their applicability in the South African context.

The literature review also indicated the availability of alternative incentive schemes. A scheme such as gain-sharing has been proven to be very successful in a South African company and is worthy of further research and exploration.

The literature review provided clear guidelines for the introduction of incentive schemes: the schemes must be simple, easily understood by the employees, and communicated clearly and effectively to the workforce before introduction. The scheme must also be seen as being fair in that employees must perceive that the relationship between how hard they work and how much they earn is fair to both parties.

The objective of the literature review has been achieved and valuable information both for this study and future studies has been presented and discussed.

6.4. Validity of study

In order to provide validity to this study the researcher chose to use a triangulation of research methods. Olsen (2004) states that the use of triangulation is not merely aimed at validation, but also at deepening and broadening ones understanding of a topic under review. Using triangulation of data collection methods enhanced the validity in this study and allowed the researcher to cross-check the results of the field experiment against both the literature and against the findings of the structured interview process, and determine whether or not the study has yielded valid results.

The evidence produced from this study indicates that internal validity has been achieved and what was recorded in the outcome of the field experiment was caused by the piece rate intervention. However, it could be claimed that external validity was not achieved as the increase in output by a small portion of the workforce cannot be generalized to the rest of the population. It would be fair to state that the validity of the outcomes are only valid to the groups that increased output and not the entire population.

The focus of this study was to determine the impact of piece rate incentives on employee output. The use of triangulation data collection methods allowed the researcher to make the best available approximation to the truth and to state that this study has yielded valid results. Furthermore, the contradictory results that have arisen from this study have highlighted possible problems with question design as well as fundamental issues surrounding the understanding of this particular topic.

6.5. Conclusions and recommendations

The research design was quasi-experimental in nature. Due to the subjective nature of the non-probability sampling method used; the evidence presented is not conclusive. It does however highlight the fact that there are similarities between this study in a South African context and those found in First World countries as identified in the literature review.

The anomalies that exist in the responses and opinions expressed during the interview process need to be further investigated. This will assist in assessing the relevance and importance of each factor in its own right, and may explain the impact of each element on the decision making process in a group situation as opposed to individual decision making processes.

Unfortunately, the only studies to which this study can be compared, are from first world countries and these studies were primarily based on secondary data analysis. The comparative studies found in the literature review do not provide detail on participation rates neither do they provide information on whether the data that was analysed was from a single experiment or from the best experiment of a number of different experiments.

Based on the lack of detail from previous research, it is difficult to rate the results of this study from a holistic view point.

It is evident, however, that there would appear to be a significant relationship between piece rate incentive schemes and employee output within the parameters of this study. Although this is only evident in a small percentage of the population it still exists and would have to be reported as a significant finding in the context of South African manufacturing. Clearly the lack of previous research in developing countries impacts on the importance of the findings of this study.

In conclusion, it is evident that there is a dire need for further research into the implementation of piece rate incentives and other forms of incentives in the South African manufacturing sector to take place. It would be a recommendation of this study that prior to the introduction of any form of incentive scheme experiment, further research is undertaken in order to determine why 91% of the population from this study decided not to increase effort and make use of this opportunity to increase earnings.

The literature review has highlighted the observation that the South African manufacturing sector is falling behind the rest of the world from a productivity point of view and this perception is laying claim that South African labour is expensive and un-productive. As long as South African companies separate productivity from wage negotiation, labour costs will continue to damage price competitiveness in the marketplace and South Africa will continue to fall behind other competing developing countries.

However, evidence also exists that when the right incentive scheme is introduced South African labour does respond positively and can compete with the rest of the world from a productivity and cost of labour perspective (Moodley, 2005).

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Table 4.1 Rate of pay per piece per operation

OPERATION	NUMBER OF GROUPS	VALUE OF PIECE RATE IN RAND
Sammying	1	0.14
Shaving	2	0.35
Setting	2	0.23
Togglng	3	0.50
Buffing	1	0.22
Crust Staking	1	0.25
Syncro roller coater	1	0.14
Reverse roller coater	1	0.14
Embossing	2	0.25
Spray machine	2	0.18
Milling	1	0.22
Dedusting	1	0.22
Finishing Staking	1	0.25
Measuring	1	0.18
Hide marking	4	0.80
Cutting	24	5.50
Perforating	2	0.65
Packing	8	0.25

Table 4.2 Minimum target of output per operation

OPERATION	NUMBER OF GROUPS	MINIMUM TARGET BEFORE PIECE RATE KICKS-IN
Sammying	1	1100
Shaving	2	480
Setting	2	640
Toggling	3	280
Buffing	1	640
Crust Staking	1	640
Syncro roller coater	1	1100
Reverse roller coater	1	1100
Embossing	2	640
Spray machine	2	800
Milling	1	960
Dedusting	1	960
Finishing Staking	1	640
Measuring	1	960
Hide marking	4	200
Cutting	24	29
Perforating	2	90
Packing	8	100

EMPLOYEE QUESTIONNAIRE

	Statement	Strongly Agree	Agree	No View	Disagree	Strongly Disagree
1.	The principle of piece rates is essentially a good one					
2.	Piece rate systems improve the overall performance of the company					
3.	Piece rates motivate employees to produce more					
4.	The current method of payment is the best and the company should continue to use it					
5.	Piece rates are a good idea for hourly paid employees					
6.	Piece rate systems prevent the company from employing more people					
7.	The idea of being able to earn more money without working overtime is a good one					
8.	The amount of pay involved was not enough to make a change in output					
9.	The job I would like is the one with the highest hourly rate					
10.	The most important thing about a job is the pay					
11.	It would be a good idea to introduce a piece rate system at our company					
12.	The idea of piece rates is essentially unfair					
13.	Group piece rate systems allow the lazy worker to do less and receive the same pay as the one's who work the hardest					
14.	Currently the majority of employees cannot produce anymore than they are currently producing					

General

	Statement	YES	NO
15.	Did you understand the system that was introduced		
16.	If the company introduced piece rates for another trial more employees would take part		
17.	You would prefer to work overtime rather than piece rate systems		
18.	Should piece rate pay be based on individual and not group performance		
19.	Do you think that employee output at this company is as good as your competitors		
20.	When the company introduced the trial on the piece rates you thought it was just a trick so that the company could change the targets		