A STUDY OF THE CONFLICT BETWEEN MAINTENANCE AND PRODUCTION FUNCTIONS IN A MANUFACTURING ORGANISATION IN PORT ELIZABETH

BY
RICCARDO VINICIO PETRONIO
(S/N: 20528667)

Paper submitted in partial fulfilment of the requirements for a Masters Degree in Business Administration at the Nelson Mandela Metropolitan University.

PROMOTOR: DR M. CULLEN

DATE: DECEMBER 2007
ABSTRACT

If manufacturing organisations are to improve their competitive positions in the global arena and increase profitability, their operations strategies need to be focused on: reducing cost, improving quality, increasing efficiency, improving the speed of delivery, developing and improving process flexibility, and ensuring that higher service levels are achieved and maintained. One of the critical success factors in implementing these strategies, within manufacturing organisations, is the relationship that exists between the maintenance and production functions. There is sufficient evidence to suggest that in many manufacturing organisations, the relationship that exists between these two functions is usually one of conflict, which if left unmanaged or unresolved has the potential to severely hamper effectiveness, productivity, creativity, and profitability of the organisation.

The overall purpose of this research was to identify the interventions that manufacturing organisations can pursue, to effectively manage and resolve the conflict between the production and maintenance functions, in order to improve their competitive position in the global economy.

The study was conducted in one particular manufacturing organisation in Port Elizabeth in the Eastern Cape.

A research questionnaire was used as a means for collecting empirical data. The research questionnaire included various instruments used by previous conflict researchers, to identify and analyse the following dimensions of conflict within the organisation: conflict management styles used, the types of conflict perceived, and the amount of conflict perceived. The questionnaire was also designed to identify the sources of conflict, collect demographic information, identify issues relating to diversity, and indicate the respondents’ preferences to various organisational reporting structures.

The results of the survey revealed key findings, which enabled the researcher to draw meaningful conclusions, and make recommendations as to how organisations can effectively manage and resolve the conflict that exists between maintenance and production functions.
DECLARATION

I, Riccardo Petronio, hereby declare that:

- The work of this research paper is my own;
- All sources used, or referred to, within this treatise have been appropriately referenced and recognised;
- This research paper has not previously been submitted in full or partial fulfilment of the requirement of an equivalent or higher qualification at any other recognised education.

RICCARDO PETRONIO
December 2007
ACKNOWLEDGEMENT

I would like to acknowledge and say thank you to the following people and organisations that have contributed towards the successful completion of this research:

- Dr M. Cullen for all her support, motivation and guidance provided to me throughout this project;
- Cadbury South Africa;
- My work colleagues;
- My study group, namely: Johann Liebenberg, Jacques Bezhuidenhout, and Tyerol van der Kan for their friendship and support;
- My wife Sharee and my two beautiful children Allyssa and Alessandro for all their love, support, and personal sacrifice that they have given over the last three years.
# TABLE OF CONTENTS

## CHAPTER ONE

**PROBLEM STATEMENT**

1. Introduction ........................................................................................................ 1
1.1. Main Problem ..................................................................................................... 3
1.2. Sub-Problems .................................................................................................... 3
1.3. Delimitation of the Research ............................................................................. 4
1.3.1. Organisational Level ..................................................................................... 4
1.3.2. Industry .......................................................................................................... 5
1.3.3. Size of Organisation ...................................................................................... 5
1.3.4. Geographical Delimitations .......................................................................... 5
1.3.5. Conflict Management Research ................................................................... 5
1.4. Basis for the Study ............................................................................................ 6
1.5. Assumptions ..................................................................................................... 6
1.6. The Significance of the research ....................................................................... 7
1.7. Definitions and Key Concepts .......................................................................... 7
1.8. Research Methodology and Design ................................................................ 8
1.8.1. Literature Survey .......................................................................................... 8
CHAPTER TWO

COMPANY BACKGROUND AND STRUCTURES

2. Introduction ........................................................................................................ 12
2.1. Cadbury South Africa ................................................................................... 13
2.1.1. Site Structure and Functions ...................................................................... 14
2.1.2. Manufacturing Unit’s Structures and Functions ........................................ 15
2.1.2.1. Production ............................................................................................. 16
2.1.2.2. Maintenance ......................................................................................... 17
2.1.2.3. Accounting ............................................................................................ 20
2.1.2.4. Logistics ................................................................................................ 21
2.1.2.5. Technical ................................................................................................ 21
2.2. Interdependency between Maintenance and Production Functions .......... 22
2.3. Conclusion ....................................................................................................... 24
CHAPTER FOUR

RESEARCH METHODOLOGY AND DESIGN

4. Introduction .................................................................................................. 65
4.1. The Purpose of Research ......................................................................... 66
4.2. The Research Process ............................................................................. 66
4.3. Types of Research ................................................................................... 70
4.3.1. Purpose ................................................................................................. 70
4.3.1.1. Exploratory Research ....................................................................... 70
4.3.1.2. Descriptive Research ....................................................................... 71
4.3.1.3. Analytical Research ......................................................................... 71
4.3.1.4. Predictive Research ......................................................................... 71
4.3.2. Process .................................................................................................. 72
4.3.2.1. Quantitative Research ..................................................................... 72
4.3.2.2. Qualitative Research ....................................................................... 72
4.3.3. Logic .................................................................................................. 74
4.3.3.1. Deductive Research........................................................................... 74
4.3.3.2. Inductive Research ............................................................................ 74
4.3.4. Outcome ............................................................................................ 75
4.3.4.1. Basic Research.................................................................................. 75
4.3.4.2. Applied Research............................................................................... 75
4.4. Validity and Reliability of Research.................................................... 75
4.4.1. Validity ............................................................................................... 76
4.4.2. Reliability............................................................................................ 76
4.5. Choosing an Appropriate Research Strategy ....................................... 77
4.5.1. Purpose (Analytical Choice)............................................................... 77
4.5.2. Process (Qualitative and Quantitative Choice)................................... 78
4.5.3. Logic (Deductive Choice) ................................................................... 78
4.5.4. Outcome (Applied Choice) ................................................................. 79
4.6. Research Surveys .............................................................................. 79
4.6.1. Defining Questionnaires................................................................. 79
4.6.2. Open and Closed Type Questions ..................................................... 80
4.6.3. Questionnaire Guidelines................................................................. 81
4.6.4. Questionnaire Design ....................................................................... 82
4.6.5. Selection of the Research Sample and Distribution of the Questionnaire .................................................................................. 86
CHAPTER FIVE

ANALYSIS AND INTERPRETATION OF DATA

5. Introduction ........................................................................................ 88
5.1. Analysis and Interpretation of Data .................................................... 88
5.1.1. Overall Response Rate ..................................................................... 92
5.1.2. Total Production and Maintenance Groups ...................................... 94
5.1.2.1. Total Production ............................................................................. 94
5.1.2.2. Total Maintenance ......................................................................... 104
5.1.3. Total Site Group ............................................................................... 114
5.1.4. Conclusion ....................................................................................... 121

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6. Introduction .......................................................................................... 125
6.1. Summary ........................................................................................... 125
Figure 4.1: The Research Process ................................................................. 67

Figure 5.1: Showing the Demographic Profile for the Total Production Group . 94

Figure 5.2: Radar Chart Showing the Responses to the Conflict Management Style Questions for the Total Production Group ........................................... 95

Figure 5.3: Bar Chart Showing the Number of Responses to Affective and Substantive Conflict Questions for the Total Production Group ....................... 97

Figure 5.4: Pareto Analysis on the Sources of Conflict for the Total Production Group .............................................................................................................. 98

Figure 5.5: Pareto Analysis on Conflict Diversity Elements for the Total Production Group ............................................................................................................. 100

Figure 5.6: Bar Chart Showing the Choice of Preferred Structure by Members of the Total Production Group. ................................................................. 101

Figure 5.7: Showing the Demographic Profile for the Total Maintenance Group ........................................................................................................................... 104

Figure 5.8: Radar Chart Showing the Responses to the Conflict Management Style Questions for the Total Maintenance Group .................................... 105

Figure 5.9: Bar Chart Showing the Number of Responses to Affective and Substantive Conflict Questions for the Total Maintenance Group .............. 107

Figure 5.10: Pareto Analysis on the Sources of Conflict for the Total Maintenance Group ............................................................................................................. 108

Figure 5.11: Pareto Analysis on Conflict Diversity Elements for the Total Maintenance Group ...................................................................................................... 110

Figure 5.12: Bar Chart Showing the Choice of Preferred Structure by Members of the Total Maintenance Group ................................................................. 111

Figure 5.13: Showing the Demographic Profile for the Total Site Group ....... 114
Figure 5.14: Radar Chart Showing the Responses to the Conflict Management Style Questions for the Total Site Group ........................................................ 115

Figure 5.15: Bar Chart Showing the Number of Responses to Affective and Substantive Conflict Questions for the Total Site Group ................................. 117

Figure 5.16: Pareto Analysis on the Sources of Conflict for the Total Site Group ....................................................................................................................... 118

Figure 5.17: Pareto Analysis on Conflict Diversity Elements for the Total Site Group ............................................................................................................. 120

Figure 5.18: Bar Chart Showing the Choice of Preferred Structure by Members of the Total Site Group. .................................................................................. 121

LIST OF TABLES

Table 5.1: Showing the Population Size and the Number of Responses by Group Surveyed ........................................................................................................... 93

LIST OF ANNEXURES

Annexure A: Research Questionnaire Covering Letter.............................. 146
Annexure B: Research Questionnaire .............................................................. 147
Annexure C: Graphical Presentation of Data Collected for all Production and Maintenance Groups ........................................................................................................... 157
CHAPTER ONE

PROBLEM STATEMENT

1. Introduction

The challenges facing the manufacturing industry have increased dramatically over the last decade due to increased competition, which has been fuelled by globalisation and advancements in technology (Davis and Heineke, 2005: 14). According to McCully (2002: 1) “the goal of every plant is to manufacture its products better, faster, cheaper and the pressure to improve is increasing”. It is clear, from this statement, that operations strategies can no longer be based on cost alone, and that other competitive priorities, such as: quality; speed of delivery; process flexibility; and service, are equally important if manufacturers are to increase profitability, and compete more efficiently and effectively in the global arena (Davis and Heineke, 2005: 13).

The increase in global competitive pressures, coupled with these additional competitive priorities, has resulted in manufacturers across the globe turning to the implementation of continuous improvement strategies, such as: Total Quality Management (TQM); Six Sigma; Lean Manufacturing; and Just-in-Time, to improve their competitive position (McCully, 2002: 1). According to McCully (2002: 1) some of the challenges associated with the successful implementation of these manufacturing strategies, has led organisations to focus on indirect manufacturing support functions, and has subsequently highlighted the need for greater maintenance effectiveness to many manufacturing managers and business professionals. Kutucuoglu, Hamali, Irani, and Sharp (2001: 173 - 174) also indicate that manufacturing organisations, often fail to acknowledge the gap between maintenance and quality improvement strategies, and furthermore fail to acknowledge that effective maintenance can be leveraged as a core competency.
Whilst the continuous improvement strategies, mentioned before, are often specifically designed to improve the level of cooperation and teamwork between maintenance and production personnel, it has been observed that, more often than not, the conflict that exists between these two functions hampers the successful implementation of these strategies from the start. In a 2004 survey, conducted by Works Management, Baker (2004: 18) reported that sixty one percent of the one hundred and five manufacturing respondents indicated that they experienced dissatisfaction with their maintenance department, because of conflict between maintenance and production personnel. Conflict between these two parties has also been documented by McCully (2002), Latham (2003), Idhammer (2000), and Johnson and Johnson (2005). According to McCully (2002: 1) a common language is required between maintenance and production to get them to work together towards a common purpose. McCully (2002: 1) claims that production personnel constantly advocate the need for improved maintenance, whilst maintenance managers constantly complain about the lack of available funds, lack of access to equipment, lack of resources, lack of overall production cooperation, and poor production planning.

French and Bell (1995: 197) claim that when there is conflict amongst groups in an organisation “each group sees each other as an “enemy” rather than a neutral object; each group describes the other in terms of negative stereotypes; interaction and communication between the two groups decrease, cutting off feedback and data input between them” and that “each group believes and acts as though it can do wrong and the other group can do no right; under certain circumstances the groups may commit acts of sabotage (of various kinds) against the other group”. According to Cowan (1995: 24) if left unmanaged, organisational conflict will drain energy, cause distress and distraction, and therefore has the potential to severely hamper effectiveness, productivity, creativity, and profitability.
1.1. Main Problem

The requirement for manufacturing organisations to effectively manage and resolve conflict between maintenance and production personnel, in order to improve their efficiency, effectiveness, and competitive positions in the global arena, highlights the following problem, which will be addressed by this treatise:

What interventions can manufacturing organisations undertake to resolve the conflict between production and maintenance functions, to improve their competitive position in the global economy?

1.2. Sub-Problems

The solution to the main problem is complex and multidimensional, and therefore, as a strategy to solve the main problem the following sub-problems have been identified:

- What is organisational conflict?
- Is all conflict between maintenance and production personnel destructive?
- What are the sources of the conflict that exist between maintenance and production functions?
- What interventions, as revealed by research literature, can be used to effectively resolve or manage the conflict?
- Which of the following maintenance reporting structures are most likely to foster better relationships between maintenance and production: Centralised, Decentralised or Semi-Centralised?
- What are the desired conflict management styles that are required by production and maintenance personnel to effectively manage and resolve conflict?
• Is diversity (in particular age, gender, race, and education level) a significant contributor to the conflict, and if so what strategies can be used to overcome these issues?
• What are the performance measures that should be applied to both the maintenance and production functions to enhance the effectiveness of their relationship?

1.3. Delimitation of the Research

The reason for delimiting this research is to ensure that it is manageable and can be completed effectively by the researcher. It is also important to note that the omission of certain topics is not an indication that they are unimportant, or that there is no need to research them.

1.3.1. Organisational Level

The study has been limited to middle and junior management in both the production and maintenance departments, within the Cadbury SA Port Elizabeth manufacturing site. The study also includes artisans and electricians in the maintenance department.

Senior management, production operators, and managers of other departments have been excluded from the study. The reason for this is two fold, firstly that the production operator group is too broad, which means that it will become unmanageable, and the senior management group is too small, which means that it is unlikely that any meaningful conclusions will be drawn from the research. Secondly the conflict of significance to this research is anticipated to be between the members of each group, which work closely with one another.
1.3.2. Industry

The study has been limited to Cadbury SA’s Port Elizabeth manufacturing site, which operates in the food and beverage industry.

1.3.3. Size of Organisation

Cadbury SA currently employs approximately 1200 employees at its Port Elizabeth manufacturing site. The total size of the target sample for this treatise, on the Port Elizabeth site, consists of one hundred and twenty people from within the production and maintenance functions. The Cadbury Port Elizabeth site is essentially divided into four different main manufacturing units each of which will be researched.

1.3.4. Geographical Delimitations

The study has been limited to Cadbury SA’s Port Elizabeth site in the Eastern Cape.

1.3.5. Conflict Management Research

The empirical evidence collected in this treatise has been specifically targeted at the conflict that exists between the maintenance and production functions within the organisation. However, the literature review is much broader, and includes both organisational and social conflict theory.
1.4. Basis for the Study

The aims of this treatise are the following:

- To identify the sources of conflict between maintenance and production personnel at Cadbury SA;
- To identify the types and amounts of conflict between maintenance and production personnel at Cadbury SA;
- To identify the conflict management styles that are used by maintenance and production personnel at Cadbury SA;
- To draw correlations and conclusions between the data collected pertaining to the sources of conflict, types of conflict, amounts of conflict, and conflict management styles;
- To identify and recommend interventions, based on the empirical data collected, which should be implemented to resolve and manage the conflict that exists between maintenance and production personnel at Cadbury SA.

1.5. Assumptions

For the purpose of this research the following assumptions have been made:

- The organisational conflict described, and researched, in literature for different organisations in different countries, is indicative of the conflict experienced by organisations in the South African context, and more specifically to that of Cadbury SA in the Eastern Cape;
- The literature relating to organisational conflict is generic but is still applicable to the conflict that exists between maintenance and production departments;
- The sector in which Cadbury SA operates (i.e. Food and Beverage) has no relevance or impact on the research.
1.6. The Significance of the research

When left unmanaged, or unresolved, organisational conflict can result in lower levels of productivity, and adversely affect an individual or group’s, performance, effectiveness and creativity, which in turn can result in poor profitability for the organisation (Cowan, 1995: 24). Since the maintenance and production functions, of a manufacturing organisation, directly influence the cost; quality; speed of delivery; and flexibility, of producing and delivering product, they have a direct impact on the profitability of the organisation, and are therefore crucial to its success. It therefore stands to reason that, if conflict exists between these two functions, which results in poor performance and ineffectiveness, that this conflict must be effectively managed or resolved, in order to ensure that the organisation can achieve maximum profitability, and gain a competitive advantage in the global arena.

1.7. Definitions and Key Concepts

A review of the literature and theory pertaining to both organisational conflict and social conflict has been conducted, and includes the following key concepts and definitions, which are discussed in greater detail in chapter three of this treatise:

- Social conflict;
- Sociological perspectives of conflict;
- Definition of conflict;
- Sources of conflict;
- Context of conflict;
- Categories of conflict;
- The nature of conflict;
- Functional and dysfunctional conflict;
- Affective and substantive organisational conflict;
- The resolution of conflict;
• The management of conflict;
• Conflict management styles.

1.8. Research Methodology and Design

The broad research methodology that has been used to solve the main problems and sub-problems consists of a literature survey, a qualitative, and a quantitative empirical study.

1.8.1. Literature Survey

An in depth study of the literature with reference to both social and organisational conflict theory has been conducted to identify possible solutions and interventions that can be used to address the issues stated in the main and sub-problems.

1.8.2. Empirical Study

The empirical study consists of a questionnaire, which is based on evidence collected from previous workshops that have been held within the organisation in an attempt to resolve conflict between the maintenance and production functions, and on previous surveys conducted by other organisational conflict researchers. The focus of the questionnaire is primarily on the conflict between the maintenance and production functions within the Cadbury SA Port Elizabeth site. The questionnaire has been used to collect data pertaining to the following aspects of conflict: Conflict management styles, types of conflict, amounts of conflict, sources of conflict, diversity elements, and reporting structures (see annexure B). The questionnaire was distributed to middle management, junior management, artisans, and electricians within the production and maintenance departments, in each of the four manufacturing units on the Cadbury SA Port Elizabeth manufacturing site.
The results of the survey have been analysed and used to develop and identify interventions that can be implemented by the organisation to address the conflict that exists between the maintenance and production functions.

1.9. Contents of the Study

The following is a summary of the remaining chapters of this treatise:

- Chapter Two: Company Background and Structures – essentially this chapter establishes the context in which the research is being conducted, through a discussion of the background and structures of Cadbury SA and Cadbury Schweppes plc;

- Chapter Three: Conflict Theory – this chapter looks at specific elements of social and organisational conflict theory relevant to solving the main problem, and is based on a review of available literature pertaining to conflict;

- Chapter Four: Research Methodology and Design – the focus of this chapter is to discuss and describe the research methodologies and strategies that were chosen by the researcher, and applied during the research process;

- Chapter Five: Analysis and Interpretation of Data – this chapter essentially describes how the data collected during the research process was organised, analysed and interpreted;

- Chapter Six: Conclusions and Recommendations – the main focus in this chapter is on providing solutions to the main problem and the sub-problems, based on the review of the literature and the interpretation of the data, which was collected and analysed.
1.10. Conclusion

The aim of this chapter was to present the main problem that has been addressed by this treatise, and to provide a brief outline as to how this research was conducted.

The main problem presented in this research was the following:

“What interventions can manufacturing organisations undertake to resolve the conflict between production and maintenance functions, to improve their competitive position in the global economy?”

In presenting the main problem, its significance was discussed and it was broken down into more manageable sub-problems, namely:

- What is organisational conflict?
- Is all conflict between maintenance and production personnel destructive?
- What are the sources of the conflict that exists between maintenance and production functions?
- What interventions, as revealed by research literature, can be used to effectively resolve or manage the conflict?
- Which of the following maintenance reporting structures is most likely to foster better relationships between maintenance and production: Centralised, Decentralised or Semi-Centralised?
- What are the desired conflict management styles that are required by production and maintenance personnel to effectively manage and resolve conflict?
- Is diversity (in particular age, gender, race and education) a significant contributor to the conflict, and if so what strategies can be used to overcome these issues?
• What are the performance measures that should be applied to both the maintenance and production functions to enhance the effectiveness of their relationship?

This chapter also provided insights into critical assumptions and delimitations of the treatise. Key concepts and definitions relating to the main and sub-problems were also identified for further discussion in chapter three.

Chapter two of this treatise describes the context of the research problem, through a discussion of the background and structures of Cadbury South Africa (SA).
CHAPTER TWO

COMPANY BACKGROUND AND STRUCTURES

2. Introduction

Cadbury South Africa is a wholly owned subsidiary of the global giant Cadbury Schweppes plc, which is currently the world’s largest confectionery company, and has a strong presence in the beverage industry, in America and Australia (http://www.cadburyschweppes.com/ (2007)).

Cadbury Schweppes plc has a strong heritage of which the company is extremely proud, and one that can be traced back over 200 years (http://www.cadburyschweppes.com/ (2007)). The company essentially began as two separate businesses, namely: Schweppes which was established in 1783, and Cadbury which was established in 1824. In 1969 the two companies merged to form Cadbury Schweppes plc (http://www.cadburyschweppes.com/ (2007)).

Since the merger of the two companies, Cadbury Schweppes plc has expanded through both organic and acquisition led growth, which has allowed them to enjoy a number one position in the world confectionery market, a number two position in the world chewing gum market, and a number three position in the world beverage market (http://www.cadburyschweppes.com/ (2007)).

The aim of this chapter is to provide insight into Cadbury SA, so as to gain a better understanding of the context of the research problem.
2.1. Cadbury South Africa

In the South African confectionery market, Cadbury SA holds a number one position in Chocolate confectionery, a number two position in Gum confectionery, and a number three position in Sugar confectionery.

Cadbury South Africa was established in Port Elizabeth in 1939. The manufacturing facility still occupies that same site today, but the head office and commercial team are now based in Johannesburg.

The size of the original site has increased considerably since 1939, mainly due to investment and various global acquisitions that subsequently led to the relocation of the acquired assets to the Port Elizabeth site. Examples of these investments and relocations include the following:

- In 1998 Cadbury SA purchased the adjacent land to the site, which was owned by Dairy Maid at the time, and invested a substantial amount of capital to upgrade its chocolate manufacturing and chocolate moulding facilities (Bester, 1999);

- Following the acquisition of Chapelat Humphrey, Cadbury SA made the decision in 1999, to close the manufacturing facility in Johannesburg, and relocate these assets to Port Elizabeth (Bester, 1999);

- Following the acquisition of Adams in 2003, and subsequent closure of the factory in Cape Town, various assets were relocated to the manufacturing site in Port Elizabeth.

The site currently has over 1200 employees, and produces approximately twenty-seven thousand tons of moulded slabs, countline bars, assortments, and sugar confectionery per annum. Whilst definitely not the biggest site in terms of volume, it is widely regarded by the group as the most complex site in the
Britain, Ireland, Middle East and Asia (BIMA) region, mainly because of the diversity of the technologies employed and the fact that it produces the highest number of Store Keeping Units (SKU's), or different product variants, in the group.

### 2.1.1. Site Structure and Functions

The site is essentially divided into four main manufacturing units based on the similarity of the technologies employed, and the similarity of the products produced, these divisions are: Sugar, Chocolate Making and Moulding, Panning and Assortments, and Countlines. In addition to the manufacturing units, the site also has two Raw Material Stores (inbound logistics) and a Stockroom (outbound logistics), which are collectively known as Site Logistics.

A General Manager (GM) heads up the entire site. The organisational chart depicted in figure 2.1 below shows the different functions (represented by blocks) and their reporting relationship (represented by lines) to the GM.

**Figure 2.1:** Site organisational chart depicting the direct reports to the site GM

![Site organisational chart](chart.png)

Source: Authors own construct (2007).
Reporting directly into the GM are four unit Production Managers (PM’s), one site Logistics Manager (LM), one site Engineering Manager (EM), one site Manufacturing Development Manager (MDM), one site Human Resources Manager (HRM), one site Environmental, Health and Safety Manager (EHSM), one site Accountant, and two site Quality Managers (QM’s).

**2.1.2. Manufacturing Unit’s Structures and Functions**

Each of the four manufacturing divisions operate as a stand-alone business unit known as a Mini Business Area (MBA).

**Figure 2.2:** Manufacturing unit organisational chart (shaded area)

Source: Authors own construct (2007).
The shaded region depicted in figure 2.2, represents the organisational chart for a typical manufacturing MBA, with all the various functions that operate within that MBA and their reporting relationships. In figure 2.2 the solid lines between the different functions represent a formal and direct reporting relationship, whilst the dashed lines in the figure represent an informal or support function relationship between the different functions.

### 2.1.2.1. Production

Production Managers (PM) head up each of the manufacturing MBA’s, and report directly in to site General Manager (GM). Shift based Team Managers report directly into the PM’s, and have shift-based teams, consisting of Machine Operators, reporting directly into them. In essence this central structure forms the backbone of each of the manufacturing MBA’s.

The primary functions and accountabilities of the PM’s are to coordinate and manage all manufacturing related activities of the manufacturing unit. The activities related to these primary functions include the following:

- Quality management and ensuring compliance to ISO 9001: 2000 and the Trade and Metrology Act;
- Safety management and ensuring compliance to the Occupational Health and Safety Act (OHSA);
- Hygiene management and ensuring compliance to the Cadbury Schweppes Manufacturing Best Practice Standards;
- Food safety management and ensuring compliance to Hazard Analysis Critical Control Point (HACCP) principles as well as to the Food, Cosmetics and Disinfectants Act;
- Production planning and scheduling;
- Delivering against the production plan to ensure the improvement and maintenance of superior service levels;
- Cost control and the implementation of cost improvement initiatives, such as: budgeting, material and labour variance analysis and control, productivity improvements, and waste reduction;
- Identifying and implementing continuous improvement initiatives;
- Training of Team Managers and Machine Operators in accordance with the Skills Development Act (SDA);
- Labour planning;
- Maintaining discipline and ensuring compliance to the Basic Conditions of Employment Act (BCEA) and the Labour Relations Act (LRA);
- Managing Team Managers activities;
- Coaching of Team Managers;
- Improvement and maintenance of team morale.

The Team Managers head up the shift-based production teams, which consist primarily of Machine Operators. Their responsibilities, accountabilities and activities are similar to that of the Production Manager, but with a greater emphasis on the execution.

The performance measures for the production functions are clearly defined and are based on a balanced scorecard type approach. The balanced scorecard includes specific performance measures related to: Quality, Cost, Delivery, Safety and Hygiene, and Morale.

2.1.2.2. Maintenance

A unit Plant Engineer (PE), who reports directly into the site Engineering Manager (EM), heads up the maintenance support function. All plant engineers are required to have their government ticket, which is a pre-requisite for this position. Reporting into the PE’s are Engineering Technician Planners as well as shift based Artisans and Electricians.
The primary functions and accountabilities of the PE’s are to coordinate and manage all engineering and maintenance related activities within the manufacturing unit. The activities related to these primary functions include the following:

- Safety management and ensuring compliance to the Occupational Health and Safety Act (OHSA);
- Executing all plant repairs and maintenance;
- Planned and preventative maintenance planning, scheduling, and execution;
- Managing Engineering Technician Planners, Artisans, and Electricians;
- Engineering resource planning;
- Ensuring compliance to Cadbury Schweppes Maintenance Best Practice standards;
- Cost control and budgeting;
- Identifying and implementing maintenance related continuous improvement initiatives and strategies;
- Installing and commissioning of new plant and equipment;
- Maintaining discipline and ensuring compliance to the Basic Conditions of Employment Act (BCEA) and the Labour Relations Act (LRA);
- Training of maintenance personnel in accordance with the Skills Development Act (SDA);
- Coaching of maintenance personnel.

The Engineering Technician Planners for the different manufacturing units are primarily responsible for the coordinating and execution of all planned and preventative maintenance activities, this includes the following:

- Securing plant time from production, to carry out planned and preventative maintenance;
- Planning and scheduling of all planned and preventative maintenance activities, as well as scheduled plant inspections;
• Completing job cards and work orders for all planned and preventative maintenance activities;
• Allocating engineering personnel (Artisans, Electricians, and contractors) to execute the planned and preventative maintenance activities;
• Ensure that all spare parts are available to effectively execute planned and preventative maintenance work.

The Artisans and Electricians within each of the manufacturing unit are shift-based engineering personnel, that are primarily responsible for the execution of all plant and equipment repairs, as well the completion of any planned and preventative maintenance activities.

The performance measures for the engineering functions are somewhat less clearly defined than that of the production functions. However, over time the Overall Equipment Efficiency (OEE) measurement has been adopted as the singular performance measure for the engineering function. OEE is essentially the product of three other measurements, namely: Availability, Quality, and Performance (see figure 2.3 below).

**Figure 2.3:** Calculation of Overall Equipment Efficiency (OEE)

\[
\text{OEE} = \text{Availability} \times \text{Performance} \times \text{Quality}
\]


OEE is measured as a percentage. The availability is calculated as the percentage of time (in hours) that the plant or equipment is available for planned production (in hours). Performance is calculated as the percentage of the actual production achieved (in kilograms) on the plant, and the plants maximum rated throughput (in kilograms). Quality is calculated as the percentage of non-standard product produced (in kilograms) and the total product produced (in kilograms). Whilst at first glance this appears to be an
an effective way to measure the performance of the maintenance function, there are other non-engineering factors that will influence this measurement, and some of these are: Machine Operator competence, Machine Operator errors, process capability, and poor production planning.

2.1.2.3. Accounting

Factory Accountants (FA’s) who report directly into site Factory Accountant, head up the accounting support functions for each manufacturing unit. Reporting into the Factory Accountants are Factory Accountant Support Assistants.

The primary functions and accountabilities of the FA’s are to coordinate, manage, and advise on all cost related activities within the manufacturing unit, these activities include the following:

- Coordinating and compiling of annual budgets and budget forecasting;
- Generating financial reports;
- Product costing;
- Maintaining and ensuring the integrity of the Enterprise Resource Planning (ERP) system;
- Analysing, interpreting, and controlling manufacturing controlled costs, unit overheads, material variances, and labour cost variances.

The primary function of the Factory Account Support Assistants is to accurately capture all the financial data required for the generation, analysis, and interpretation of financial reports and budgets.
2.1.2.4. Logistics

A Logistics Coordinator (LC), who reports directly into the site Logistics Manager (LM), and has a Materials Controller reporting into them, heads up the logistics function in each MBA.

The primary functions and accountabilities of the LC’s are to coordinate and manage all production planning related activities within the manufacturing unit. The activities related to these primary functions include the following:

- Ensuring that the production plans are aligned with the commercial teams (i.e. sales and marketing) expectations and sales forecasts;
- Ensuring that all necessary materials and ingredients are available for the effective execution of the production plan;
- Liaising with and managing suppliers;
- Ensuring that safety stock levels are achieved and maintained;
- Managing working capital requirements within set targets.

The materials controller is essentially an assistant to the Logistics Controller.

2.1.2.5. Technical

The technical support function is headed up by a Technical Manager (Tech. M), who reports directly through to the National Technical Manager, and has reporting into them a Process Investigator (PI) and shift-based Quality Operators (QO).

The primary functions and accountabilities of the Technical Managers are to coordinate and manage all production process and quality related activities within the manufacturing unit. The activities of these primary functions include the following:
• Quality management and ensuring compliance to ISO 9001: 2000 and the Trade and Metrology Act;
• Hygiene management and ensuring compliance to the Cadbury Schweppes Manufacturing Best Practice Standards;
• Food safety management and ensuring compliance to Hazard Analysis Critical Control Point (HACCP) principles as well as to the Food, Cosmetics and Disinfectants Act;
• Ensuring that quality standards are achieved and maintained;
• Maintaining and ensuring the integrity of the ISO quality management system;
• Resolving process and quality related issues and problems;
• Identifying and implementing both process and quality related continuous improvement initiatives;
• Maintaining Bills of Materials (BOM’s) and recipe information;
• Evaluating, analysing, interpreting and optimising process capabilities;
• Ensuring the effective and efficient manufacture of new products on the manufacturing plants;
• Commissioning of new plant and equipment.

The process investigators essentially assist production with resolving process related issues. Part of their function is also to audit and report on compliance to ISO standards, Hygiene standards, Food Safety standards, Cadbury Schweppes Manufacturing Best Practice Standards, and food manufacturing related statutory requirements.

The Quality Operators are shift-based personnel that evaluate and ensure compliance to quality standards.

### 2.2. Interdependency between Maintenance and Production Functions

According to Rahim (2002: 207) in order for conflict to occur there must be an interdependency between the parties involved, and that before conflict can be
recognised or experienced by the parties, it must have exceeded a particular threshold level.

Since the focus of this treatise is on the conflict that exists between the maintenance and production functions at the Cadbury SA Port Elizabeth manufacturing site, it is appropriate at this stage, to discuss the interdependent relationship between these two functions.

Within the current structures of the manufacturing units depicted in figure 2.2, the interaction between the production and maintenance functions can best be described as “a customer-supplier” relationship, where the production function is the “customer”, and the maintenance function the “supplier”. As mentioned previously it is the production function, which forms the backbone to the structure of each of the manufacturing units, and executes the manufacturing core activities. Although part of a specific manufacturing unit team or MBA, the maintenance function is structured as a semi-centralised support structure, which to some degree is removed from the core manufacturing activities undertaken by the production function.

The majority of the plants on the Port Elizabeth manufacturing site operate on multi-shift patterns, and since the production team managers and maintenance artisans are shift based personnel, they are required, most of the time, to work together effectively without any supervision.

The primary goal of the production function is to ensure that product is manufactured and delivered, in alignment with the master production schedule, and in compliance with quality, cost, safety, and hygiene standards. Since the achievement of this goal is largely reliant on the reliability and performance of the plant’s equipment and machinery, the production function is dependent on the maintenance function for the achievement of the primary goal. This dependency requires the maintenance department to ensure the following: the minimisation of machine downtime through planned and preventative maintenance activities; efficient changeovers between different products;
maintenance and improvement of the inherent safety features of the plants equipment and machinery; maintenance of plant capability to ensure that quality standards are maintained; minimisation of waste due to performance of machines; efficient and effective response to machine breakdowns; and to ensure that the machines are able to operate within their design capacity.

The primary goal of the maintenance function is to ensure that an Overall Equipment Efficiency (OEE) of ninety-five percent is achieved and maintained. As previously discussed and illustrated in figure 2.3, the plant’s OEE is the product of availability, performance, and quality. In order for the maintenance function to achieve their goal, they are dependant on the production function to ensure the following: that machines are operated correctly by trained and competent operators; that the machines are cleaned properly and well cared for; that job cards and works orders are raised and completed promptly and accurately; that the relevant maintenance personnel are informed, without delay, of machine breakdowns and / or machine problems; and to make time available in the production schedules for planned and preventative maintenance work.

2.3. Conclusion

The aim of this chapter was to describe the context in which the research study was undertaken. To achieve this objective the chapter began with a general discussion relating to the background, structures, and functions of Cadbury Schweppes plc in a global context. The focus of the chapter then shifted to Cadbury SA, and more specifically to the Cadbury SA Port Elizabeth manufacturing site. Finally the chapter concluded with a discussion of the interdependent relationship between the maintenance and production functions, which essentially is the context of the research problem for this treatise.

In the following chapter a review of the literature relating to social and organisational conflict is discussed, in order to gain a better insight into various aspects and perspectives of the conflict phenomenon.
3. Introduction

This chapter is a review of the literature pertaining to both social conflict and organisational conflict, as means of achieving the following objectives:

• To gain a better understanding and insight into various aspects of organisational conflict phenomena;
• To identify and discuss key concepts and definitions relating conflict;
• To identify the appropriate research methodologies and strategies, from existing research, that should be used to research organisational conflict phenomena;
• To establish the difference between conflict management and conflict resolution;
• To establish a means of effectively managing and resolving conflict.

The discussion that follows begins with a look at social conflict and the sociological perspectives relating to conflict. A definition of organisational conflict is then derived, which leads to discussions on the sources, context, categories, and nature of conflict. The chapter then closes with a review and discussion of conflict resolution and conflict management.

3.1. Social Conflict

Conflict studies generally focus on “Social Conflict”, which is the conflict that takes place between or among individuals or groups (Schellenberg, 1996: 8). Social conflict and its theory form an integral part of the studies relating to the
field of social sciences, particularly, that of sociology, which is the most general of the social sciences (Chambliss, 1973: 1), and that of social psychology (Pruitt and Kim, 2004: xiii). The South African Concise Oxford Dictionary (Kavanagh, 2002: 1112 - 1114) defines sociology as "the study of the development, structure, and functioning of human society...the study of social problems", and social psychology as "a branch of psychology associated with social interactions".

### 3.1.1. Sociological Perspectives

In the field of sociology, as is the case with many other scientific disciplines, general theoretical models, which are based on a general set of ideas and concepts, are used to select problems, organise data and practise inquiry (Chambliss, 1973: 2 and Sullivan, 2003: 9). Due to the complexity of the problems associated with human behaviour, no single model or theory can be used to adequately explain these problems, and therefore the problems are often tackled using more than one model or theory (Chambliss, 1973: 1). According to Sullivan (2003: 10) social problems and social phenomena, of which conflict is one, can broadly be described from three theoretical perspectives namely: Functionalist Perspective, Conflict Perspective, and the Interactionist Perspective.

- **The Functionalist Perspective:** Sullivan (2003: 9) suggests that the functionalist perspective initially developed from the observations of sociologists, which highlighted the functional similarities between societies, and that of biological organisms. Chambliss (1973: 3) suggests that it was Emile Durkheim who, in his search for "the elements of social life that provide the glue to the fabric of society", laid the foundations for functionalist perspective. This perspective focuses primarily on the aspects or elements that produce stability, harmony and continuity within societies (Chambliss, 1973: 3). The functionalist perspective is systemic (Chambliss, 1973: 40), where societies are viewed as systems, with
various needs of their own, that are made up of a number of harmoniously integrated and interrelated elements, all of which perform a different function and contribute to the needs and requirements of the social system as a whole (Parsons, 1951 cited in Sullivan, 2003: 10 and Chambliss, 1973: 40). Determining exactly what function each element in society serves is central to the functionalists approach (Sullivan, 2003: 10).

- The Conflict Perspective: According to Sullivan (2003: 11) it was Karl Marx who provided the foundation for the conflict perspective, during his work on conflict between social classes in 1867. The conflict perspective, as opposed to functionalist’s perspective, focuses more on the disruptive aspects of society that cause and bring about change (Chambliss, 1973: 3), and emphasises the unavoidability of coercion, domination and conflict (Sullivan, 2003: 11). This perspective is anti-systemic (Chambliss, 1973: 40). Under this perspective society is not viewed as a system, but rather as the “stage” on which conflicts and struggles take place (Chambliss, 1973: 3), in order to gain control of, or access to, scarce societal resources that are considered valuable, such as “money, power, prestige or the authority to impose one’s values on society” (Sullivan, 2003: 11). Societies, from the conflict perspective, exist because of the social interactions that take place between their members, and because of the constraints that are imposed by some of its members on others (Chambliss, 1973: 3). The conflict model suggests that social conflict and social change are unavoidable and ubiquitous. Under this model, it is assumed that every society is continuously subject to social change, because it is constantly experiencing social conflict, and that every element within that social system contributes towards that change (Chambliss, 1973: 3).

- The Interactionist Perspective: The focus of this perspective is on the everyday social interactions that take place between individuals. As a result of these interactions, groups, organisations and societies are
created, maintained and changed (Sullivan, 2003: 13). According to Schellenberg (1996: 68) the interactionist perspective, through the writings of Herbert Blumer in 1937, developed into what has become known as “symbolic interactionism”. The foundations of “symbolic interactionism” are based on the following three concepts: “(1) that human beings act toward things on the basis of the meanings that these things have for them; (2) that the meaning of such things is derived from, or rises out of, the social interaction that one has with one’s fellows; and (3) that these meanings are handled in, and modified through, an interpretive process used by the person in dealing with the things he encounters” (Blumer (1937) quoted in Schellenberg, 1996: 68). From this perspective social problems exist when a “social condition” arises that is seen, by others, to be incongruent or threatening to “normal” social values or disruptive of “normal” social expectations (Sullivan, 2003: 14).

The well-known functionalists, such as Emile Durkeim and Talcott Parsons, typically have a dysfunctional view of conflict in social systems (Bradshaw, 2006), and according to Coser (1956), cited in Bradshaw (2006), see conflict as having “disruptive, dissociating and destructive consequences” in society.

Those who subscribe to the conflict perspective, such as Karl Marx and Lewis Coser, see conflict as an “inherent part of social relations”, which “serves some latent social functions” (Nepstad, 2005), and as a “functionally positive force in the development of society” (Bradshaw, 2006).

According to Sullivan (2003: 14) neither one of these perspectives should be seen to be more right, or wrong, than another, but rather they should be viewed as a set of “tools”, that provide some “fundamental assumptions about the nature and operation of society”, which can be used as the basis for the development of more specific theories, that in turn can be used in the analysis of complex social problems (Sullivan, 2003: 9 -14).
3.2. Defining Conflict

The word “Conflict” is derived from the Latin word “Confligere” which means, “to strike together” (Wright, 1951: 16. and Tillet, 1991: 3), and is often associated with the following synonyms: “dissension, strife, friction, disagreement, dispute, argument, quarrel, war, fight” (Tillet, 1991: 3).

Tillet (1991: 7) claims that, generally speaking, most definitions are inadequate or imperfect. Bradshaw (2006) supports this view, and suggests that in order to define a “complex and multi-faceted” concept such as conflict, that it is useful to look at several definitions of the word, in order to highlight some of the key aspects that are usually associated with it. Some of these definitions of conflict are as follows:

- The definition of conflict in the South African Concise Oxford Dictionary (Kavanagh, 2002: 242) is “a serious disagreement or argument…a prolonged armed struggle…an incompatibility between opinions, principles, etc.”;

- Tillet’s (1991: 7) definition of conflict is that it “exists when two or more parties perceive that their values or needs are incompatible”;

- Matthews (1993) defines conflict as “a disagreement or opposing position on an issue”;

- Sullivan (2003: 11) suggests that conflict is a struggle between different groups in society to gain control of, and have access to scarce societal resources that are considered valuable;

- Harper (1995: 6) defines conflict as the “result of a process whereby the “haves” have striven – often successfully – to enhance their favoured position in society at the expense of the “have-nots” ”;
Schellenberg (1996: 8) defines conflict as “the opposition between individuals and groups on the basis of competing interests, different identities, and/or differing attitudes”;

Burton (1988: 11), cited in Tillet (1991: 7), defines conflict as “a relationship in which each party perceives the other’s goals, values, interests or behaviour as antithetical to its own”;

Pruitt and Kim (2004: 7 - 8) define conflict as a “perceived divergence of interest, a belief that the parties’ current aspirations are incompatible”.

The definitions above, relate to conflict in general or what is commonly known as social conflict. Since the primary focus of this paper is on organisational conflict, it is appropriate to look at some definitions of organisational conflict to see how they compare with the definitions of social conflict. Some of the definitions of organisational conflict include the following:

Roloff (1987), who is quoted in Rahim (2002: 207), claims, “Organisational conflict occurs when members engage in activities that are incompatible with those of colleagues within their network, members of other collectivities, or unaffiliated individuals who utilize the services or products of the organisation”;

Rahim (2002: 207) suggests that Roloff’s definition of organisational conflict is somewhat limited, and defines organisational conflict as “an interactive process manifested in incompatibility, disagreement or dissonance, within or between social entities (i.e., individual, group, organisation, etc.)”. Rahim (2002: 207) further claims that organisational conflict typically occurs when parties: are required to take on activities that are incompatible with their own needs or interests; have behavioural preferences, attitudes, values, skills and / or goals, that are incompatible with other parties preferences for these same attributes; desire some mutually beneficial scarce resource; have “partially exclusive behavioural
preferences regarding their joint actions”; and where parties are interdependent on one other to succeed;

- Jehn (1994: 224) defines organisational conflict as: “an awareness by the parties involved that there are discrepancies, or incompatible wishes or desires present”;

- According to Tjosvoldt and Wong (2004, 298), Deutsch defines conflict as a “condition present in incompatible activities, where one person’s actions are interfering, obstructing, or in other ways making the behaviour of another less effective”;

- De Dreu, van Dierendonck, and Dijkstra (2004, 8) view conflict as “a process that begins when an individual or group perceives differences and opposition between oneself and another individual or group about interests, beliefs or values that matter to them”.

From the definitions of both social and organisational conflict given above, it is clear that social conflict and organisational conflict are in fact similar. Drawing information from the above definitions “Organisational Conflict” can therefore be defined as: a “perception” or “awareness”, of “incompatibility” or “difference”, that exists between “interdependent”, groups or individuals within an organisation, relating to activities, behaviours, values, needs, goals, skills, interests, attitudes, identity, and / or scarce resources.

3.3 Sources of Conflict

The definitions of conflict discussed before provide some clues as to the sources of conflict. Bradshaw (2006) has developed a useful model called the “Conflict Cube” (see figure 3.1), which suggests that there are essentially six bases or sources of conflict.
Each side of the “Conflict Cube” denotes a source or a base of conflict. The six sources of conflict, reflected on the sides of the cube, are structure, values, interests, data, needs and relationships. Bradshaw (2006) claims that, since conflict is a multifaceted and complex phenomenon, each conflict can be the result of more than one of these sources, and that these sources may overlap with one another.

A description of these sources of conflict is as follows:

- Structurally based conflict is the result of social structures that are in place, which promote and facilitate the perception of zero-sum relationships, therefore placing individuals and groups in conflict with one another (Bradshaw, 2006);
• Value based conflict is typically found where significantly diverse people or groups hold different values, which may be of a religious, political, or ideological nature (Bradshaw, 2006);

• Interest based conflict is the struggle between different groups for scarce resources that may be in great demand (Bradshaw, 2006);

• Data based conflict centres around the miscommunication, or misinterpretation, of information which is significant enough to cause conflict (Bradshaw, 2006);

• Needs based conflict is driven by the denial and frustration of both physical and psychological basic human needs such as nutrition, shelter, safety, social acceptance, identity, and control (Bradshaw, 2006);

• Relationship based conflict deals specifically with the relationships between individuals that can cause conflict. This type of conflict can also be due to poor past relationships between individuals and groups, where because of these past relationships there is currently a high level of distrust and animosity between the different individuals or groups (Bradshaw, 2006).

3.4. Context of Conflict

According to Tillett (1991: 18) conflicts do not take place in vacuums, and need to be placed in context if they are to be adequately described, analysed and understood. The importance of contextualising conflict can not be underestimated, as it provides important information pertaining to the participants (parties) and their relationships, as well as information relating to the social and cultural norms, values and rules of the society in which the conflict is taking place (Tillett, 1991: 18 – 19 and Miall, Ramsbotham, and Woodhouse, 2001: 29). Furthermore, placing a particular conflict into context, will aid in determining whether or not the conflict at hand is part of a larger
conflict or whether or not it is influenced by, or has influence on, other conflicts (Tillet, 1991: 18). Organisational conflict is essentially a form, or as Bradshaw (2006) describes it, a “species” of social conflict which is contextualised within an organisation.

### 3.5. Categorising Conflict

There are many different categories of conflict, however for the purpose of this research the following categories of conflict will be discussed, namely: Parties, Conflict Size, Conflict Symmetry, and Manifest and Latent Conflict

#### 3.5.1. Parties

Tillet (1991: 5) claims that “conflict ranges across a broad spectrum”, and suggests that there are essentially four different classifications of conflict based on the parties involved, namely: Intrapersonal conflict, interpersonal conflict, intragroup conflict, and intergroup conflict.

Intrapersonal conflict is the conflict that exists within an individual, and can occur when individuals are required to engage in an activity, which places competing demands on that individual, and which they perceive to be incompatible, with their own goals, needs or interests, ultimately causing frustration (Rahim, 2002: 207 and Tillet, 1991: 5). This type of conflict is usually associated with feelings that relate to guilt, honesty, and loyalty (Tillet, 1991: 5). According to Schellenberg (1996: 8) the field of social conflict studies generally excludes this type of conflict, however Rahim (2002, 207) suggests that intrapersonal conflict, in an organisational context, should not be excluded, as individuals within an organisation are often required to “interact with self” as part of their daily activities.

Interpersonal conflict, is also known as dyadic conflict (Rahim, 2002: 216), and can be defined as a conflict that typically takes place between two individuals,
engaged in an interdependent relationship, who hold the perception that their goals, roles, needs, values, interests and/or access to scarce resources are incompatible with one another, and/or that the other is interfering with, or negatively affecting, the achievement of their own specific individual goals (Barki and Hartwick, 2001: 197 – 198 and Bwowe, 2002: 7). From an organisational perspective interpersonal conflict typically occurs between individuals within the organisation who may be on similar levels, on different levels, in the same department or in different departments (Rahim, 2002: 216).

Intergroup conflict can be defined as conflict that takes place between groups (Tillet, 1991: 5), where Pruitt and Kim (2004: 27) define a group as “two or more people who have a common identity and a capacity for coordinated action”. Intergroup conflict typically arises due to the following causes: perceived incompatibility of goals, roles, needs, values interests and/or access to scarce resources; power struggles and the attempts of one group to gain control over the other; group identity; and antagonistic feelings between the groups towards one another (Fisher, 2000: 168). An important theory to be considered in intergroup conflict is the “Social Identity Theory”, which was developed by Tajfel and Turner in 1979, and which holds that “the mere awareness of the presence of an out-group is sufficient to provoke intergroup competitive or discriminatory responses on the part of the ingroup” (Pruitt and Kim, 2004: 29 and Fisher, 2000: 168 – 169). In an organisational context intergroup conflict can also be referred to as inter-departmental conflict, which is essentially conflict that takes place between different departments (Rahim, 2002: 216).

Intragroup conflict is conflict that takes place between members within a group (Tillet, 1991: 5). This type of conflict can exist either between individual members within a group, and hence can be defined as interpersonal conflict, or between factions within a group, and therefore be defined as intergroup conflict (Tillet, 1991: 5). From an organisational perspective this type of conflict can also be referred to as intra-departmental conflict, which takes place within a specific department, or more broadly as intra-organisational conflict, which takes place within a particular organisation (Rahim, 2002: 216).
3.5.2. Conflict Size

According to Schellenberg (1996: 10), and Pruitt and Kim (2004: 19) conflicts can also vary in size, and hence can also be categorised as being either “Macro” or “Micro” conflicts, where the terms “Macro” and “Micro” denote the size of the conflict at hand. For example: Macro conflicts would include conflicts such as wars or revolutions, and Micro conflicts on the other hand would include conflicts such as interpersonal conflicts between neighbours, conflicts within small groups, or conflicts within organisations (Schellenberg, 1996: 10). Pruitt and Kim (2004: 19) suggest that one of the contributors to conflict size is the apparent divergence of interest. They claim that the size of conflict is directly proportional to the size and rigidity of each of the parties' aspirations, and inversely proportional to the number of alternatives available for the resolution of the conflict at hand. Schellenberg (1996: 66) also claims that conflicts are likely to greater and more radical when parties are engaged in close relationships.

3.5.3. Conflict Symmetry

According to Miall et al. (2001: 12) conflicts can also be categorised as being symmetric or asymmetric, where the symmetry of conflict is determined based on the similarity between the parties involved. Similarity between the parties is described in terms of the structure, power, authority, roles and the relationships between the parties (Miall et al., 2001: 12). When the parties have dissimilarities in terms of these aspects, for example: a manager and a subordinate, the conflict is described as being asymmetric. Where there are similarities between the two parties based on these aspects, for example: two colleagues or teams within a department in an organisation, the conflict can be described as symmetric (Miall et al., 2001: 12). Miall et al. (2001: 12) claims that there are generally no win-win resolutions to asymmetric conflicts, and that these conflicts are often only resolved through intervention by a third party or a through a change in the structure of the relationships between the two parties.
3.5.4. Manifest or Latent Conflict

Another way in which conflict can be categorised is that of whether the conflict at hand is manifest or latent (Tillet, 1991: 14). Manifest or overt conflict is where conflict, or aspects of conflicts, are visible due to the presence of conflict related actions. Latent conflict or un-manifest conflict on the other hand, relates to conflict or aspects of conflict that are below the surface or invisible, because there is little or no evidence, to support the fact that a conflict exists as no conflict related actions are being or have been displayed (Tillet, 1991: 14). According to (Tillet, 1991: 7) Morton Deutsch, a scholar of conflict studies, distinguishes between manifest and latent conflict, by referring to manifest conflict as the “symptom” of conflict, and to latent conflict as the “cause” of conflict (Tillet, 1991: 14).

3.6. The Nature of Conflict

A discussion of the nature of conflict, inevitably leads one to pose the following question: “Is conflict good or bad?” (Gordon, 2003; and Matthews, 1993). In response to this particular question, most of the authors studied, and in particular, Pruitt and Kim (2004); Johnson (2004); Wilson (2004); Bwowe (2002); Rahim (2002); Schellenberg (1996); Markham (1996); Jehn (1994); Matthews (1993); Tillet (1991); and Filley (1975), usually begin by acknowledging that conflict is a multifaceted, inevitable, omnipresent and unavoidable phenomenon. These authors further acknowledge that conflict, depending on the nature, type, context, and how the conflict is managed, can be either “Functional “or “Dysfunctional”.

3.6.1. Functional and Dysfunctional Social Conflict

The advantages associated with conflict are essentially encapsulated by the term “functional conflict”, which describes the view that conflict “is a functionally
positive force” that contributes towards the “development of societies” (Bradshaw, 2006). Some of these advantages, or evidence of functional conflict, include the following:

- Conflict has the capacity to initiate, promote and effect beneficial social change, where those who regard their situation as unjust, or view current policies in a negative light, can use conflict to bring about positive change (Pruitt and Kim, 2004: 9);

- Conflict prevents the stagnation and decay of society, by stimulating interest, curiosity, motivation, innovation and creativity (Pruitt and Kim, 2004: 10 and Tillet, 1991: 6);

- Conflict facilitates the process of group decision-making, and discourages poor or premature decisions (Pruitt and Kim, 2004: 10);

- Conflict can serve the function of reconciling “people’s legitimate interests”, this means that through mutual agreement and negotiation, between the two parties, involved in a particular conflict, a “win – win” situation can evolve that is mutually beneficial to both (Pruitt and Kim, 2004: 10);

- Conflict can strengthen the identity, cohesiveness, and the efficiency and effectiveness both within and between groups. It can also improve interpersonal relationships between group members who have engaged in conflict (Pruit and Kim, 2004: 11; Tillet, 1991: 6; and Filley, 1975: 6);

- Conflict can help towards stabilizing and maintaining relationships by helping to release tensions (Schellenberg, 1996: 65 and Tillet, 1991: 6);

- Some conflict situations, such as those associated with games, can provide entertainment value, and can help to diffuse more serious conflict situations (Filley, 1975: 4).
Similarly the disadvantages associated with conflict are summed up by the term “dysfunctional conflict”, which advocates the view that conflict has “disruptive, dissociating and destructive consequences” in society (Coser, 1956: 21). Some of the disadvantages, or evidence of dysfunctional conflict, are as follows:

- Conflict has the capacity to “wreak havoc” and destruction in societies, and can lead to violence, injury, death, famine, and poverty (Pruitt and Kim, 2004, 11);

- Conflict can be counterproductive by taking up time, energy and other resources, which could be more effectively deployed in pursuit of other more beneficial goals or interests (Pruitt and Kim, 2004: 11);

- Conflict can be costly (Pruitt and Kim, 2004: 173);

- Conflict can have an adverse impact on the health and well being, of both the individuals involved in the conflict and those around them that may be affected by the conflict (Pruitt and Kim, 2004: 11 – 12). According to Pruitt and Kim (2004: 11), evidence has linked conflict to health problems, such as: weakened immune systems, depression, alcoholism, and eating disorders. Other examples of the more severe effects of conflict on health and emotional well being, are those associated heavily escalated conflict, such as warfare, and include: Post Traumatic Stress Disorder (PTSD), psychological disorders, nightmares, flashbacks, emotional numbing, social withdrawal and hyperawareness (Pruitt and Kim, 2004: 12);

- Whilst conflict can strengthen unity and relationships between groups and individuals, it can also lead to the opposite, by weakening relationships to the extent that they are irreparable, and may contribute towards the disintegration of groups (Tillet, 1991: 6 and Pruitt and Kim, 2004: 10);
Conflict can “provoke anger, anxiety, distress, fear and aggression” and even result in violence (Tillet, 1991: 6);

- Conflict may cause a breakdown communication and obstruct problem solving (Tillet, 1991: 6).

### 3.6.2. Substantive and Affective Organisational Conflict

As is the case with social conflict, organisational conflict can also have either functional or dysfunctional outcomes (De Dreu and Beersma, 2005: 105 – 106; Wilson, 2004; Rahim, 2002: 208; Barki and Hartwick, 2001: 204; Jehn 1997: 530; Jehn, 1994: 91). According to Rahim (2002, 211) and Jehn (1997: 531), Guetzkow and Gyr (1954) claim that there are essentially two dimensions of conflict within organisations, namely: “affective conflict” and “substantive conflict”.

The dimension of substantive conflict relates specifically to issues concerned with tasks, work, policies, procedures, distribution and allocation of resources, differences in judgement, and differences in the interpretation of facts (De Dreu and Beersma, 2005:106). This type of conflict can also be referred to as “cognitive conflict” or “task conflict” (Rahim, 2002: 211). According to Jehn (1994: 232), substantive conflicts are generally functional for organisations, and are associated with an increase in organisational performance, effectiveness, and learning. Other functional outcomes of conflict within organisations, in addition to those discussed under social conflict are likely to include the following:

- Substantive conflict can result in an increase in performance and productivity (De Dreu and Beersma, 2005: 105 and Jehn, 1997: 532);
• Substantive conflict can stimulate innovation and creativity (Wilson, 2004);

• Substantive conflict stimulates discussion and debate, which in turn facilitates better understanding of issues, and enhances effective decision-making (Rahim, 2002: 210 and Jehn, 1994: 223);

• Substantive conflict can encourage problem solving and shared solutions (De Dreu and Beersma, 2005: 108 and Wilson, 2004);

• Substantive conflict can enhance organisational learning, since conflict encourages questioning and challenging of the status quo (Rahim, 2002: 208);

• Substantive conflict can improve morale and team spirit (Wilson, 2004);

• Conflict at senior levels within the organisation are “essential for effective strategic choice” (Rahim, 2002: 208 and Jehn, 1994: 223).

Affective conflict, on the other hand, relates directly to emotional or interpersonal issues (Rahim, 2002: 211). According to Rahim (2002: 211) “affective conflict”, can also be referred to as “relationship conflict” or “emotional conflict’. This type of conflict, as some of its pseudonyms suggest, is associated with negative emotions and feelings by one party towards another, relating to personal tastes, interpersonal styles, and personal values (De Dreu and Beersma, 2005: 106). Parties who are engaged in this type of conflict may be “negative, irritable, suspicious, and resentful” (Jehn, 1997: 531 - 532). Affective conflicts are typically dysfunctional for organisations, and are associated with a decrease in performance (Jehn, 1994: 232). The dysfunctional outcomes of affective conflicts are directly due to the fact, that parties spend time and energy on trying to reduce threats, increase power, and building cohesive relationships, rather than focusing on the tasks at hand (Jehn, 1997: 531). Other dysfunctional
outcomes of conflict within organisations, again in addition to those discussed under social conflict, may include the following:

- Affective conflict can: limit the ability of parties to process information effectively, discourage exchange of knowledge and ideas, and encourage hostile and aggressive behaviours between organisational members (Rahim, 2002: 210);

- High levels of conflict, in general, can have a negative impact on individual well being, and therefore contribute towards increased absenteeism. Conflict has been linked to both psychological and physiological symptoms such as: stress, anxiety, headaches, upset stomachs, increased intake of alcohol, sleeping problems, exhaustion, and burnout (De Dreu and Beersma, 2005: 112);

- According to Rahim (2002: 210), De Dreu and Beersma (2005: 108) conflict can also adversely affect group loyalty, job satisfaction and workgroup commitment;

- Affective conflicts may decrease work team effectiveness (De Dreu and Beersma, 2005: 110);

- Escalated levels of conflict can also result in “workplace bullying” and even physical violence between organisational members (De Dreu and Beersma, 2005: 110);

- Conflict may decrease group productivity (Jehn, 1994: 223);

- Affective and ineffectively managed conflict can drain energy, reduce focus, cause discomfort and hostility, and can be costly (Wilson, 2004).

Whilst it has been mentioned previously, that substantive conflict is functional for organisations, it should be noted that this only holds true for an optimal level
of such conflict. Both Rahim (2002: 210) and Jehn (1997: 532) note that too much task conflict can be dysfunctional, as it interferes with task completion, and may diminish group loyalty and workplace commitment. According to Rahim (2002: 211) most of the past studies conducted on affective and substantive conflicts, show a positive correlation between the two, and only one showed a negative correlation. This means that, generally speaking, as the amount of substantive (functional) conflict increases, so does the amount of affective (dysfunctional) conflict. Despite this correlation, between substantive and affective conflicts, Rahim (2002: 210 – 211) suggests that organisational conflict management strategies should be focused and developed around reducing the amount of affective conflict, and around stimulating, attaining and maintaining optimal levels of substantive conflict. This will enable organisations to reap the benefits from substantive conflicts, and ensure that they do not fall victim to dysfunctional outcomes of affective conflicts.

3.6.3. Escalation of Conflict

Escalation of conflict and its persistence are, more often than not, associated with the dysfunctional views of conflict. Failure to manage conflict or resolve conflict, effectively and efficiently, is usually the root cause of why conflicts escalate.

Escalation usually occurs when one of the parties opts to use heavier tactics than before, which in turn forces the other party to do the same. This action by the first party, and then reaction by the second party, results in an “increase in the intensity of conflict as a whole” (Pruitt and Kim, 2004; 88 - 89).

During escalation of a conflict the following transformations will take place: the number issues will tend to multiply, issues will become more general than specific, the commitment of each of the parties towards the struggle will increase, positive feelings within each of the parties will be displaced with more negative feelings, and the size of the parties will tend to grow due to the recruitment of neutral individuals and groups (Pruitt and Kim, 2004: 99).
In 1969 Galtung proposed a model of conflict (see figure 3.2 below), which can be used to describe the escalation of conflicts (Miall et al. 2001, 14). The model is in the shape of a triangle, where the vertices of the triangle are labelled with the following terms: “(C) contradiction”, “(B) behaviour” and “(A) attitude”.

In this model the term “Contradiction” depicts underlying or latent conflict, which includes the perceived incompatibility of goals, roles, values, needs, interests, and/or access to scarce resources (Miall et al., 2001: 14). When conflicts are symmetric, Miall et al. (2001: 14) claim that “the parties, their interests and the clash of interests between them” define this “contradiction”. In asymmetric conflicts, “contradiction” is defined in terms of the relationship between the parties and “the conflict of interest”, that is inherent in their relationship (Miall et al. 2001: 14).

Figure 3.2: The Galtung Conflict Triangle

![The Galtung Conflict Triangle](source)

The term “attitude” describes the “emotive (feeling), cognitive (belief), and conative (will) elements” (Miall et al. 2001: 14). The term “behaviour” includes aspects such as those associated with “cooperation or coercion”, and “gestures signifying conciliation or hostility” (Miall et al. 2001: 14).
Galtung claimed that in order for conflict to become manifest or overt, that all three of these components, had to be present, otherwise the conflict would remain latent (Miall, 2001: 15). According to Galtung, conflict is a dynamic process, in which these three components are constantly changing and influencing one another, this continual dynamic process, forces parties to constantly reorganise themselves around these changes in order to continue pursuing their own interests (Miall et al. 2001: 15). In the absence of, or ineffectiveness of, either resolution or management, escalation of conflict will occur.

Pruitt and Kim (2004: 92) describe three other models that can be used to describe the escalation of conflict, these are: “The Contender – Defender Model”, “The Conflict Spiral Model”, and the “Structural Change Model”.

In the “Contender – Defender Model”, one of the parties is seen to be the “contender”, and the other the “defender”. Each party then makes use of various tactics, to achieve their individual goals by attempting to change current reality. Often this is done at the expense of the other party. In the beginning the tactics applied are mild, because the risk, associated with them, to the party is low. However, when it becomes apparent that these tactics are ineffective, the parties begin to make use of heavier tactics. The opposing party can then either not respond to the tactics applied (remain passive), or retaliate by applying heavier tactics. As this interaction between the two parties continues the conflict is escalated (Pruitt and Kim, 2004: 93).

The “Conflict Spiral Model”, is based on a reiterative cycle, and holds that “escalation results from a vicious circle of action and reaction” (Pruitt and Kim, 2004: 96). The motivation’s of each party, in this case, is partly one of “revenge”, and “partly a matter of defence or deterrence” (Pruitt and Kim, 2004: 96 – 97). Again in this model the escalation of conflict occurs due to the action and reaction of each of the parties involved, with neither one of them willing to break the cycle (Pruitt and Kim, 2004: 97).
The “Structural Change Model” essentially builds on the “Spiral Conflict Model”, and looks specifically at the psychological, structural, and emotional changes that take place in individuals, groups and communities, as a way of explaining how and why the escalation of conflict takes place (Pruitt and Kim, 2004: 119 - 120). The model also claims that whilst some changes will dissipate once the conflict is over, there are other changes that would have permanently injured the relationship between the parties, and that may cause renewed conflict and escalation at a later time (Pruitt and Kim, 2004: 120).

Pruitt and Kim (2004: 92) suggest that each of these models describing the development of conflict escalation, are valuable, and that one should not be favoured over the other.

Although the ineffective management or resolution of conflict, contributes towards the escalation of conflict, they are not the only causes of why conflict escalates. According to Pruitt and Kim (2004: 121 – 150), the likelihood of conflict escalation, and the degree to which conflicts escalate is based on numerous inherent factors of the conflict, which include the following: Conflict size, instability, features of the situation, differences in personality and experience of the parties, differences in age and gender of the parties, escalation models employed by the parties, cultural differences between the parties, prior escalations and structural changes that have taken place, features of the relationships between the two parties, various features of the broader community, and evidence of stability through threats.

Apart from the dysfunctional affects of conflict escalation on society, escalation causes conflict to become more complex in nature, which ultimately makes resolution and management of the conflict more difficult (Miall et al., 2001: 15).

Pruitt and Kim (2004: 171) claim that the escalation of conflict cannot continue indefinitely and that “escalated conflict always ends”. At this point the parties reach, what Pruitt and Kim (2004: 177) refer to as, a “stalemate”. A stalemate is reached when either one, or both, of the parties come to the realisation that the
Conflict at hand is no longer tolerable or desirable (Pruitt and Kim, 2004: 188). This is because the costs, risks, and the exhaustion of resources required to maintain the conflict, far outweigh the benefits (Pruitt and Kim, 2004: 188). At the point of reaching a stalemate, each of the parties may still be unwilling to surrender to the other or withdraw from the conflict, as this may be seen as a sign of weakness, which at this stage is still an undesirable alternative (Pruitt and Kim, 2004: 177). Reaching a position of stalemate inevitably forces each of the parties to adopt the view that the other party is an interdependent partner, and one with whom collaboration and cooperation is required if the conflict is to be resolved (Pruitt and Kim, 2004: 178).

3.7. Resolution of Conflict

According to Rahim (2002: 207) conflict resolution is the “reduction, elimination or termination of conflict” typically through negotiation, bargaining, and / or arbitration.

Tillet (1991: 70) claims that there are many models available, which dictate the processes and steps that should be followed during the resolution of conflict. According to Tillet (1991: 70) the variation between these models is fairly insignificant, and that any differentiation between them mostly lies in the way in which the steps and processes are named. Tillet (1991: 70) further claims that there is no one model that exists which can be universally applied to all conflicts, and that because of this, one should rather consider the steps in a conflict resolution process, as a “checklist” or “inventory” of concepts that can be used when appropriate. A typical conflict resolution process is depicted in figure 3.3, which has been adapted from the elements of a checklist provided by Tillet (1991: 70).
Figure 3.3: A Typical Conflict Resolution Process

- Agreement of the problem, purpose and process
- Sharing of perceptions
- Responding to perceptions
- Defining objectives
- Identifying options
- Evaluating options and projecting outcomes
- Selecting and negotiating options
- Planning and implementation
- Evaluating and reviewing
- Revising
- Resolving

Source: Adapted from Tillet, (1991: 70).
3.8. Management of Conflict

According to Rahim (2002: 208) conflict management, differs from conflict resolution, in that it does not necessarily imply the “avoidance, reduction, or termination of conflict”, but instead focuses on strategies that are specifically designed to enhance the functional consequences of conflict, and reduce the dysfunctional consequences.

3.8.1. Conflict Management Styles

Much of the literature reviewed relating to the management of conflict centres around, what is known as the “Dual-Concern Model” (DCM), which is depicted in figure 3.4 (Bercovitch (1984) cited in Bradshaw (2006); Johnson (2004); Wilson (2004); Rahim (2002); Pruitt and Kim (2004); Slaikeu (1996); Rahim (1983)). According to Rahim (2002: 216) and Rahim (1983) it was Blake and Mouton, in 1964, which initially developed the basic concepts of the DCM, which were then later reinterpreted by: Thomas in 1976, Rahim and Bonoma in 1979 and again by Pruitt and Rubin in 1983. The DCM is essentially a matrix, which distinguishes between five different management styles, or modes, for handling conflict. In the DCM model these five styles are defined as: Avoiding, Obliging, Integrating, Dominating, and Compromising (Rahim, 2002: 221). Two axes construct the matrix itself, namely: “Concern for Self “and “Concern for Others” (Rahim, 2002: 216)

The axis “concern for self” describes the degree (high or low) to which an individual, or group, attempts to satisfy their own needs or interests, and the axis “concern for others” determines the degree (high or low) to which an individual, or group, is willing to satisfy the needs and interests of others (Rahim, 2002: 216 – 217). Various combinations of these two axes, lead to the formation of four distinct quadrants, each of which then represents a particular style of management.
Rahim (2002: 217) and Rahim (1983: 369) also claim that in addition to these four styles of management, a fifth management style exists at the point where the four quadrants intersect one another. Pruitt and Kim (2004: 41) however, suggest that there are essentially only four styles of management, and do not recognise the fifth style. It is also worthwhile noting that the terminology used to describe each of these management styles, differs from one author to another. For example: “Avoiding” is also referred to as “Withdrawing” or “Inaction”; “Obliging” is also referred to as “Yielding”, “Smoothing”, or “Competition”; “Integration” is also referred to as “Problem Solving” or “Collaboration”; “Dominating” is also referred to as “Contending”, “Forcing”, or “Accommodation”, and “Compromising” is also referred to as “Sharing” (Pruitt

Having described the construct of the DCM and associated terminology, it is now appropriate to describe and discuss the different management styles in more detail. Furthermore, it is important to note, that whilst parties may tend to favour the use of one particular style over another, depending on their personal views or feelings about conflict in general, that these styles are flexible and that the appropriate choice and use of each of these styles is dependant on the factors inherent of a particular conflict situation (Rahim, 2002: 218).

Avoiding: From figure 3.4, it is clear that this style is favoured when the party has a low concern for self, and a low concern for others (Rahim, 2002: 220). This style involves ignoring the conflict, or changing ones own behaviour to resolve the conflict at hand (Slaikeu, 1996: 6). The use of this style is often seen to result in a “Lose-Lose” situation, since the party fails to satisfy both its' own concern, and that of the other (Rahim, 2002: 220). With this style decision-making is essentially left to chance, this is because the primary focus of this style involves isolation from the problem, which in turn results in a primary outcome that is often unpredictable (Slaikeu, 1996: 6). To be constructive this style relies on the passing of time to bring about resolution or the changing of a parties own behaviours, without expecting a change in behaviour from the opposition (Slaikeu, 1996: 6). In its destructive form there is denial that a problem exists due to the avoidance of confrontation, because of a lack of negotiation skill (Slaikeu, 1996: 6). According to Rahim (2002: 220) and Slaikeu (1996: 6) it is appropriate to use this style under the following conditions: when the issues are trivial; when there is no opportunity to talk to other party; where the passing of time will help resolve the conflict; where delay will not result in a deterioration of the situation; where the use other styles, for some or other reason, are not suitable; and where the potential dysfunctional effects of having to confront the other party will outweigh the benefits of resolution. Similarly, it is inappropriate to use this style: when issues are important to the party and have
to be resolved; when immediate attention to the problem is required; and when it is the parties’ responsibility to make a decision (Rahim, 2002:219).

Obliging: As indicated in figure 3.4 this particular conflict management style is favoured when there is a high concern for others, and a low concern for self (Rahim, 2002: 218). This style typically involves an attempt to underplay differences and emphasise commonalities between the parties, the result of which ends up as a “Win-Lose” scenario (Rahim, 2002: 220). It is appropriate to use this style in the following circumstances: when parties believe that they are in the wrong or that their position is weak; when an issue is less important to the party than it is to the other; when a party is willing to sacrifice its position in the hope of gaining some future benefit; and when protecting the relationship between the two parties is important (Rahim, 2002: 219). Similarly it is inappropriate to use this style in the following situations: when the issue is important to the party; when the party believes that they are right; and when the other party is wrong or unethical (Rahim, 2002: 219).

Integrating: As indicated in figure 3.4 this particular conflict management style is favoured when there is both a high concern for others, and a high concern for self (Rahim, 2002: 218). This style essentially involves collaboration, negotiation, and either formal or informal mediation to address the conflict at hand (Slaikeu, 1996: 6 - 9). Decision making when using this particular style, is by the parties involved (Slaikeu, 1996: 6 - 9). The primary focus of this style is the development of an integrative solution to the problem, based on both the interests of the parties as well as other supporting facts (Slaikeu, 1996: 6 - 9). The primary outcome is a mutually beneficial “Win – Win” situation (Slaikeu, 1996: 6 - 9). In its constructive form this style ensures that: individual rights are protected; the best alternatives towards settlement are negotiated and considered; all parties are willing to engage in discussions either directly or through a mediator; and adjustments are made to initially identify and address power imbalances to protect the parties (Slaikeu, 1996: 6 - 9). It is appropriate to use this style under the following conditions: where issues are complex; where the commitment and compliance of each party is important to the
success of the resolution; where the preservation of the relationships between
the parties is desirable after the conflict has been resolved; where there is time
available for problem solving and a combination of ideas is required to generate
better solutions; where one party alone cannot solve the problem; and where
each of the parties has access to different resources that are required to resolve
the common problem (Rahim, 2002: 219 and Slaikeu, 1996: 6 - 9). Similarly it is
inappropriate to use this style: when problems are simple; when quick decision
making is required; when other parties may be affected or impacted by the
decisions; and when the parties do not have problem-solving skills to deal with
the issue collaboratively (Rahim, 2002: 219).

Dominating: As indicated in figure 3.4 this particular conflict management style
is favoured when there is a high concern for self, and a low concern for others
(Rahim, 2002: 220). Parties using this particular style will use assertive and
forceful behaviour, to relentlessly pursue their objectives, and often in so doing,
will ignore the needs, interests and expectations of the other party (Rahim,
2002: 220). This type of style is often considered to result in a “Win-Lose”
situation (Rahim, 2002: 220). It is appropriate to use this style in the following
situations: when issues are trivial; when quick decisions are required; when an
unpopular course of action is required; when the issue is important to the party;
when dealing with assertive subordinates; when a decision by the other party is
unfavourable or costly; and where subordinates may lack the technical skills
required to make good decisions (Rahim, 2002: 219). Similarly it is
inappropriate to use this style: when issues are complex; when the issue is
unimportant to the party; when each of the parties are equally powerful; when
decisions can take time; and when subordinates are competent to make
decisions (Rahim, 2002: 219).

Compromising: As indicated in figure 3.4 this particular conflict management
style is favoured when there is an intermediate concern for self, and for others
(Rahim, 2002: 220). This style essentially involves both parties sacrificing
something to reach a mutually beneficial decision (Rahim, 2002: 220). This style
more often than not results in a “Win-Win” situation and less often in a “Lose-
Lose” situation. It is appropriate to use this style in the following situations: when the goals of both parties are mutually exclusive; when parties are equally powerful; when “consensus cannot be reached”; when integrating or dominating styles have yielded little success; and when temporary solutions to complicated issues are required (Rahim, 2002: 219). Similarly, it is inappropriate to use this style: when “one party is more powerful” than the other and when problems are too complicated for temporary solutions (Rahim, 2002: 219).

According to Rahim (2002: 221), and as illustrated in figure 3.4, the DCM matrix can be further divided into two dimensions along the diagonal. These dimensions are termed the “Bargaining Dimension” and the “Problem-Solving Dimension”. The bargaining dimension, or style, is indicative of the willingness of a party to either pursue its own concerns or the other parties concerns, and the problem-solving dimension represents the willingness of a party to pursue both its own concerns and that of the other party (Rahim, 2002: 222). The Integrating and Avoiding styles therefore fall within the problem-solving dimension, and the Obliging and Dominating styles fall within the bargaining dimension.

### 3.8.2. Conflict Management Process

According to Rahim (2002: 222) the management of organisational conflict involves the “diagnosis of and intervention in conflict”. Rahim (2002: 222) suggests the following process (see figure 3.5), as a means to managing organisational conflict.
“Diagnosis”, as illustrated in figure 3.5 above, is the first step in the conflict management process. This step is essentially one of problem solving, where measurement and analysis of conflict are undertaken, to effectively recognise, sense, and formulate problems (Rahim, 2002: 223). According to Rahim (2002: 223) the measurement of organisational conflict typically involves the following: determining the amount of substantive and affective conflict at different organisational levels; determining the dominant conflict management styles of organisational members at different organisational levels; identifying the sources of substantive and affective conflict, as well as the sources of dominant conflict management styles; and determining organisational learning and effectiveness at the individual and group levels. Analysis is mostly concerned with: the classification of the data collected by department, division, or unit; comparison of the data collected between departments, divisions, units, and against national norms; and the identification of the possible relationships between conflict management styles, amount of conflict, conflict types, sources of conflict, and organisational learning and effectiveness (Rahim, 2002: 223). Rahim (2002: 223) claims that an effective and comprehensive diagnosis is undoubtedly the most important step towards effective conflict management.
The reasons for this are that an effective and comprehensive diagnosis will ensure that the correct problem has been identified, and that the true causes and effects of the problem are known. Furthermore, an effective diagnosis will indicate whether or not any intervention is required, and will also provide an indication of the type of intervention that is required to manage the conflict (Rahim, 2002: 223).

“Intervention”, as illustrated in figure 3.5, is the second stage in the conflict management process. According to Rahim and Bonoma (1979), cited in Rahim (2002: 225), interventions can be either “Process” or “Structural”. Process interventions are typically designed to improve organisational effectiveness by changing the amount of substantive and affective conflicts, through process related activities, such as: teaching organisational members about the different types of conflict management styles, and how they can use these styles effectively in different situations; changing the organisational culture; changing leadership processes; communication; and changing decision making processes (Rahim, 2002: 225). Structural interventions, on the other hand, are typically designed to change the amount of substantive or affective conflict by altering the organisations “structural design characteristics” (Rahim, 2002: 228). According to Rahim (2002: 228) these characteristics typically include the following: integration and differentiation mechanisms; hierarchy; procedures; and reward systems. Rahim (2002: 228) also claims that there is sufficient evidence to suggest, that there is no “one best design” for all organisations, and that generally speaking, a mechanistic or bureaucratic type design is more appropriate for organisational teams that respond to a stable environments, whereas an organic or organismic design is more appropriate for organisational departments who respond to unstable environments. In many cases it is desirable to use both process and structural interventions, especially when the two types of interventions are interdependent on one another or where a synergistic effect of the two is possible (Rahim, 2002: 229).

“Change in Conflict” is the third stage in the conflict management process. Since interventions are specifically designed to have an effect on the use of
conflict management styles (Process interventions), and change the amounts of substantive or affective conflict (Structural and Process interventions), one would expect that once an intervention has taken place that there would be a change in both of these two measurements and on the conflict as a whole.

“Change in Organisational Learning and Effectiveness” at the individual, group and organisational level, is the fourth stage in the conflict management process. According to Rahim (2002: 229) the primary goal of organisational conflict management is to improve organisational learning and effectiveness. This goal is achieved when the interventions taken, have successfully managed to reduce the amount of affective conflict, attain and maintain moderate amounts of substantive conflict for non-routine tasks, and have enabled organisational members to effectively select and use different conflict management styles in different conflict situations (Rahim, 2002: 229).

The conflict management process, in figure 3.5, is an iterative process, since organisations will constantly strive to improve organisational learning effectiveness. The last stage in the process is “Feedback”, which is necessary to determine whether or not the diagnosis was accurate, and whether or not the interventions that were undertaken have been successful.

3.9. Conflict and Diversity

According to Ayoko and Hartel (2006: 345) rapid changes in demographic trends within organisations are presenting managers with unique challenges, and the ability to understand and manage diversity has become essential to the capability of present-day organisations (Ayoko and Hartel, 2006: 345). None more so than organisations within South Africa, which now have highly diversified workforces and are faced, with the seemingly impossible challenges associated, with managing this diversity effectively (Poovan, du Toit, and Engelbrecht, 2006). According to Schultz, Bagraim, Potgieter, Viedge, and
Werner, (2005: 31) “embracing cultural diversity is perceived as a competitive advantage and a strategic necessity to survive in a globally diverse environment”. Swanepoel, Erasmus, Van Wyk, and Schenk, (2005: 363) further claim that only through the effective management of diversity in South Africa, can the collective potential of South African organisations be improved.

The number of different cultures within an organisation means that different values and different value systems may exist between the different organisational members, and this in turn means that the management of human resources and teams has become increasingly more difficult (Proovan et al, 2006). Given that many South African organisations have adopted team-based working approaches, the ineffective management of diversity could have an adverse impact on the organisations efficiency, productivity and profitability (Proovan et al, 2006). According to Ayoko and Hartel (2006: 345) “studies have shown that diverse workgroups compared to homogenous workgroups suffer more from poor cohesion and social integration … conflict, turnover, low trust, low job satisfaction, stress, absenteeism, and communication difficulties”. They also claim that people in organisations that are different from their colleagues “in terms of race, gender, tenure, and other characteristics report feelings of discomfort and less organisational commitment”.

Since the effectiveness of diverse work teams is often hampered by short-term problems, such as establishing processes and relationships with work colleagues, organisations need to ensure that managers of diverse work teams are equipped with the necessary skills to promote functional conflict and eliminate dysfunctional within their teams (Ayoko and Hartel, 2006: 345 – 346).
According to Ayoko and Hartel (2006: 355) the following propositions originate from this model, which can be used to predict the outcomes of leaders intervene in dysfunctional conflict events and should be used as the basis for training leaders of diverse work teams.

- The more pronounced the in-group and out-group distinction, the greater the perception of conflict experienced by culturally diverse work teams;
- The more observable the cultural heterogeneity in a workgroup is, the more pronounced the distinction between group values, work orientation styles, and social norms in the group;
- The more significant that cultural diversity is in a workgroup, the higher the intensity (amount, duration, type, and frequency) of conflict in the workgroup;
• Cognitive reactions to conflict will be moderated by the type and the source of the conflict in culturally diverse workgroups;  
• Cognitive reactions to conflict will be moderated by the intensity, frequency, and duration of the conflict in culturally diverse workgroups;  
• The affective reactions to conflict will be moderated by the intensity, frequency, and duration of conflict;  
• Affective reactions to conflict will be moderated by the type and the source of the conflict in culturally diverse workgroups;  
• In the long run the functional and dysfunctional reactions to conflict will moderate the task outcomes for culturally diverse workgroups;  
• In the long-run the functional and dysfunctional reactions to conflict will moderate the social outcomes for culturally diverse workgroups;  
• Leaders perceived by their group as high in technical skills will have followers who react more productively to conflict events in their workgroup than will followers of leaders perceived as low in technical skills;  
• Leaders perceived by their group as high in conceptual skills will have followers who react more productively to conflict events in their workgroup than will followers of leaders perceived as low in conceptual skills;  
• Leaders perceived by their group as high in administrative skills will have followers who react more productively to conflict events in their workgroup than will followers of leaders perceived as low in administrative skills;  
• The more dissimilar the leaders and their group members are in ethnicity and cultural backgrounds, the higher the perception of conflict in the group;  
• The more dissimilar the leaders and their group members are in conflict management styles, the higher the perception of conflict in the group;
• The relationship between conflict events and group outcomes will be more strongly affected by the group leader’s conflict management skills in culturally heterogeneous workgroups than it will be in homogeneous workgroups;

• The more collaborative a leader’s conflict management style is, the more functional will be the workgroup member’s reactions to conflict events;

• The more a group’s leader displays awareness of own and other’s emotional capacity, the more positive the emotional climate within the group;

• Positive emotional climate will lower the amount, intensity, and frequency of conflict in the workgroup;

• Positive emotional climate will increase functional reactions to conflict in culturally diverse workgroups;

• The more open the group leader is towards dissimilar others in their workgroup, the more open group members will be towards dissimilar others in the group;

• The more open group members are towards diverse others in their group, the greater the reduction in the intensity of conflict in culturally diverse workgroups;

• The more open group members are to dissimilar others in their group, the greater the likelihood of functional reactions to conflict in the work group;

• Leader intervention will moderate both cognitive and affective reactions to conflict within culturally diverse workgroups;

• Leader intervention will moderate distal effects (task and social outcomes) for culturally diverse workgroups;

• The leader pre-conflict stage will moderate types of conflict events emanating within culturally diverse work teams;

• The leader pre-conflict stage will moderate the reactions (both cognitive and affective) to conflict within culturally diverse work teams;
• The leader pre-conflict stage will moderate distal effects (task and social) from conflict in culturally diverse work teams.

Management theories and practices, which are based on the European or American ideologies, may fall short in terms of being able to manage and develop South Africa’s diverse workforce (Proovan et al, 2006). It is therefore important that South African organisations develop management and leadership models and theories that harness the uniqueness of South Africa, and that consider both diversity and cultural differences (Proovan et al, 2006). One of the proposals is that South Africa should develop an Afro-centric approach based on the principles of “Ubuntu” (Proovan et al, 2006). According to Mangaliso (2001) “Ubuntu” is a cultural philosophy that “embodies the beliefs, values, and behaviours of a large majority of the South African population”.

3.10. Conclusion

The overall objectives of this chapter were to provide a better understanding of conflict in general and more specifically, that of organisational conflict, by examining the various perspectives and aspects of conflict phenomena as revealed by existing literature. In order to achieve this objective the chapter included the following discussions:

• The chapter began with a look at the various perceptions of conflict from three sociological perspectives, namely: “The Functionalist Perspective”, “The Conflict Perspective”, and the “Interactionist Perspective”. During the discussion of conflict, from these three theoretical perspectives, it was revealed that conflict could be viewed as having either “Functional” or “Dysfunctional” outcomes in society, depending on which of the three theoretical perspectives is at play;

• The next part of the chapter entailed deriving an all-encompassing definition for “Organisational Conflict”, based on several definitions from
various sources of literature. From these definitions, “Organisational Conflict” was defined as: a “perception” or “awareness”, of “incompatibility” or “difference”, that exists between “interdependent”, groups or individuals, within an organisation, relating to activities, behaviours, values, needs, goals, skills, interests, attitudes, identity, and / or scarce resources;

- A discussion on the “Sources of Conflict” involved an examination of Bradshaw’s “Conflict Cube”, which suggests that there are essentially six bases or sources of conflict, namely: structures, values, needs, interests, data, and relationships;

- The context and categories of conflict were then discussed with specific reference to:
  - The parties involved, where intrapersonal, interpersonal, intergroup, and intragroup conflicts were described;
  - Conflict size, where macro and micro conflicts were described;
  - Conflict symmetry, where symmetric and asymmetric conflicts were described;
  - Manifest and latent conflict;

- The discussions around the “Nature of Conflict” then re-enforced the previous discussions around the sociological perspectives of conflict, where “Functional” and “Dysfunctional” social conflict were examined, and where “Affective” and “Substantive” organisational conflict were defined and examined. This particular section of the chapter also looked at the escalation of conflict and various conflict escalation models;

- The penultimate two sections of the chapter looked specifically at the theory pertaining to “Conflict Resolution” and “Conflict Management”. In these two sections the terminology and processes of “Conflict Resolution” and “Conflict Management” were defined and described.
Under the section on “Conflict Management”, the “Dual Concern Model” was used to define and describe the different “Styles of Conflict Management” and the significance of these styles in the management of conflict within organisations;

- The final section discussed conflict in the context of cultural diversity in which a theoretical model of the effects of leader intervention in conflict events within culturally heterogeneous workgroups and its propositions were presented.

In conclusion the literature study in Chapter Three provided a better understanding into the conflict phenomena through discussions on various aspects and perspectives on conflict, and revealed appropriate research methodologies and strategies that should be followed when conflict research is undertaken in organisations.

Chapter four of this treatise looks at research methodology and design in general, and then describes the specific research methodologies and strategies that were used to collect the empirical evidence, which was used to solve the main problem of this research.
CHAPTER FOUR
RESEARCH METHODOLOGY AND DESIGN

4. Introduction

Collis and Hussey (2003: 1) state that research is fundamental to both business and academic activities. Leedy and Ormrod (2005: 2) define research as “a systematic process of collecting, analysing, and interpreting information (data) in order to increase our understanding of the phenomenon about which we are interested or concerned”. Collis and Hussey (2003: 1), on the other hand, steer clear of providing a definition for research, as they claim that there are many different definitions available in the literature, they do however maintain that all the definitions have the following three things in common, namely: research is “systematic and methodical”, research is a “process of enquiry and investigation”, and that research is undertaken to “increase knowledge”.

In order for research to be effective, the activities undertaken, by the researcher, must be geared towards ultimately providing a solution to an identified problem or issue (Collis and Hussey, 2003: 1). Investigations should be precise, meticulous and organised, in order to make the most effective and efficient use, of the opportunities and resources available (Collis and Hussey, 2003: 1). Furthermore, appropriate methods of data collection and analysis must be applied, to provide a clear and logical route to a dependable outcome (Collis and Hussey, 2003: 1).

The primary objective of this chapter is to demonstrate that appropriate research strategies were selected and developed, based on sound research principles, to solve the sub problems and ultimately the main problem, which was identified in chapter one.
4.1. The Purpose of Research

According to Collis and Hussey (2003: 2), the purpose of research can be summarised by any combination of one or more of the following statements:

- “To review and synthesise existing knowledge”;
- “To investigate some existing situation or problem”;
- “To provide solutions to a problem”;
- “To explore and analyse more general issues”;
- “To construct or create a new procedure or system”;
- “To generate new knowledge”.

The literature review and the discussion of conflict theory in chapter three essentially addressed the first statement (from those mentioned above). The remainder of this chapter and the chapters that follow will ultimately address more of the remaining statements.

4.2. The Research Process

Leedy and Ormrod (2005: 3) describe the research process as being cyclical, or more precisely, as being helical. Figure 4.1 shows a general research process, which has been constructed from the characteristics of research as discussed and described by Leedy and Ormrod (2005: 2–3).

The research process is set in motion when an answer, which is not readily available, is required to a question that has been posed, or where one requires a better understanding of a specific problem or phenomenon that has been recognised (Leedy and Ormrod, 2005: 3).
In order for research to be effective, Leedy and Ormrod (2005: 3) maintain that it is crucial that the ultimate goal of the research be articulated in a clear, unambiguous, precise, and grammatically correct statement.

Figure 4.1: The Research Process

Once the goal of the research has been properly articulated, it is important for the researcher to identify the overall purpose of the research, and to then design and develop a specific research plan before proceeding (Leedy and Ormrod, 2005: 3). Failure to plan and design the research properly, before embarking through the rest of the process, may lead to the collection of irrelevant data, and/or ultimately conducted research that does not fulfil the overall purpose or achieve the articulated goal (Leedy and Ormrod, 2005: 3).
According to Leedy and Ormrod (2005: 3) the following questions should be considered during the planning process:

- How will the overall purpose and goal be achieved?
- Which research methods and designs are applicable and appropriate?
- Does any existing data address the problem?
- Where are the data?
- How will the data be accessed or collected?
- How will the data be interpreted once it is collected?

After the plan has been completed, it is then useful for the researcher to break the main problem down into manageable sub-problems, which once solved will resolve the main problem (Leedy and Ormrod, 2005: 3). This process not only allows the researcher to identify and recognise critical issues that should be discussed and explored, but also makes the research less complicated and more finite (Leedy and Ormrod, 2005: 4).

Throughout the research process, the researcher is guided by a specific research problem, question, or hypothesis (Leedy and Ormrod, 2005: 4). Although the problem or question is stated in the beginning of the research process, at this stage, it would most likely have been broken down or reformulated into manageable sub-problems or sub-questions, and it is now the solving of these sub-problems or sub-questions that drive the rest of the research process (Leedy and Ormrod, 2005: 4). At this stage the researcher may also form one or more hypotheses, about what they expect to discover once the data has been collected and interpreted (Leedy and Ormrod, 2005: 4).

A “hypothesis”, as defined by Leedy and Ormrod (2005: 4), is a “logical supposition, a reasonable guess, an educated conjecture”, which “provides a tentative explanation for a phenomenon under investigation”. Hypotheses direct the researchers thinking towards possible sources of information that will help to solve one or more of the sub-problems, and ultimately the main problem (Leedy and Ormrod, 2005: 4). Hypotheses are either supported by the data collected, in which case they are accepted, or alternatively they are contrary to the data.
collected, in which case they are rejected (Leedy and Ormrod, 2005: 4). Leedy and Ormrod (2005: 4) maintain that over time, as certain hypotheses are continually supported by data, they evolve into theories.

During the research process, researchers will inevitably make certain assumptions about what they believe to be true (Leedy and Ormrod, 2005: 5). Assumptions can be described as “a condition that is taken for granted” (Leedy and Ormrod, 2005: 5). These assumptions or “self-evident truths” must be both valid and clearly stated by the researcher, to ensure that the research is meaningful to others (Leedy and Ormrod, 2005: 4). Leedy and Ormrod (2005: 5) suggest that whilst assumptions are an inevitable part of the research process, that researchers should rather try and be overly explicit than take too much for granted.

The penultimate stage of the research process, involves the collection and interpretation of data (Leedy and Ormrod, 2005: 4). At this stage of the process, the researcher is required to identify both the type of data that should be collected, and the most appropriate method of collecting such data (Leedy and Ormrod, 2005: 4). Once the relevant data has been collected by an appropriate method, the researcher must then organise this data in such a way, that the data becomes meaningful and can be easily interpreted (Leedy and Ormrod, 2005: 4).

After the data has been collected and interpreted, the researcher must then use the interpretation of this data, to develop conclusive answers and/or recommendations, which relate specifically to the main question or problem that was stated in the beginning of the research process. As mentioned earlier, Leedy and Ormrod (2005: 6) suggest that that the research process is helical in nature, and therefore whilst this may be last stage in the research process for a particular piece of research, it may not be the last of the research that is conducted to solve the specific problem that was identified in the beginning of the process. Instead, the knowledge gained during a specific research process, may form part of a broader body of knowledge, and may identify new issues or
new ways of thinking about the specific problem, question, or phenomenon that has been researched. As such the research process may begin again, but this time there will be a broader base of knowledge to work from, and hence the helical nature of the research process.

4.3. Types of Research

There are essentially ten different types of research, which according to Collis and Hussey (2003, 10), can be classified according to: Purpose, Process, Logic, and Outcome.

4.3.1. Purpose

The purpose of the research is “Why” it is being conducted. The types of research classified according to purpose include the following: Exploratory, Descriptive, Analytical, and Predictive research (Collis and Hussey, 2003: 10 - 12).

4.3.1.1. Exploratory Research

This type of research is typically applied to solve problems when there are limited, or no previous studies available, which can provide information relevant to a particular issue or problem (Collis and Hussey, 2003: 10). Exploratory research is not used to prove or disprove hypotheses, nor is it used to provide conclusive answers to current issues or problems. Instead, its primary focus is on “gaining insights and familiarity with the subject area for more rigorous investigation at a later stage”, through the identification of patterns, ideas and hypotheses (Collis and Hussey, 2003: 10). The techniques used in exploratory research are flexible, and may include: case studies, observation, and historical analysis (Collis and Hussey, 2003: 11). The data generated from these techniques is usually broad, and may consist of both qualitative and quantitative data (Collis and Hussey, 2003: 11). Exploratory research can also be used to
determine whether or not any existing theories or concepts can be adapted and/or applied to the problem at hand, or whether or not, any new theories must be developed (Collis and Hussey, 2003: 11).

### 4.3.1.2. Descriptive Research

This type of research is typically associated with describing, identifying, and obtaining information related to the characteristics of different phenomena, issues or problems as they exist (Collis and Hussey, 2003: 11). In essence this type of research goes one step further than exploratory research as it is undertaken to provide answers to “What” is occurring, rather than just gaining insight into the occurrence (Collis and Hussey, 2003: 11). The data collected during this type of research is often, but not always, quantitative data, which are analysed and summarised using statistical techniques (Collis and Hussey, 2003: 11).

### 4.3.1.3. Analytical Research

Analytical research continues from descriptive research, and is often also referred to as explanatory research. As its pseudonym suggests, this type of research is typically undertaken to describe “Why” or “How” a particular phenomenon, problem, or issue is occurring (Collis and Hussey, 2003: 11). The primary focus for this research is concerned with the identification and controlling of critical variables related to the observed phenomena, in order to recognise, identify, and measure the causal relationships between these variables and the phenomena, so that the characteristics of the phenomena, problems, or issues can be better explained (Collis and Hussey, 2003: 11).

### 4.3.1.4. Predictive Research

The primary focus of predictive research is to anticipate the likelihood of a particular phenomenon, problem, or issue occurring in a different situation or
context, based on specific critical variables and the causal relationships between these variables and specific phenomena, which most likely have been identified through previous analytical research (Collis and Hussey, 2003: 12). According to Collis and Hussey (2003: 12) “predictive research provides ‘How’, ‘Why’ and ‘Where’ answers to current events and also to similar events in the future”. They also claim that this particular research methodology is useful in providing answers to “What if?” or scenario planning type questions.

### 4.3.2. Process

The process essentially refers to the way in which the data is collected and analysed. The types of research classified according to the process are Quantitative and Qualitative research (Collis and Hussey, 2003: 10, 13).

#### 4.3.2.1. Quantitative Research

In quantitative research, numerical data is collected through objectively measuring variables or particular aspects of a problem or issue. The data obtained from quantitative research is then analysed by applying statistical tests and techniques (Collis and Hussey, 2003: 13). According to Leedy and Ormrod (2005: 94) quantitative research is most often used to “answer questions about relationships among measured variables with the purpose of explaining, predicting, and controlling phenomena”. This approach is also referred to as the “traditional”, “experimental”, or “positivist” approach (Leedy and Ormrod, 2005: 94).

#### 4.3.2.2. Qualitative Research

Qualitative research, as opposed to quantitative research, is more subjective in nature. It is mostly undertaken to describe, understand, examine, and reflect on perceptions relating to the nature of phenomena, and to gain insight into social
and human activities, from the participant’s point of view (Collis and Hussey, 2003: 13; Leedy and Ormrod, 2005: 94).

Leedy and Ormrod (2005: 133) claim that all qualitative approaches have the following two things in common:

- All qualitative approaches focus on phenomena, as they exist in a “natural setting”; and
- All qualitative approaches involve studying the phenomena in all their complexity.

According to Leedy and Ormrod (2005: 134 – 135) it is appropriate to use qualitative research for one or more of the following purposes:

- Description – to reveal the nature or characteristics of “certain situations, settings, processes, relationships, systems, or people”;
- Interpretation – to gain insights into particular phenomena, to develop new concepts or theoretical perspectives, and/or to identify problems that exist within phenomena;
- Verification – to test the validity of assumptions, claims, theories, or generalisations in real contexts;
- Evaluation – to determine the effectiveness of particular policies, practices, and innovations.

In the past qualitative studies have been frowned upon by the more scientific academic disciplines, because of their subjective nature. However, according to Leedy and Ormrod (2005: 133), this approach has most recently gained wide acceptance as legitimate academic research. The qualitative approach can also be referred to as the “interpretative”, “constructivist”, or “post-positivist” approach (Leedy and Ormrod, 2005: 94).
4.3.3. Logic

The logic of the research refers to whether the research being conducted, moves from the general to the specific, or vice versa. The types of research classified according to the logic are Deductive and Inductive research (Collis and Hussey, 2003: 10, 15).

4.3.3.1. Deductive Research

Deductive research is essentially a type of research, which moves from the general to the specific and one that is based on deductive logic (Collis and Hussey, 2003: 15). According to Leedy and Ormrod (2005: 51) deductive logic is when one is able to draw logical conclusions from one or more “premises”, using “if-this-then-that” type logic. An example of this type of logic is the following:

- If all people who go to gym are healthy, (premise 1);
- And all healthy people live beyond the age of 65, (premise 2);
- Then all people who go to gym will live beyond the age of 65 (conclusion).

When using deductive logic it is important to ensure that the premises on which the logic is based is sound, since a false or inaccurate premise may ultimately lead to false conclusions. An example of this can be observed in the previous example, which claims that all healthy people will live beyond the age of 65, in reality however, some people who are healthy and go to gym may not live beyond the age of 65 due to reasons other than ill health.

4.3.3.2. Inductive Research

Inductive research is the reverse of deductive research, and tends to move from the specific to the more general (Collis and Hussey, 2003: 15). According to
Leedy and Ormrod (2005: 32) inductive logic begins with an observation, rather than a pre-established general assumption. More generalised inferences are then induced from these particular observations (Collis and Hussey, 2003: 15). An example of this type of logic would be the following: When you drop a ball on planet Earth it falls to the ground because of gravitational forces. The inductive logic is that when you drop something other than a ball, on planet Earth, it will also fall to the ground because of the gravitational forces at play.

4.3.4. Outcome

The outcome essentially describes whether the research will solve a specific problem, or alternatively make a general contribution to existing knowledge. The types of research classified to the outcome are Applied and Basic research (Collis and Hussey, 2003: 10, 13 –15).

4.3.4.1. Basic Research

Basic research is also often referred to as fundamental or pure research, and is primarily conducted to improve the understanding of more general issues without the need for immediate application (Collis and Hussey, 2003: 13 –15).

4.3.4.2. Applied Research

Applied research is research that is designed to apply its findings to solving a specific and existing problem (Collis and Hussey, 2003: 13).

4.4. Validity and Reliability of Research

According to Leedy and Ormrod (2005: 27) “validity” and “reliability” are two measurement related concepts, which are frequently encountered in research
methodology. These two concepts essentially reflect the degree to which there are errors in the measurements (Leedy and Ormrod, 2005: 29). Furthermore, they describe the extent to which something can be learned from the phenomenon that is being researched, the probability that the data analysed will be of statistical significance, and the extent to which meaningful conclusions can be extracted from the data collected (Leedy and Ormrod, 2005: 27).

4.4.1. Validity

Leedy and Ormrod (2005: 28) define validity as “the extent to which the instrument measures what it is supposed to measure”. In essence, when determining the validity of an instrument, the following question is pertinent:

- Is the instrument measuring what it is supposed to?

Leedy and Ormrod (2005: 29) maintain that validity errors generally reflect biases in the instrument itself and are relatively constant sources of error.

4.4.2. Reliability

The concept of reliability, as defined by Leedy and Ormrod (2005: 29), is “the consistency with which a measuring instrument yields a certain result when the entity being measured hasn’t changed”. When determining the reliability of an instrument the following question is pertinent:

- With what degree of accuracy and repeatability does the instrument measure what it is supposed to?

Reliability errors, as opposed to validity errors, reflect the incorrect use of an instrument and are likely to vary unpredictably from one instance to the next.
4.5. Choosing an Appropriate Research Strategy

The overall aim of this treatise is to address the main problem that was stated in Chapter one, namely: What interventions can manufacturing organisations undertake to resolve the conflict between production and maintenance functions, to improve their competitive position in the global economy?

The types of research strategies or methodologies that were selected to address the sub-problems and the main problem of this treatise, in terms of the purpose, process, logic, and outcome of the sub-problems and main problem, were the following: analytical, qualitative and quantitative, deductive, and applied.

The reasons for selecting these research strategies were as follows:

4.5.1. Purpose (Analytical Choice)

The analytical method was chosen as an appropriate strategy based on the following:

- Previous studies relating to organisational conflict and conflict between maintenance and production had been conducted, and were applicable to solving the sub-problems and the main problem;
- In order to solve the main problem it was necessary to determine “How” and “Why” the conflict between maintenance and production functions was occurring;
- In order to identify “How” and “Why” the conflict between the maintenance and production functions was occurring, causal relationships between specific conflict variables and the conflict phenomenon needed to be recognised, identified and measured.
4.5.2. Process (Qualitative and Quantitative Choice)

Both the qualitative and quantitative methods of data collection were chosen based on the following:

- In order to solve the sub-problems and the main problem of the conflict phenomenon it was necessary to describe, understand, examine, and reflect on perceptions relating to the nature of the conflict phenomenon, and to gain insight into social and human activities, from the respondents’ point of view;
- Conflict is a multifaceted and complex phenomenon;
- The organisational conflict between the maintenance and production functions was researched, as it exists within its “natural setting”;
- In order to solve the sub-problems and the main problem it was necessary to gain insights into the conflict phenomenon, and to identify problems that exist within conflict phenomenon;
- Numerical data was collected through objectively measuring variables or particular aspects of the problem or issue;
- The data obtained from the research was then analysed by applying statistical tests and techniques, such as: calculation of the mean and mode; use of bar charts and radar charts; and Pareto analysis.

4.5.3. Logic (Deductive Choice)

Deductive logic was chosen as an appropriate strategy based on the following:

- In order to solve the sub-problems and the main problem it was necessary to move, the plethora of findings from previously conducted organisational research to more specific organisational conflict between maintenance and production functions at the Cadbury SA Port Elizabeth Manufacturing facility;
• In order to determine the causal relationships between the specific conflict variables and the conflict phenomenon it was necessary to use the “if-this-then-that” type logic.

4.5.4. Outcome (Applied Choice)

An applied research methodology was selected as an appropriate strategy based on the following:

• Previous research conducted on organisational conflict was used to solve the sub-problems and the main problem;
• Previous research conducted on organisational conflict between maintenance and production functions was used to provide insights into the specific conflict phenomenon that was being researched.

4.6. Research Surveys

For the purpose of this treatise a survey in the form of a questionnaire was conducted to collect the relevant qualitative and quantitative data necessary to solve the main problem and the sub-problems.

4.6.1. Defining Questionnaires

Questionnaires are usually associated with positivistic studies and phenomenological studies (Collis and Hussey, 2003: 173). A questionnaire is essentially “a list of carefully structured questions, chosen after considerable testing, with a view to eliciting reliable responses from a chosen sample” (Collis and Hussey, 2003: 173). The aim of using a questionnaire is to find out what a selected group of individuals “do, think, or feel” (Collis and Hussey, 2003: 173).

Collis and Hussey (2003: 174) maintain that questionnaires are a popular way of collecting data because of the following advantages: They are generally
Research Methodology and Design

Chapter Four

cheaper and less time consuming than conducting interviews, very large samples can be taken, and they can be designed to address the issues associated with confidentiality. The disadvantages of using questionnaires, highlighted by Leedy and Ormrod (2005: 185), are the following: low return rates due to the apathy of respondents in taking the time to complete the questionnaire, and flawed results due to misinterpretation of the questions.

4.6.2. Open and Closed Type Questions

When using questionnaires, researchers can make use of both open-ended and closed questions (Collis and Hussey, 2003: 173). Open-ended questions are typically those questions, which allow the participant to provide a response or opinion in their own words (Collis and Hussey, 2003: 179). Closed questions, on the other hand, require the participant to select an answer from a number of predetermined alternatives (Collis and Hussey, 2003: 179).

According to Collis and Hussey (2003: 173, 179) open-ended questions are generally used for phenomenological studies, where they offer the advantage of the participant being able to give their response and opinion in their own words. The disadvantages associated with these types of questions, according to Collis and Hussey (2003: 179), are that they are generally more difficult to analyse and require more of the participant’s time to complete.

Closed questions are often used for positivistic studies, or where factual data needs to be collected (Collis and Hussey, 2003: 173, 179). Closed questions are generally easier to analyse and to complete, as opposed to open-ended questions, because the range of responses to the questions is limited (Collis and Hussey, 2003: 179).
4.6.3. Questionnaire Guidelines

Leedy and Ormrod (2005: 190 – 192) maintain that designing questionnaires is not an easy task, and suggest that the following guidelines be considered during the design process:

- Questions should be succinct and should only seek out information that is essential to the research being conducted;
- Questions should be worded in simple, clear and unambiguous language to ensure that they communicate exactly what the researcher wants to know, and should not be open to misinterpretation. The use of terminology that is not widely understood or that is not precise should be avoided;
- Questions must be carefully worded to ensure that there are no unfounded implicit assumptions;
- Questions should be worded in such a way that they do not give any clues as to preferable or desired responses;
- Questions that may solicit “socially acceptable” answers, rather than true answers, should be checked for consistency by including a “Counter Check” question further down the list;
- Determine in advance how the data, collected from the questionnaire, will be organised, analysed and interpreted;
- Ensure the questionnaire is easy to read and simple to answer;
- Provide clear instructions for completing the questionnaire;
- Clarify the purpose of the questions to the respondents;
- Questionnaires should be designed and presented with attractiveness and professionalism in mind;
- A pilot test should be conducted before using the questionnaire;
- The final questionnaire should be scrutinised for quality, precision, and expression to ensure that it meets the requirements of the research being conducted.
One should not forget that these are only guidelines for consideration, and that the ultimate aim of the questionnaire is to collect the necessary data that will address the research problem.

4.6.4. Questionnaire Design

The questionnaire used in this study was designed in accordance with the guidelines mentioned before. It was developed from both the literature study on conflict theory, which was discussed in chapter three, and issues documented from previous workshops, which were held to address previously address conflict between maintenance and production groups.

The questionnaire (see Annexure B) consisted of six sections, which were denoted as follows:

- **Section A: Demographic Information**

This section of the questionnaire consists of closed questions that were used to collect specific demographic information about the respondent, such as: the manufacturing unit in which the respondent worked, the designated function of the respondent in that manufacturing unit, the position held by the respondent in that particular manufacturing unit, the age group of the respondent, the gender of the respondent, the population group of the respondent, and the highest level of education obtained by the respondent.

- **Section B: Conflict Management Styles**

This section of the questionnaire is the Rahim Organisational Conflict Inventory – II (ROCI-II) instrument, which was developed by Rahim in 1983 (Rahim, 1983). The instrument was developed to measure the five styles of managing interpersonal conflict, namely: Integrating, Avoiding, Dominating, Obliging, and Compromising. It consists of thirty-five items, or questions, each of which
represents one of the five conflict management styles. Each of the conflict management styles is represented by seven of these questions or items. The questions for this section in Annexure B have been coded as follows to indicate which conflict management style each of these questions represent: “IN” = “Integrating”; “AV” = “Avoiding”; “DO” = “Dominating”; “OB” = “Obliging”; and “CO” = “Compromising”.

The questions were closed questions that were cast on a five-point Likert scale, pegged at 1 = “Never” and 5 = “Always”, where the higher value on the Likert scale represents the more frequent use of a particular management style. The underlined portion of these questions (see Annexure B), were re-phrased depending on the designated function of the respondent. For example the questionnaires distributed to production personnel read “…my maintenance colleagues…” and those distributed to the maintenance personnel read “…my production colleagues…”

- Section C: Intergroup Conflict

This section of the questionnaire is the instrument that was developed by Jehn in 1994, which is used to validate the level of substantive and affective conflict between individuals and groups within an organisation (Jehn, 1994). The instrument consists of eight questions, each of which represents either affective or substantive conflict. Each of the conflict types namely, affective or substantive, is represented by four of the questions. The questions for this section in Annexure B have been coded as follows to indicate which type of conflict each of these questions represent: “AF” = “Affective” and “SU” = Substantive.

The questions were closed questions that were cast on a five-point Likert scale, pegged at 1 = “None / Never” and 5 = “A lot / Always”, where the higher value on the Likert scale indicates the particular type and frequency of the perceived conflict.
Section D: Sources of Conflict

The questions in this section of the questionnaire were based both on the literature review in chapter three, pertaining to the sources of conflict and the Conflict Cube model, and on documented issues from previous workshops that were held between maintenance and production personnel, which were focused on resolving conflict.

The questions were closed questions that were cast on a five-point Likert scale, pegged at 1 = “Strongly Disagree” and 5 = “Strongly Agree”. The questions for this section in Annexure B have been coded with three letters. The first letter represents which particular source of conflict, as determined by the conflict cube model, the question is exploring, where “V” = “Values”; “I” = “Interests”; “R” = “Relationships”; “D” = “Data”; and “N” = “Needs”. The last two letters of the code represent whether a higher value on the Likert scale will indicate that the issue, described by the question, is a “Conflict Alleviator” or a “Conflict Escalator”, where “CA” = Conflict Alleviator and “CE” = “Conflict Escalator”. For example a higher value on the Likert scale for a question coded with CE will indicate that the particular issue described in the question is more likely to escalate conflict, on the other hand a higher value on the Likert scale for a particular issue described by a question coded with the letters CA is more likely to alleviate conflict.

Section E: Conflict and Diversity

The aim of this particular section of the questionnaire was to gather information on the elements of diversity that may influence the type and level of conflict at hand. The information gathered on the elements of diversity and included information on the following: cultural background, age, gender, religious beliefs, and political views.

Once again the questions in this section were closed questions which were cast on a five-point Likert scale, pegged at 1 = “Strongly Disagree” and 5 = “Strongly Agree”.

84
Agree”. The questions for this section in Annexure B have been coded with six letters. The first three letters, namely “Div” indicate that this section relates to conflict diversity elements. As in the previous section of the questionnaire the last two letters of the code represent whether a higher value on the Likert scale will indicate that the diversity issue, described by the question, is a “Conflict Alleviator” or a “Conflict Escalator”, where “CA” = “Conflict Alleviator” and “CE” = “Conflict Escalator” (see previous example for Section D).

- Section F: Structures

This section of the questionnaire was designed specifically to get an opinion from the respondents as to what they believed would be the most effective organisational reporting structure for maintenance and production. The choices in this section were in the form of eight figures (see Annexure B) or organisational charts, which represent decentralised, semi-centralised, centralised structures. Figure 1, in the questionnaire represents, the current semi-centralised organisational structure. Figures 2, 3, 4, 5, and 6, in the questionnaire, show more decentralised structures with different reporting relationships of the different functions with inherently different skill requirements. Figure 7 in the questionnaire represents a fully centralised structure, whilst figure 8 depicts a similar structure to the current structure but includes a maintenance manager position.

The last two questions for this section were opened ended questions and were designed to understand firstly, what the respondent believes to be the main benefits or challenges with their choice of structure, and secondly to allow the respondent an opportunity to comment on what they believe to be the main contributor towards the conflict that exists between maintenance and production that may or may not have been covered in the closed questions from the previous sections.
4.6.5. Selection of the Research Sample and Distribution of the Questionnaire

A covering letter (see Annexure A), which outlined the purpose of the research, was prepared by the researcher and attached to the questionnaire.

The questionnaire was first given to five respondents within the maintenance and production functions (three from production and two from maintenance) for a pilot test. Those questions, which the respondents felt were “too personal” or “un-clear” were either re-phrased or deleted from the questionnaire. The pilot test also revealed that it would take between thirty and forty five minutes for respondents to complete the questionnaire.

As discussed in chapter one the research was limited to middle and junior management in both the production and maintenance departments, within the Cadbury SA Port Elizabeth manufacturing site, and included artisans and electricians in the maintenance department.

The questionnaire was then distributed to artisans, electricians, engineering technicians, plant engineers, team managers, and production managers within the four manufacturing units. The questionnaires were handed to the respondents during their shifts and where possible collected at the end of the shift or the following day by the researcher.

4.7. Conclusion

The content within this chapter highlighted that the selection and development of an appropriate research strategy, depends primarily on what is required to address the sub-problems and main problem of the research, in terms of its purpose, process, logic, and outcome. Ten different types of research strategies or methodologies were discussed, and based on these discussions the following were selected as appropriate strategies to solve the sub-problems and
the main problem, namely: analytical, qualitative and quantitative, deductive logic, and applied.

Furthermore, the development, design and distribution of the research survey or questionnaire, which was used to gather the information to solve the sub-problems and the main problem, were also discussed in line with sound research principles.

Therefore it can be concluded that the primary objective of this chapter, which was to demonstrate that appropriate research strategies were selected and developed on sound research principles, to solve the sub-problems and ultimately the main problem, was achieved.

In the following chapter an analysis, interpretation, and discussion of the data collected from the research survey will be conducted.
CHAPTER FIVE

ANALYSIS AND INTERPRETATION OF DATA

5. Introduction

To solve the sub-problems and the main problem that were identified in chapter one of this treatise, a statistical analysis and an interpretation of the responses to the questionnaire will be undertaken in this chapter. An analysis of the overall response will also be conducted in order to confirm the reliability and validity of the results.

5.1. Analysis and Interpretation of Data

Microsoft Excel (1997) was used as a tool to organise and analyse the data collected. The responses from each questionnaire received were captured into Microsoft Excel and grouped by respondent, manufacturing unit and the designated function of the respondent. The categorisation of the responses in this manner led to the formation of the following thirteen groups:

- Chocolate making and moulding production;
- Chocolate making and moulding maintenance;
- Countlines production;
- Countlines maintenance;
- Panning and assortments production;
- Panning and assortments maintenance;
- Sugar production;
- Sugar maintenance;
- Production learnerships;
- Maintenance learnerships;
• Production managers;
• Plant engineers;
• Engineering technicians.

These thirteen groups were then categorised into three main groups, namely: Total Production, Total Maintenance, and the Total Site group.

Meaningful and appropriate statistical calculations and tests were applied to each section of the questionnaire in order to organise, analyse and present the data of the three main groups. A graphical representation of the data collected for each of the thirteen groups is included in Annexure C of this treatise. The statistical analyses performed for each of the three main groups are as follows:

• Overall Response Rate

The overall response rate is presented in a frequency table format, which shows the size of the population, the number of questionnaires distributed, and the number of responses received by group. The table also shows the number of responses as a percentage of the population size and as a percentage of the number of questionnaires distributed.

• Section A: Demographic Information

The data from this section of the questionnaire is presented in the form of a bar chart for each group and shows the number of respondents by age, population group, gender, and highest level of education obtained. The mean age is calculated for each of the three main groups using the class intervals and class marks. The mode and corresponding frequency values are calculated for the age, population group, gender, and highest level of education obtained for each of the three main groups.
• Section B: Conflict Management Styles

The data from this section of the questionnaire is presented in the form of a radar chart, which is divided into five sections. Each of the five sections represents one of the conflict management styles, namely: Integrating, Avoiding, Dominating, Obliging and Compromising. The questions relating to a particular conflict management style have been grouped together and the question number is present on the axis at the circumference of the radar chart. The letter following the question number indicates which of the conflict management styles is represented by that question, that is: “i” = integrating, “a” = avoiding, “d” = dominating, “o” = obliging, and “c” = compromising. There are five series on the Radar Chart, which show the number of responses to each of the questions, namely: “Never”, “Rarely”, “Sometimes”, “Frequently”, and “Always”. In essence the higher the number of responses for the “Frequently” and “Always” series, the more dominant the conflict management style for each of the groups. Since the calculation of the mean for Likert data is not meaningful, only the mode and relative frequency values for each of the three main groups have been calculated.

• Section C: Intergroup Conflict

The data from the intergroup conflict section of the questionnaire is presented in the form of a bar chart. The X-axis of the graph is divided into two sections each of which represents one of the types of conflict, namely: Affective and Substantive conflict. Along the X-axis the numbers to the questions, which represent these two types of conflict, are present. Following the numbers to the questions are the letters “a” and “s” which represent the type of conflict that the questions relate to, where “a” = Affective conflict and “s” = Substantive conflict. There are five series on the Bar Chart, which show the number of responses to each of the questions, namely: “None / Never”, “Rarely”, “Some / Sometimes”, “Frequently”, and “A Lot / Always”. In essence the higher the number of responses for the “Frequently” and “A Lot / Always” series, the higher the level for a particular type of conflict. Again since the calculation of the mean for Likert
data is not meaningful, only the mode and relative frequency values have been calculated.

- **Section D: Sources of Conflict**

A Pareto analysis (the 80:20 principle) was conducted on the data collected in this section of the questionnaire. For this particular section the each of the questions were evaluated, and for each question it was determined whether a higher score on the Likert scale would either lead to the escalation of conflict or the alleviation of conflict. Each question was then either coded as “CE” for “Conflict Escalator” or “CA” for “Conflict Alleviator”. The responses to the highest and second highest scores on the Likert Scale, namely “Agree” and “Strongly Agree” were combined, as were the lowest and second lowest scores on the Likert scale, namely “Disagree” and “Strongly Disagree”, to make the analysis of the data easier. The data for each group was then sorted by the highest number of responses that denoted the escalation of conflict, then by the highest number of responses to “Neither Agree Nor Disagree” that denoted little or no effect on conflict, and then by the highest number of responses that denoted the alleviation of conflict. The data was then presented in the form of a stacked percentage bar chart. The X-axis of the stacked percentage bar chart reflects the question number, from left to right, in the order that the data was sorted as described above. Since the total number of questions for this section of the questionnaire amounted to fifty, it was determined that the first ten questions to the right of the Y-axis represented twenty percent of the questions and these were then analysed for each of the three main groups.

- **Section E: Conflict and Diversity**

A Pareto analysis was also performed on the questions in this section of the questionnaire by applying the same methodology as described above for Section D. However, in this section the total number of questions in the questionnaire amounted to twelve, and it was determined that the first two questions to the right of the Y-axis represented sixteen percent of the questions
and that the first three questions to the right of the Y-axis represented twenty-five percent of the questions. To ensure completeness and validity of the analysis the first three questions to the right of the Y-axis were chosen for analysis for each of the three main groups.

- Section F: Structures

The data collected for this section of the questionnaire was presented in the form of a percentage bar chart for each of the groups surveyed. The X-axis of the percentage bar chart contains the number of the structure that was chosen by the respondents. The mode and relative frequency values for each of the three main groups were calculated.

The comments made by each respondent to the open-ended questions in this section, was noted and a summary presented in the analysis.

5.1.1. Overall Response Rate

The overall response rate by group has been summarised in Table 5.1. From the table it can be seen that the total size of the population to be surveyed was one hundred and twenty, the number of questionnaires distributed was one hundred, which equates to eighty-three percent of the total population size. Of the one hundred questionnaires distributed eighty-two usable responses were received, which equates to eighty-two percent of the questionnaires distributed. The overall response rate as a percentage of the total population size was calculated to be sixty-eight percent.

The groups with the highest number of responses as a percentage of total group population size were received from the Countline production group and the Production learnership group, where the total response rate was one hundred percent. One of the main reasons, which contributed to the high response rate, was that the each of these two groups could be surveyed as a
whole and were allowed a dedicated hour to complete and return the questionnaire.

The group with the lowest number of responses as a percentage of total group population size was the Sugar maintenance group, where the response rate was only thirty-six percent. A contributing factor to this low response rate was that although questionnaires were distributed to seventy-three percent of the population the respondents were difficult to contact as the Sugar plant had shutdown for essential maintenance at the time of the survey.

Table 5.1: Showing the Population Size and the Number of Responses by Group Surveyed

<table>
<thead>
<tr>
<th>Group</th>
<th>Size of Population</th>
<th>Number of Questionnaires Distributed</th>
<th>Number of Questionnaires Distributed as a Percentage of the Population</th>
<th>Number of Responses Received</th>
<th>Number of Responses Received as a Percentage of Population Size</th>
<th>Number of Responses Received as a Percentage of Questionnaires Distributed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chocolate Making and Moulding Production</td>
<td>10</td>
<td>10</td>
<td>100%</td>
<td>9</td>
<td>90%</td>
<td>90%</td>
</tr>
<tr>
<td>Chocolate Making and Moulding Maintenance</td>
<td>23</td>
<td>16</td>
<td>70%</td>
<td>12</td>
<td>52%</td>
<td>75%</td>
</tr>
<tr>
<td>Countlines Production</td>
<td>11</td>
<td>11</td>
<td>100%</td>
<td>11</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Countlines Maintenance</td>
<td>16</td>
<td>16</td>
<td>100%</td>
<td>13</td>
<td>81%</td>
<td>81%</td>
</tr>
<tr>
<td>Panning and Assortments Production</td>
<td>4</td>
<td>3</td>
<td>75%</td>
<td>3</td>
<td>75%</td>
<td>100%</td>
</tr>
<tr>
<td>Panning and Assortments Maintenance</td>
<td>4</td>
<td>3</td>
<td>75%</td>
<td>2</td>
<td>50%</td>
<td>67%</td>
</tr>
<tr>
<td>Sugar Production</td>
<td>5</td>
<td>4</td>
<td>80%</td>
<td>3</td>
<td>60%</td>
<td>75%</td>
</tr>
<tr>
<td>Sugar Maintenance</td>
<td>11</td>
<td>8</td>
<td>73%</td>
<td>4</td>
<td>36%</td>
<td>50%</td>
</tr>
<tr>
<td>Production Learnerships</td>
<td>9</td>
<td>9</td>
<td>100%</td>
<td>9</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Maintenance Learnerships</td>
<td>14</td>
<td>10</td>
<td>71%</td>
<td>7</td>
<td>50%</td>
<td>70%</td>
</tr>
<tr>
<td>Production Managers</td>
<td>4</td>
<td>3</td>
<td>75%</td>
<td>3</td>
<td>75%</td>
<td>100%</td>
</tr>
<tr>
<td>Plant Engineers</td>
<td>4</td>
<td>3</td>
<td>75%</td>
<td>2</td>
<td>50%</td>
<td>67%</td>
</tr>
<tr>
<td>Engineering Technicians</td>
<td>5</td>
<td>4</td>
<td>80%</td>
<td>4</td>
<td>80%</td>
<td>100%</td>
</tr>
<tr>
<td>Total Production</td>
<td>43</td>
<td>40</td>
<td>93%</td>
<td>38</td>
<td>88%</td>
<td>95%</td>
</tr>
<tr>
<td>Total Maintenance</td>
<td>77</td>
<td>60</td>
<td>78%</td>
<td>44</td>
<td>57%</td>
<td>73%</td>
</tr>
<tr>
<td>Total Site</td>
<td>120</td>
<td>100</td>
<td>83%</td>
<td>82</td>
<td>68%</td>
<td>82%</td>
</tr>
</tbody>
</table>

Source: Authors own construct (2007).
5.1.2. Total Production and Maintenance Groups

5.1.2.1. Total Production

Figure 5.1: Showing the Demographic Profile for the Total Production Group

Source: Authors own construct (2007).

The mean age for the total production group, calculated from the class marks for age in Figure 5.1 above, is 37.97 years old. The mode value for age is “Age 26 – 30” with a frequency of ten, which corresponds to 26.3 percent of the surveyed production population. The exclusion of the production learnership group from the production demographic data raises the mean age to 40.22 years old, the mode value for age remains “Age 26 – 30” with a reduced frequency of seven, which corresponds to 22.6 percent of the surveyed production population excluding learnerships.

The mode value for population group is “Black” with a frequency of twenty-one, which corresponds to 55.3 percent of the surveyed production population. If the production learnership group is excluded from the production demographic data the mode value for population group remains “Black”, but the corresponding
frequency is reduced to thirteen, which corresponds to 41.9 percent of the production population excluding learnerships.

The mode value for gender is “Male” with a frequency of twenty-four, which corresponds to 63.2 percent of the surveyed production population. If the production learnership group is excluded from the production demographic data the mode value for gender remains “Male”, but the corresponding frequency is reduced to nineteen, which corresponds to 61.3 percent of the production population excluding learnerships.

The mode value for highest level of education obtained is “Graduate National Diploma (NQF 5)” with a frequency of twenty, which corresponds to 52.6 percent of the surveyed production population. If the production learnership group is excluded from the production demographic data the mode value for highest level of education obtained remains “Graduate National Diploma (NQF 5)”, but the corresponding frequency is reduced to nineteen, which corresponds to 45.16 percent of the production population excluding learnerships.

**Figure 5.2:** Radar Chart Showing the Responses to the Conflict Management Style Questions for the Total Production Group

Source: Authors own construct (2007).
The radar chart, in figure 5.2, shows that the dominant conflict management style for the total production group is an “Integrating” conflict management style. Members of this group also demonstrated some degree of affiliation to the “Dominating” and “Obliging” conflict management styles.

The mode value for the “Always” series in the radar chart is question number 15i with a frequency of twenty-four, which shows that 63.2 percent of the members within this group always exchange accurate information with their maintenance colleagues to solve a problem together.

The mode values for the “Frequently” series in the radar chart are question numbers 4i, 29i, and 27d with a frequency of fifteen, which show that 39.5 percent of the members within this group frequently integrate their ideas with their maintenance colleagues to come up with a joint decision, frequently collaborate with their maintenance colleagues to come up with solutions that are mutually acceptable, and frequently stand their ground when pursuing their side of an issue when interacting with their maintenance colleagues.

The mode values for the “Sometimes” series in the radar chart are question numbers 13o and 25o with a frequency of twenty-three, which shows that 60.5 percent of this group sometimes give into the wishes of their maintenance colleagues and go along with their suggestions.

The mode value for the “Rarely” series in the radar chart is question number 7a with a frequency of thirteen, which shows that 34.2 percent of the members within this group rarely avoid open discussions about the differences between them and their maintenance colleagues.

The mode value for the “Never” series in the radar chart is question number 23a with a frequency of twelve, which shows that 31.6 percent of the members within this group never avoid encounters with their maintenance colleagues.
The bar chart in figure 5.3 above shows that the total production group perceives an overall high to very high level of both substantive and affective conflict, with a slightly higher level of substantive conflict than affective conflict.

In the bar chart above the mode value for the “A Lot / Always” series is question 1a with a frequency of eight, this shows that 21.1 percent of the members within this group perceive there to be a lot of friction between maintenance and production.

The mode value for the “Frequently” series in the bar chart above is question 8s with a frequency of eighteen, which means that 47.4 percent of the members within this group believe that people in the maintenance and production functions frequently disagree about ideas relating to tasks.

The mode value for the “Sometimes” series in the graph above is question 3a with a frequency of seventeen, which means that 44.7 percent of the members within this group believe that there is sometimes anger between maintenance and production personnel.
The mode value for the “Rarely” series in the bar chart is question 2a with a frequency of thirteen, which means that 34.2 percent of the members within this group believe that there are rarely personality clashes between the production and maintenance functions.

The mode value for the “None / Never” series in the bar chart is question 1a with a frequency of two, which means that 5.3 percent of the members within this group believe that there is never friction between maintenance and production functions.

**Figure 5.4:** Pareto Analysis on the Sources of Conflict for the Total Production Group

![Pareto Chart](image)

Source: Authors own construct (2007).

The Pareto analysis represented by figure 5.4 above on the sources conflict indicates that the top twenty percent of issues, which contribute towards conflict between the total production group and their maintenance counterparts are the following:
• Lack of communication (81.6 percent of respondents);
• Misinterpretation of information (68.4 percent of respondents);
• Dissatisfaction with current remuneration for members within the group (63.2 percent of respondents);
• Inaccurate information (60.5 percent of respondents);
• The perception amongst members within the group that most artisans have negative attitudes towards their own work (55.3 percent of respondents);
• Ineffective use of the time allocated to maintenance for preventative and planned maintenance activities (50 percent of respondents);
• Insufficient maintenance resources to carry out both breakdown and planned or preventative maintenance activities (50 percent of respondents);
• That job cards are not completed for all jobs (47.4 percent of respondents);
• The perception amongst members of the group that most machine operators have negative attitudes towards their own work (44.7 percent of respondents);
• Insufficient time to identify and carry out continuous improvement initiatives (42.1 percent of respondents)

From the above list of the ten items the following is evident:

• Forty percent of the items listed are related to data and communication;
• Twenty percent of the items listed are related to the perception of negative attitudes of artisans and machine operators;
• Thirty percent of the listed items relate to scarce or poor planning of time and human resources;
• Ten percent of the listed items relate to personal needs, such as remuneration.
The Pareto analysis represented by figure 5.5 above on the diversity elements of conflict indicates that the top twenty-five percent of issues, which cause conflict between the total production group and their maintenance counterparts, are the following:

- Poor appreciation for diversity by their maintenance counterparts (42.1 percent of respondents);
- Insufficient training of diversity awareness and appreciation (42.1 percent of respondents);
- Higher levels of conflict experienced between people from different cultural backgrounds (26.3 percent of respondents).

Despite the lack of diversity awareness training 92.1 percent indicated that they personally appreciated the aspects of diversity.
Figure 5.6: Bar Chart Showing the Choice of Preferred Structure by Members of the Total Production Group.

Source: Authors own construct (2007).

The bar chart in figure 5.6 above shows that thirty-nine percent of the members within the total production group chose structure number three, which is a more decentralised structure than the current structure that exists, where the plant engineers report to the production manager, and where the artisans and electricians on shift report directly through to the team managers with an indirect reporting relationship to the plant engineer. The main benefits cited with this type of structure were better supervision of maintenance personnel particularly on night shifts and over weekends, more control over maintenance, and improved goal alignment. The main challenges cited in this type of structure were the lack of engineering expertise within the current team manager and production manager groups, and resistance to change.

Three percent of the group chose structure number one, which is the current structure that is in place, and felt strongly that production teams should focus on manufacturing the product, whereas maintenance should focus on keeping the plant running and on planned and preventative maintenance activities.

Eleven percent of the group chose structure number two, which is also a more decentralised structure than the current structure but where the only change is
that the plant engineer reports through to the production manager. Members of
the group who selected this structure advocated better goal alignment and
closer working relationships. Conflicting priorities were cited as a challenge.

Eighteen percent of the respondents chose structure number four, which is a
fully decentralised structure, and where team managers and the engineering
technician report to a production-engineering manager. The artisans and
electricians in this structure then report through to the team managers. The
benefits that were cited for this structure by the group were: better goal
alignment, improved working relationships, removal of the blame culture,
improved accountability, better communication, and improved utilisation and
planning of resources particularly with regards to planned maintenance work.

Five percent of the respondents chose structure number five, which is more
decentralised than the current structure but less decentralised than structure
number four. Here the team managers and a maintenance manager report
through to a production-engineering manager. In this structure the artisans,
electricians, and the engineering technician report through to the maintenance
manager. There were no benefits cited for this type of structure and the only
challenge cited was an unmanageable workload for the production-engineering
manager.

Eighteen percent of the respondents chose structure number six, which is a
more decentralised structure than the current structure, where the artisans,
electricians, team managers, and engineering technician report through to a
production-engineering manager. The only benefit cited for this structure was an
improvement in communication. The main challenges associated with this
structure were the management of conflicting priorities by the production-
engineering manager, and a high workload.

Five percent of the respondents within the total production group chose
structure number eight, which closely resembles the current structure, but
 incorporates a maintenance manager who reports to the plant engineer. As was
the case with the selection of the current structure the respondents felt strongly that production teams should focus on manufacturing the product, whereas maintenance should focus on keeping the plant running and on planned and preventative maintenance activities. The main benefit cited for this type of structure was that the engineering technician would be able to focus on planning instead of managing the artisans.

The respondents within the total production group indicated that the following issues should be addressed in order to improve the relationships between the maintenance and production functions:

- More effective communication within and between departments;
- More effective goal alignment;
- A greater sense of urgency required from the maintenance staff for preventative maintenance activities and breakdowns;
- A change in the attitudes and mindsets of the maintenance staff;
- Develop basic engineering knowledge and skills of production staff;
- Develop management skills and knowledge of maintenance staff;
- Shared accountability and responsibility for successes and failures;
- Elimination of “finger pointing”, blaming and personal attacks between maintenance and production staff;
- A greater understanding and appreciation for personal differences and diversity of both maintenance and production groups;
- A more integrated (decentralised) reporting structure;
- Clarity on roles, responsibilities, and the reporting structures within the maintenance department;
- Better planning of preventative and planned maintenance activities;
- Empowerment of operators and artisan to make decisions and take action;
- Better remuneration for team managers.
**5.1.2.2. Total Maintenance**

Figure 5.7: Showing the Demographic Profile for the Total Maintenance Group

![Demographic Profile Chart]

Source: Authors own construct (2007)

The mean age for the total maintenance group, calculated from the class marks for age in Figure 5.7 above, is 39.41 years old. The mode values for age are “Age 26 – 30” and “Age 31 – 35” each with a frequency of eight, and each which corresponds to 18.2 percent of the surveyed maintenance population. The exclusion of the maintenance learnership group from the maintenance demographic data raises the mean age to 41.74 years old, the mode value for age becomes only “Age 31 – 35” with a frequency of eight, which corresponds to 22.6 percent of the surveyed maintenance population excluding learnerships.

The mode value for population group is “White” with a frequency of twenty-four, which corresponds to 54.5 percent of the surveyed maintenance population. If the maintenance learnership group is excluded from the maintenance demographic data the mode value for population group remains “White”, but the corresponding frequency is reduced to twenty-three, which corresponds to 62.2 percent of the maintenance population excluding learnerships.
The mode value for gender is “Male” with a frequency of forty-two, which corresponds to 95.5 percent of the surveyed maintenance population. If the maintenance learnership group is excluded from the maintenance demographic data the mode value for gender remains “Male”, but the corresponding frequency is reduced to thirty-six, which corresponds to 97.3 percent of the maintenance population excluding learnerships.

The mode value for highest level of education obtained is “Technical College (NQF 4)” with a frequency of twenty-eight, which corresponds to 63.6 percent of the surveyed maintenance population. If the maintenance learnership group is excluded from the maintenance demographic data the mode value for highest level of education obtained remains “Technical College (NQF 4)”, but the corresponding frequency is reduced to twenty-two, which corresponds to 59.5 percent of the maintenance population excluding learnerships.

**Figure 5.8: Radar Chart Showing the Responses to the Conflict Management Style Questions for the Total Maintenance Group**

Source: Authors own construct (2007)

The radar chart, in figure 5.8 above, shows that the dominant conflict management style for the total maintenance group is an “Integrating” conflict management style. Members of this group also demonstrated some degree of affiliation to the “Compromising” and “Obliging” conflict management styles.
The mode value for the “Always” series in the radar chart is question number 15i with a frequency of twenty-seven, which shows that 61.4 percent of the members within this group always exchange accurate information with their production colleagues to solve a problem together.

The mode value for the “Frequently” series in the radar chart is question number 29i with a frequency of twenty-five, which shows that 56.8 percent of the members within this group frequently collaborate with their production colleagues to come up with solutions that are mutually acceptable to both of them.

The mode value for the “Sometimes” series in the radar chart is question number 25o with a frequency of twenty-nine, which shows that 65.9 percent of this group sometimes go along with the suggestions of their production colleagues.

The mode value for the “Rarely” series in the radar chart is question number 11d with a frequency of seventeen, which shows that 38.6 percent of the members within this group rarely use their authority to make a decision in their favour when interacting with their production colleagues.

The mode value for the “Never” series in the radar chart is question number 11d with a frequency of thirteen, which shows that 29.5 percent of the members within this group never use their authority to make a decision in their favour when interacting with their production colleagues.
Figure 5.9: Bar Chart Showing the Number of Responses to Affective and Substantive Conflict Questions for the Total Maintenance Group

Source: Authors own construct (2007)

The bar chart in figure 5.9 above shows that the total maintenance group perceives an overall high to very high level of both substantive and affective conflict, with a slightly higher level of affective conflict than substantive conflict.

In the bar chart above the mode value for the “A Lot / Always” series is question 1a with a frequency of six, this shows that 13.6 percent of the members within this group perceive there to be a lot of friction between maintenance and production personnel.

The mode values for the “Frequently” series in the bar chart above are question numbers 2a and 6s with a frequency of thirteen, which means that 29.5 percent of the members within this group believe that there are frequently personality clashes between maintenance and production personnel and that personnel in the maintenance and production functions frequently disagree about the work that is being done.
The mode value for the “Sometimes” series in the graph is question 5s with a frequency of twenty-four, which means that 54.5 percent of the members within this group believe that there are sometimes differences of opinions relating to the work that is being done.

The mode value for the “Rarely” series in the bar chart is question 7s with a frequency of fourteen, which means that 31.8 percent of the members within this group believe that there are rarely disagreements about the tasks they are working on with their production colleagues.

The mode values for the “None / Never” series in the bar chart are questions 2a and 3a with a frequency of one, which means that 2.3 percent of the members within this group believe that there are never personality clashes, nor anger present between maintenance and production colleagues.

**Figure 5.10:** Pareto Analysis on the Sources of Conflict for the Total Maintenance Group

Source: Authors own construct (2007)

The Pareto analysis represented by figure 5.10 above on the sources conflict indicates that the top twenty percent of issues, which contribute towards conflict
between the total maintenance group and their production counterparts are the following:

- Lack of communication (84.1 percent of respondents);
- Misinterpretation of information (75 percent of respondents);
- Inaccurate information (72.7 percent of respondents);
- That job cards are not completed for all jobs (70.5 percent of respondents);
- Insufficient maintenance resources to carry out both breakdown and planned or preventative maintenance activities (47.7 percent of respondents);
- Dissatisfaction with current remuneration for members within the group (43.2 percent of respondents);
- The view held amongst members within this group that team managers are not skilled at their jobs (43.2 percent of respondents);
- The view held amongst members within this group that insufficient time is allocated by production towards preventative maintenance activities (38.6 percent of respondents);
- Insufficient time to identify and carry out continuous improvement initiatives (36.4 percent of respondents);
- The view held amongst members of this group that most operators are not skilled at their jobs.

From the above list of the ten items the following is evident:

- Forty percent of the items listed are relate to data and communication;
- Twenty percent of the items listed are related to the skills of production team managers and machine operators;
- Thirty percent of the listed items relate to scarce or poor planning of time and human resources;
- Ten percent of the listed items relate to personal needs, such as remuneration.
The Pareto analysis represented by figure 5.11 above on the diversity elements of conflict indicates that the top twenty-five percent of issues, which may cause conflict between the total maintenance group and their production counterparts, are the following:

- Insufficient training of diversity awareness and appreciation (54.5 percent of respondents);
- Higher levels of conflict are experienced between the maintenance personnel and colleagues who are of the same gender (29.5 percent of respondents);
- Higher levels of conflict are experienced between the maintenance personnel and colleagues whose political views differ significantly to their own (29.5 percent of respondents).

Despite the lack of diversity awareness training 81.8 percent of the respondents indicated that they personally appreciated the aspects of diversity.
The bar chart in figure 5.12 above shows that twenty-three percent of the group chose structure number one. The benefits cited by those who chose this type of structure were the following: a more even distribution of the workload for managers and a smoother planning. Again like the production group the respondents who chose this structure advocated that production teams should rather be focused on manufacturing the product and that maintenance teams should focus on keeping the plant running and on preventative maintenance activities. One of the respondents who chose this structure believed that it was necessary that it evolve into a more decentralised structure in the next two to three years.

Fourteen percent of the group chose structure number two. Members of the group who selected this structure advocated better goal alignment, closer working relationships, and better decision-making. One of the respondents felt that effective communication in this structure could be a challenge.
Two percent of the members within the total maintenance group chose structure number three. The only benefit cited for this structure was better decision making. There were no challenges cited.

Two percent of the respondents chose structure number four. No benefits or challenges were cited for this structure.

Twenty percent of the respondents chose structure number five. The benefits cited for this type of structure were the following: a manager that is able to understand both functions, separation of the planning and management function, better goal alignment, closer working relationships, and more control over the different functions. There were no challenges cited for this structure.

Eighteen percent of the respondents chose structure number six. The benefits cited for this structure were: more time would be allocated for planned maintenance with a production-engineering manager in place, a manager that is skilled in both disciplines, and better decision making. There were no challenges cited with this choice of structure.

Five percent of the respondents within the total maintenance group chose structure number seven, which is a fully centralised structure. No benefits were cited for this structure, but the respondents again felt strongly that maintenance and production should be kept separate and focus on their individual disciplines. Those who chose this structure saw effective communication and proper planning as challenges.

Sixteen percent of the respondents chose structure number eight. The respondents felt that this structure would be more streamline and the benefit associated with this structure promote more effective management of maintenance as a whole, by allowing the plant engineer time to be more strategic, and allowing the engineering technician more time to plan preventative maintenance.
The respondents within the total production group indicated that the following issues should be addressed in order to improve the relationships between the maintenance and production functions:

- More effective communication within and between departments;
- More effective goal alignment;
- Team managers should be more visible on the shop floor;
- More flexibility from both maintenance and production staff;
- A change in the attitudes and mindsets of both the production and maintenance staff;
- More patience should be exercised by production staff;
- Develop basic engineering knowledge and skills of production staff;
- Develop management skills and knowledge of maintenance and production staff;
- Better training for maintenance and production staff;
- Continuous assessments of new ideas that are implemented;
- Shared accountability and responsibility for successes and failures;
- More accountability and ownership to be shown by the machine operators;
- Elimination of “finger pointing”, blaming and personal attacks between maintenance and production staff;
- Allow maintenance and production staff to learn from mistakes;
- More respect between maintenance and production personnel;
- Invest in new equipment;
- Resolve personal differences early enough so that they don’t become an issue;
- A more integrated (decentralised) reporting structure at the plant engineer and production management level;
- Clarity on roles, responsibilities, and the reporting structures within the maintenance department technician should be responsible for planning and not managing the artisans and electricians;
• Better planning of preventative and planned maintenance activities by allocating sufficient time and separating the planning and management functions;
• Empowerment of team managers, operators and artisans to make decisions and take action;
• A manager that understands and is skilled at both engineering and production.

5.1.3. Total Site Group

Figure 5.13: Showing the Demographic Profile for the Total Site Group

Source: Authors own construct (2007).

The mean age for the total site group, calculated from the class marks for age in Figure 5.13 above, is 38.74 years old. The mode value for age is “Age 26 – 30” with a frequency of eighteen, which corresponds to twenty-two percent of the surveyed site population. The exclusion of the learnerships group from the site demographic data raises the mean age to 40.98 years old, the mode value for age remains “Age 36 - 40” with a reduced frequency of thirteen, which corresponds to 18.8 percent of the surveyed site population excluding learnerships.
The mode values for population group are “White” and “Coloured” with a frequency of twenty-six, which corresponds to 31.7 percent of the surveyed site population. If the learnership groups are excluded from the site demographic data the mode value for population group becomes “White” only, the corresponding frequency is reduced to twenty-five, which corresponds to 30.5 percent of the site population excluding learnerships.

The mode value for gender is “Male” with a frequency of sixty-six, which corresponds to 80.5 percent of the surveyed site population. If the learnership groups are excluded from the site demographic data the mode value for gender remains “Male”, but the corresponding frequency is reduced to fifty-five, which corresponds to 67.1 percent of the site population excluding learnerships.

The mode value for highest level of education obtained is “Technical College (NQF 4)” with a frequency of twenty-nine, which corresponds to 35.4 percent of the surveyed site population. If the learnership groups are excluded from the site demographic data the mode value for highest level of education obtained remains “Technical College (NQF 4)”, but the corresponding frequency is reduced to twenty-three, which corresponds to 28.1 percent of the site population excluding learnerships.

Figure 5.14: Radar Chart Showing the Responses to the Conflict Management Style Questions for the Total Site Group

Source: Authors own construct (2007)
The radar chart, in figure 5.14, shows that the dominant conflict management style for the total site group is an “Integrating” conflict management style. The “Dominating”, “Obliging”, and “Compromising” conflict management styles are also strongly demonstrated by members within this group. Where the strong “Dominating” styles are demonstrated mainly by the production members within the group, and the strong “Obliging” styles are demonstrated mainly by the maintenance members within the group.

The mode value for the “Always” series in the radar chart is question number 15i with a frequency of fifty-one, which shows that 62.2 percent of the members within the group always exchange accurate information with members from the other function within the group to solve problems between them.

The mode value for the “Frequently” series in the radar chart are question numbers 29i with a frequency of forty, which shows that 48.8 percent of the members within the group frequently collaborate with members from the other function within the group to come up with mutually acceptable solutions.

The mode value for the “Sometimes” series in the radar chart is question number 25o with a frequency of fifty-two, which shows that 63.4 percent of the group members sometimes go along with the suggestions of members from the other function within the group.

The mode value for the “Rarely” series in the radar chart is question number 11d with a frequency of twenty-six, which shows that 31.7 percent of the members within this group rarely use their authority to make a decision in their favour when interacting with members of the other function within the group.

The mode values for the “Never” series in the radar chart are question numbers 11d and 8d with a frequency of sixteen, which shows that 19.5 percent of the members within this group never hold on to their solution to a problem, and
never use their authority to make a decision in their favour when interacting with members of the other function within the group.

**Figure 5.15:** Bar Chart Showing the Number of Responses to Affective and Substantive Conflict Questions for the Total Site Group

Source: Authors own construct (2007).

The bar chart in figure 5.15 above shows that the total site group perceives an overall high to very high level of both substantive and affective conflict, with a slightly higher level of substantive conflict than affective conflict.

In the bar chart above the mode value for the “A Lot / Always” series is question 1a with a frequency of fourteen, this shows that 17.1 percent of the members within the group perceive there to be a lot of friction between personnel within the maintenance and production functions.

The mode value for the “Frequently” series in the bar chart above is question number 8s with a frequency of thirty, which means that 36.6 percent of the members within the group believe that there are frequently disagreements about ideas relating to tasks between personnel within the maintenance and production functions.
The mode value for the “Sometimes” series in the graph is question 5s with a frequency of thirty-nine, which means that 47.6 percent of the members within this group believe that there are sometimes differences of opinions relating to the work that is being done.

The mode value for the “Rarely” series in the bar chart is question 2a with a frequency of twenty-two, which means that 26.8 percent of the members within the group believe that there are rarely personality clashes between personnel within the maintenance and production functions.

The mode values for the “None / Never” series in the bar chart are questions 1a and 2a with a frequency of two, which means that 2.4 percent of the members within the site group believe that there is never friction, nor personality clashes between maintenance and production colleagues.

**Figure 5.16: Pareto Analysis on the Sources of Conflict for the Total Site Group**

Source: Authors own construct (2007).

The Pareto analysis represented by figure 5.16 above on the sources conflict indicates that the top twenty percent of issues, which contribute towards conflict
between the total maintenance group and the total production groups are the following:

- Lack of communication (82.9 percent of respondents);
- Misinterpretation of information (72 percent of respondents);
- Inaccurate information (67.1 percent of respondents);
- Dissatisfaction with current remuneration for members within the group (52.4 percent of respondents);
- That job cards are not completed for all jobs (50 percent of respondents);
- Insufficient maintenance resources to carry out both breakdown and planned or preventative maintenance activities (48.8 percent of respondents);
- Insufficient time to identify and carry out continuous improvement initiatives (39 percent of respondents);
- The view held within the group that maintenance do not make effective use of the time that is allocated for preventative maintenance activities (39 percent of respondents);
- The view held within the group that poor relationships within each of the two functions often cause conflict between the two functions (37.8 percent of respondents);
- The view held by members of this group that insufficient time is allocated by production for preventative maintenance activities (37.8 percent of respondents).

From the above list of the ten items the following is evident:

- Fifty percent of the listed items relate to scarce or poor planning of time and human resources;
- Forty percent of the items listed are relate to data and communication;
- Ten percent of the listed items relate to personal needs, such as remuneration.
Figure 5.17: Pareto Analysis on Conflict Diversity Elements for the Total Site Group

The Pareto analysis represented by figure 5.17 above on the diversity elements of conflict indicates that the top twenty-five percent of issues, which may cause conflict between the total maintenance group and the total production group, are the following:

- Insufficient training in diversity awareness and appreciation (48.8 percent of respondents);
- Poor appreciation for diversity by group members of the other function (28 percent of respondents);
- Higher levels of conflict experienced between people from different cultural backgrounds (28 percent of respondents).

Despite the lack of diversity awareness training 86.6 percent of the respondents indicated that they personally appreciated the aspects of diversity.

Source: Authors own construct (2007).
The bar chart in figure 5.18 above shows that the preferred choice of structure for the total site group was structure number three, which was preferred by forty-one percent of the respondents, however it must be noted the majority (thirty-nine percent) of these respondents were from the production group. Structure number six was the second most favoured structure by thirty-six percent of the respondents, and equally so by members within both the production (eighteen percent) and the maintenance (eighteen percent) functions. Both of these two structures are more decentralised structures than the current structure.

### 5.1.4. Conclusion

The empirical data collected from the survey of the production groups and maintenance groups were presented, analysed and interpreted using various appropriate quantitative statistical techniques and calculations. These statistical techniques and calculations included the following:
• The use of a percentage table to present the overall response rate to the questionnaire;
• The use of bar charts to present the data collected for on demographics and conflict types for each of the groups surveyed;
• The use of radar charts to present the data collected on conflict management styles for each of the groups surveyed;
• The use of percentage bar charts to present the information collected on structures for each of the groups surveyed;
• The use of stacked percentage bar charts and a Pareto analysis to present the information collected on conflict sources and conflict diversity elements for each of the groups surveyed;
• The calculation of the mean age for each of the three main groups;
• The calculation of the mode values for each set of data collected in the questionnaire.

Only data for the three main groups identified, namely: total production group, total maintenance group, and the total site group, were included and discussed in this chapter. The graphical presentations of the data for each of the thirteen sub-groups have, however been included in Annexure C.

The key findings revealed during the analysis of the data were the following:

• The overall response rate to the questionnaire as a percentage of the total target population was sixty-eight percent;

• The integrating conflict management style was identified as the most frequently used conflict management style by both the total production and total maintenance groups;

• The total maintenance group also demonstrated strong use of the obliging and compromising conflict management styles;
• Total production group also demonstrated strong use of the dominating and compromising conflict management styles;

• A high to very high level of both affective and substantive conflict was evident in both the total production group and the total maintenance group. However, the total maintenance group perceived slightly higher levels of affective conflict, whereas the total production group perceived slightly higher levels of substantive conflict;

• The sources of conflict between the two groups highlighted the following three main issues:
  
  • Poor communication, namely: lack of communication, misinterpretation of information, incomplete information, and inaccurate data;
  • Scarcity and poor planning of resources, namely: time and human resources;
  • Personal needs, namely: inadequate remuneration.

• The diversity issues relating to conflict were found to be the following:
  
  • Insufficient training for diversity awareness and appreciation;
  • Poor appreciation for diversity by group members within the other function;
  • Higher levels of conflict experienced between people from significantly different cultural backgrounds.

• The preferred structures chosen by the majority of respondents indicated that the majority of the respondents preferred more decentralised structures when compared to the current structure;
• The responses to the open ended questions confirmed the results of the two Pareto analysis on conflict sources and conflict diversity elements, but also highlighted the following key issues:
  • Poor goal alignment between the two functions;
  • More effective training and cross-training for both maintenance and production staff;
  • Changes in the behaviours, mindsets, and attitudes of both production and maintenance personnel.

The following and final chapter of this treatise will focus on providing solutions to the main problem and the sub-problems, based on the review of the literature and the interpretation of the data, which was collected and analysed. In this chapter the recommendations, conclusions, and limitations of the research are stated.
6. Introduction

In this chapter the findings from the both the literature review and the empirical data are discussed with the overall objective of addressing the main problem and the sub-problems, which were identified in chapter one.

6.1. Summary

6.1.1. Reasons for the Research

If manufacturing organisations are to improve their competitive positions in the global arena and increase profitability, their operations strategies need to be focused on: reducing cost, improving quality, increasing efficiency, improving the speed of delivery, developing and improving process flexibility, and ensuring that higher service levels are achieved and maintained.

One of the critical success factors in implementing these strategies, within manufacturing organisations, is the relationship that exists between the maintenance and production functions. A review of the literature, concerning this relationship, has indicated that there is often a great deal of conflict that exists between these two functions, which if not managed or resolved effectively can directly hamper the progress of the organisation towards achieving its overall goals, and hence have a negative impact on the profitability of the organisation, and its ability to compete successfully in the global arena.
6.1.2. The Main Problem

This requirement for manufacturing organisations to effectively manage and resolve conflict between the maintenance and production functions, in order to improve their efficiency, effectiveness, and competitive positions in the global arena, highlighted the following problem, namely: What interventions can manufacturing organisations undertake to resolve the conflict between production and maintenance functions, to improve their competitive position in the global economy?

Since the solution to the main problem was both complex and multidimensional, the following sub-problems were identified, and were used as a strategy towards solving the main problem:

- What is organisational conflict?
- Is all conflict between maintenance and production personnel destructive?
- What are the sources of the conflict that exists between maintenance and production functions?
- What interventions, as revealed by research literature, can be used to effectively resolve or manage the conflict?
- Which of the following maintenance reporting structures is most likely to foster better relationships between maintenance and production: Centralised, Decentralised or Semi-Centralised?
- What are the desired conflict management styles that are required by production and maintenance personnel to effectively manage and resolve conflict?
- Is diversity (in particular age, gender, race, and education) a significant contributor to the conflict, and if so what strategies can be used to overcome these issues?
• What are the performance measures that should be applied to both the maintenance and production functions to enhance the effectiveness of their relationship?

6.2. Summary of Findings and Recommendations

The following section is summary of the key findings that were revealed by this research with recommendations that are to be considered in light of the main problem and the sub-problems that were stated in the previous section.

• After an extensive evaluation of various definitions for both social and organisational conflict the following definition was formulated and presented: “Organisational Conflict” is a “perception” or “awareness”, of “incompatibility” or “difference”, that exists between “interdependent”, groups or individuals within an organisation, relating to activities, behaviours, values, needs, goals, skills, interests, attitudes, identity, and / or scarce resources.

• A review of the literature on conflict types conducted in chapter three indicated that conflict could be both functional and dysfunctional for organisations, depending of the type and amount of conflict that exists. There are essentially two different types of conflict, namely: substantive conflict and affective conflict. Substantive conflict is seen as functional conflict, whereas affective conflict is seen as dysfunctional conflict. The level of the conflict also plays a role in determining whether the conflict, and in particular substantive conflict, is functional or dysfunctional. Whilst an optimal level of substantive conflict is functional, too much substantive conflict can be dysfunctional since it interferes with task completion, and may diminish group loyalty and workplace commitment. Previous studies had indicated that there was a positive correlation between substantive and affective conflict, which means that as the amount of substantive
(functional) conflict increases, so does the amount of affective (dysfunctional) conflict.

The results of the empirical study revealed a high to very high level of both affective and substantive conflict in both the total production group and the total maintenance group. It was also revealed the total maintenance group perceived slightly higher levels of affective conflict, whereas the total production group perceived slightly higher levels of substantive conflict. In this particular case it is evident that the amounts of both the substantive conflict and affective conflict are too high. The high levels of affective conflict that are evident may very well be due to the very high levels of substantive conflict that are being experienced.

In summary all organisational conflict is not dysfunctional or destructive, and if organisations are to reap the benefits of conflict they should aspire to develop strategies, which are focused towards reducing the amount of affective conflict, and around stimulating, attaining and maintaining optimal levels of substantive conflict (Rahim, 2002: 210 – 211).

- The Conflict Cube model was presented in chapter three, as means of identifying the potential sources of conflict for any given conflict situation. This model showed that conflict essentially originates from six sources, namely: structure, values, interests, data, needs and relationships. It is seldom found that the only one of these sources is present for any given conflict situation, and therefore it is more likely that the conflict at hand is as a result of a combination of more than one of these sources. The sources for different conflict situations will also differ according to the context within which the conflict is taking place, and as such it is necessary to determine which of the sources are relevant for different conflict situations.

A Pareto analysis was used to analyse the empirical data relating to the sources of conflict, which were collected from the production and
Conclusions and Recommendations  Chapter Six

maintenance groups. The results of this analysis revealed that the sources of conflict between these two groups originated from two main sources, namely needs and data. The results of this study were the following:

- Fifty percent of the sources identified, related to scarce or poor planning of resources, namely: time and human resources (Needs)
- Forty percent of the sources identified, related to data and communication, namely lack of communication, misinterpretation of information, incomplete information, and inaccurate information (Data)
- Ten percent of the sources identified, related to personal needs, namely: remuneration (Needs)

This particular set of results gave rise to an interesting conundrum. If the results show that lack of communication, misinterpretation of information, and inaccurate information are key escalators of conflict, then how is it possible that 62.2 percent of the members within the group claimed to always exchange accurate information with members from the other function within the group to solve problems between them, and a further 22.8 percent of the respondents claimed to frequently exchange accurate information with members from the other function within the group to solve problems between them, when responding to the conflict management style section of the questionnaire? One rational answer to this contradiction is that whilst members from each of the functions may indeed exchange accurate information with their colleagues from the other function, the perception of their colleagues due to a lack of trust is accurate information is not exchanged or not reported upwards.

The responses to the open ended questions of the questionnaire revealed two additional sources of conflict between the maintenance and production functions. The first was poor goal alignment between the two functions, which can be classified under interests in the Conflict Cube.
model. The second source that was highlighted was structure, where a number of the respondents alluded to the fact that there may be a gap in the current maintenance structure since the engineering technician was filling a maintenance management role and in so doing was neglecting to effectively plan resources for preventative maintenance activities.

Similar results were found in a 2004 survey, of one hundred and five manufacturing organisations, conducted by Works Management (Baker, 2004: 18 – 20). In this survey it was recommended that production and maintenance staff receives training in teamwork and communication skills to address the issue of communication. The survey also suggested that the effective implementation of a Computerised Maintenance Management Systems (CMMS), or an Enterprise Resource Planning (ERP) maintenance module, could assist organisations in addressing the issues around data.

In order to further address the issue of communication and goal alignment, Idhammer (2000) recommends that the Overall Equipment Efficiency (OEE) measurement, which is usually applied to measure the effectiveness of maintenance, be changed to Overall Production Efficiency, and be used to measure the effectiveness of both the maintenance and production functions. Furthermore Idhammer (2000) suggests that the maintenance-production relationship be evolved to one of partners rather than a customer-supplier relationship. By doing these two things Idhammer (2000) believes that both departments will see that they have they both responsible and accountable for achieving the same goal.

The needs based source of conflict relating to poor planning of resources and can be addressed through either the clarification of roles within the maintenance structure, or alternatively through a change in structure. The most important issue that must be addressed here is to ensure that effective planning of preventative maintenance work and use of
resources is performed. The structural changes to facilitate this could be as simple as including a maintenance manager within the existing maintenance structure to manage the maintenance activities or as drastic as a total change in the reporting structures between the maintenance and production functions.

In summary the sources for any given conflict situation should be identified so that suitable actions can be taken to remove them. In this particular case the organisation must develop strategies to improve communication, goal alignment, planning, and structure.

- The results from the empirical survey showed that the majority of respondents from both the maintenance and production functions preferred more decentralised structures to the current structure. The majority of the production respondents preferred a reporting structure where maintenance at all levels reported through to production, whereas the majority of the maintenance respondents preferred a structure where all functions report through to a production-engineering manager. This highlighted the fact that personnel in the maintenance function would prefer to report into a person with engineering technical skills and knowledge.

The survey conducted by works management in 2004, of one hundred and five manufacturing organisations, indicated that different types of maintenance-production reporting structures had little to no effect on the perceived effectiveness of the maintenance departments. It was noted however, that in more decentralised structures, where maintenance reported into production, that resources were likely to be less strained. On the other hand the results showed that the accuracy of data and information was better for organisations where more centralised maintenance-production structures were in place. More decentralised structures also promote better goal alignment and communication between the two functions, but may have a negative impact on
maintenance standards and preventative maintenance planning, since preventative maintenance activities are more likely to be sacrificed for higher production outputs.

In summary structures tend to have little or no impact on the effectiveness of maintenance within manufacturing organisations. Each of the different structures has various advantages and disadvantages associated with them, which indicates that semi-decentralised structure may be better. However since structure follows strategy, manufacturing organisations should opt for structures, which will enable them to effectively and efficiently implement and drive the overall organisational strategies.

- The Dual Concern Model (DCM) was introduced in chapter three in the discussion on conflict management styles. This model gave rise to five different conflict management styles based on the degree to which the parties involved in the conflict, had a concern for self and concern for others. The five different conflict management styles in the DCM were the following: integrating, avoiding, dominating, obliging and compromising. Each of these conflict management styles were described in terms of what the use of the style involved, and discussed in terms of the outcome of using the style, as well as the appropriateness and inappropriateness of using each of the styles in different conflict situations.

The results of the empirical survey showed that both the maintenance and production functions showed a strong affiliation towards the integrating conflict management style. This conflict management style is favoured when there is both a high concern for others, and a high concern for self by the parties involved. The primary outcome of this style is usually a mutually beneficial “Win – Win” situation. This particular style mostly involves collaboration and negotiation of the parties involved. Parties making use of this style come together to develop of an
integrative solution to a particular problem based on the interests of both the parties and other supporting facts.

Both of the groups within the total site group also showed some affiliation for the compromising conflict management style, which is favoured when there is an intermediate concern for self, and for others. This style more often than not results in a “Win-Win” situation, and less often in a “Lose-Lose” situation. This style essentially involves both parties sacrificing something to reach a mutually beneficial decision. The use of this style may be appropriate in this particular situation due to the high level of interdependence between the two functions required to achieve their individual goals.

Members within the production group demonstrated a relatively strong affiliation for the dominating style. This style is typically favoured when there is a high concern for self, and a low concern for others, which is often considered to result in a “Win-Lose” situation. Parties using this particular style often make use of assertive and forceful behaviour, to relentlessly pursue their objectives, and often in so doing; will often ignore the needs, interests and expectations of the other party. It is not unusual to see that many of the members within the production group make use of this style as all of them are in managerial positions, which often requires them to make quick decisions, and to be forceful and assertive in the pursuit of organisational goals.

The strong obliging style demonstrated by members of the maintenance group is typically favoured when there is a high concern for others, and a low concern for self, and often results in a “Win-Lose” outcome. Based on the working relationship between the two parties in this case, where maintenance is viewed as a service function to production, it is not unusual to see members of the maintenance group demonstrating a strong affiliation towards this style.
Neither of the two groups in this particular case shows a strong affiliation towards the avoiding conflict management style, which is typically favoured when there is a low concern for self, and a low concern for others. The use of this style is often seen to result in a “Lose-Lose” situation. This style involves ignoring the conflict, or changing ones own behaviour to resolve the conflict at hand, neither of which is significantly evident in this particular case.

The fact that each of the conflict management styles is considered to be more appropriate in some conflict situations and less so in others, suggests that the best type of conflict management style is a “situational” one. This means that organisations should train personnel in the types of conflict management styles that are available, and enable them to recognise particular situations where the use one type of conflict management style may be more effective than another.

- The literature review on conflict and diversity, presented in chapter three, discussed some of the key challenges facing managers within organisations today. Under this section a theoretical model of the effects of leader intervention in conflict events within culturally heterogeneous workgroups and its propositions were presented.

The demographic data presented and analysed from the empirical data presented revealed that the maintenance and production teams together formed a culturally diverse work force. In this analysis the mean and mode values were calculated for age group, in each of the two main groups surveyed. The mode values were calculated for population group, gender, and highest level of education obtained, for each of the two main groups surveyed. Each calculation was performed twice, once with the learnership groups included and once with the learnership groups excluded. The reason for this was to demonstrate the impact that the learner groups had on the demographical statistics of the overall populations in each group.
The analysis revealed that the mean average age groups for each of the two main groups were fairly similar, where the mean age calculated for the production group was calculated to be 37.97 years old and the mean age for the maintenance group was calculated to be 39.41 years old. The mode values for each of the two groups were calculated and the production group had a mode value of “Age 26 – 30”, whereas the maintenance group had two modes one at “Age 26 – 30” and the other at “Age 31 – 35”. This shows that there are more, older members within the maintenance group. The exclusion of the learnership groups had a significant impact on the mean age and no impact on the mode value for the production group, where the mean age was increased to 40.22 years old. The impact of excluding the learnership group from the maintenance group had a significant impact on both the mean and mode value, where the mean value was increased to 41.74 years old and the mode value was only “Age 31 – 35”. This impact on both the production and maintenance mean and mode values indicates that the learnership groups consist of considerably younger members. The development of skills in younger people is encouraging, particularly in the maintenance discipline, where there is a currently a shortage of skills in the country.

The results of the empirical data also revealed that male members dominated the demographics both groups. This was more evident in the maintenance group where only 2.7 percent of the respondents were females, as opposed to the production group where 36.8 percent of the respondents were females. This observation is not that unusual since both manufacturing and engineering (maintenance) have traditionally been male dominated disciplines. It is encouraging to see that despite this tradition, female members present in both groups and in particular the maintenance group.

Black males were more dominant in the demographics of the production group, whereas it was white males who dominated the demographics in
the maintenance group. This observation is not unusual and can be explained by the fact that the maintenance discipline has traditionally been dominated white male members in the manufacturing industry.

The production group showed higher levels of education with a majority of the respondents having an NQF 5 graduate diploma level of education, whereas the majority of the members within the maintenance group had an NQF 4 technical college level of education.

A Pareto analysis was performed on the conflict diversity elements for each of the two main groups surveyed and the total site group, the analysis on the total site group revealed the following key issues:

- Insufficient training for diversity awareness and appreciation
- Poor appreciation for diversity by group members within the other function
- Higher levels of conflict experienced between people from significantly different cultural background

An interesting observation here is that although a large majority of respondents claim to personally appreciate diversity, a significant portion of the site group (28 percent of the respondents) perceived that members from the other function do not have or demonstrate an appreciation for diversity. The majority of these perceptions originated mainly from the production group. The explanation for this contradiction can be two fold, either the respondents did not adequately understand the question, or based on the idea that a negative answer to the question may be seen to be socially unacceptable or socially undesirable, a number of respondents may have opted for a positive response to the question. Either way this does not affect the results as the respondents who have highlighted the issue have a perception that there is a poor appreciation for diversity from the members of the other group.
In summary elements of diversity were found to be a key issue in this particular case. The recommendation to address this issue is two fold, firstly managers within organisations should be equipped with the necessary skills, knowledge, and behaviours to manage conflict within diverse work groups as outlined by the theoretical model of the effects of leader intervention in conflict events within culturally heterogeneous workgroups and its propositions, secondly organisational members should be made aware of the benefits of diversity towards achieving organisational goals and should be made aware of the detrimental affects can result when there is no appreciation for diversity.

6.3. Limitations of the Study

During the compilation this treatise, various limitations and shortcomings were identified. These and other areas, which may require future study, are identified as follows:

The research was confined mainly to one manufacturing organisation operating within the food and beverage industry within the Eastern Cape. This type of study would have to be conducted within in other manufacturing sectors in other areas to determine the overall validity and reliability of the study.

In some instances the sample size of the groups surveyed was too small, which made it difficult to draw meaningful conclusions between the different groups; this was particularly true for the production manager, plant engineer, engineering technician, sugar, and the panning and assortments group. It is therefore the recommendation of the researcher that a minimum sample size of between five and ten be used for similar future empirical studies.

A key consideration that must be taken into account is that group members working in shift based teams within a particular function do not always have the
opportunity to interact with different members of the other function who are also working shifts. This means that the perceptions of conflict and the working relationships between the different functions on a particular shift may be very different to those on another shift. The recommendation of the researcher in this regard is that when one is researching shift-based personnel that the shift be surveyed as a group.

The shortcomings of the questionnaire also cannot be underestimated, particularly the questions around the assessment of diversity elements, which can prove be a fairly sensitive issue. The responses to these particular questions may be influenced by the social desirability of the respondent, and will therefore not always be answered honestly.

For future studies a follow-up interview should be conducted after an initial analysis of the results to clarify contradictory results, such as those highlighted in the previous section.

The results of this research, or similar research, could be used to determine whether or not there is a direct correlation between the different demographic characteristics of the respondents, and the type of conflict management style used, and the type and amount of conflict perceived.

Similarly the results of this research, or similar research could be used to determine whether or not there is a direct correlation between the different conflict management styles used and the type and amount of conflict perceived.

Future research could also be conducted to determine if there is a direct correlation between different personality types and the use of different conflict management styles and the type and amount of conflict perceived.
6.4. Conclusion

Despite the shortcomings of the research, which were identified in the previous section, the overall objective of this particular research was achieved. From both the analysis of the empirical data collected, and the review of the literature pertaining to organisational conflict, meaningful conclusions were reached and recommendations were made that were used to solve the main problem and the sub-problems that were presented in chapter one of this treatise. The key elements identified within this research included the following: clarification on the concept of organisational conflict, the identification of different conflict types, the identification of conflict different management styles, the key sources of conflict as they relate to production and maintenance, and various interventions that organisations can take to effectively manage the conflict between the maintenance and production functions within manufacturing organisations.
Reference List


Wilson, J. 2004. *Conflict management does not have to create conflicts*[Online]. Available from: 

September 2007

Dear Colleague

**Re: QUESTIONNAIRE ON ORGANISATIONAL CONFLICT**

I am currently conducting research at the Nelson Mandela Metropolitan University (NMMU). This research is in partial fulfilment towards a Masters Degree in Business Administration (MBA). My research topic is an investigation into organisational conflict with specific reference to conflict between maintenance and production functions within our manufacturing organisation.

I would appreciate it if you could please complete the accompanying questionnaire, which will allow me to gather the necessary information about various aspects conflict between the maintenance and production functions within our organisation.

Please note that the information gathered from you will be used solely for academic purposes and will be treated in the strictest confidence.

Thank you for your co-operation.

Yours sincerely

Riccardo Petronio
Annexure B: Research Questionnaire

Section A: Demographic Information

Please place a cross in the block that is most applicable to you.

Manufacturing Unit

<table>
<thead>
<tr>
<th>Countlines</th>
<th>Panning and Assortments</th>
<th>Sugar</th>
<th>Chocolate Making and Moulding</th>
</tr>
</thead>
</table>

Department / Function

<table>
<thead>
<tr>
<th>Maintenance</th>
<th>Production</th>
</tr>
</thead>
</table>

Position

<table>
<thead>
<tr>
<th>Team Manager</th>
<th>Artisan or Electrician</th>
<th>Production Learnership</th>
<th>Maintenance Learnership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant Engineer</td>
<td>Production Manager</td>
<td>Maintenance Apprentice</td>
<td>Engineering Technician</td>
</tr>
</tbody>
</table>

Current age

|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|

Gender

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
</table>

Population Group

<table>
<thead>
<tr>
<th>Coloured</th>
<th>Indian</th>
<th>Black</th>
<th>White</th>
</tr>
</thead>
</table>

Highest Level of Education

<table>
<thead>
<tr>
<th>High School (NQF 3)</th>
<th>Technical College (NQF 4)</th>
<th>Graduate - National Diploma (NQF 5)</th>
<th>Graduate – Degree (NQF 6)</th>
<th>Post Graduate (NQF 7)</th>
</tr>
</thead>
</table>
### Section B: Conflict Management Styles

Please place a cross in the block that is most applicable to you.

<table>
<thead>
<tr>
<th>No.</th>
<th>Conflict Management Styles</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Frequently</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I try to investigate an issue with my maintenance/production colleagues to find a solution acceptable to both of us.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>I try to satisfy the needs of my maintenance/production colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>I attempt to avoid being “put on the spot” and try to keep my conflict with my maintenance/production colleagues to myself.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>I try to integrate my ideas with those of my maintenance/production colleagues to come up with a joint decision.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>I give something to get something when interacting with my maintenance/production colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>I try to work with my maintenance/production colleagues to find solutions to a problem, which satisfies our expectations.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>I avoid open discussions of our differences with my maintenance/production colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>I hold on to my solution to a problem when interacting with my maintenance/production colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>I try to find a middle of the road option to avoid a stalemate or deadlock when interacting with my maintenance/production colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>I use my influence to get my ideas accepted when interacting with my maintenance/production colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>I use my authority to make a decision in my favour when interacting with my maintenance/production colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>I accommodate the wishes of my maintenance/production colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>I give in to the wishes of my maintenance/production colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>I win some and I lose some when interacting with my maintenance/production colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>I exchange accurate information with my maintenance/production colleagues to solve a problem together.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>I help my maintenance/production colleagues to make a decision in their favour.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>I usually allow concessions to my maintenance/production colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Source: Rahim, 1983: 371 – 372)
Please place a cross in the block that is most applicable to you.

<table>
<thead>
<tr>
<th>No.</th>
<th>Conflict Management Styles</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Frequently</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>I argue my case with my maintenance/production colleagues to show the merits of my position.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>I try to play down our differences to reach a compromise.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>I propose a middle ground to break deadlocks when interacting with my maintenance/production colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>I negotiate with my maintenance/production colleagues so that a compromise can be reached.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>I try to stay away from disagreement with my maintenance/production colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>I avoid an encounter with my maintenance/production colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>I use my expertise to make a decision in my favour when interacting with my maintenance/production colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>I go along with the suggestions of my maintenance/production colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>I use “give and take” so that a compromise can be made when interacting with my maintenance/production colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>I stand my ground when pursuing my side of the issue when interacting with my maintenance/production colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>I try to bring all our concerns out into the open so that the issues can be resolved in the best possible way when interacting with my maintenance/production colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>I collaborate with my maintenance/production colleagues to come up with solutions that are acceptable to us.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>I try to satisfy the expectations of my maintenance/production colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>I use my power to win a competitive situation when interacting with my maintenance/production colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>I try to keep my disagreement with my maintenance/production colleagues to myself to avoid hard feelings.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>I try to avoid unpleasant exchanges with my maintenance/production colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>I generally avoid an argument with my maintenance/production colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>I try to work with my maintenance/production colleagues for a proper understanding of the problem.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Source: Rahim, 1983: 371 – 372)
### Section C: Intergroup Conflict

Please place a cross in the block that is most applicable to you.

<table>
<thead>
<tr>
<th>No.</th>
<th>Intergroup Conflict</th>
<th>None / Never</th>
<th>Rarely</th>
<th>Some / Sometimes</th>
<th>Frequently</th>
<th>A Lot / Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(AF) How much friction is there between the maintenance and production functions?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>(AF) To what extent are personality clashes present between the production and maintenance functions?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>(AF) How much anger is present between the maintenance and production functions?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>(AF) How much emotional conflict is there between the production and maintenance functions?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>(SU) To what extent are there differences of opinions relating to tasks between the maintenance and production functions?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>(SU) How often are there disagreements between the maintenance and production functions about the work that is being done?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>(SU) How frequently are there disagreements about the task you are working on with colleagues from the maintenance/production department?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>(SU) How often do people in the maintenance and production functions disagree about ideas relating to tasks?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Source: Jehn, 1994: 97)
### Section D: Sources of Conflict

Please place a cross in the block that is most applicable to you.

<table>
<thead>
<tr>
<th>No.</th>
<th>Sources of Conflict</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Disagree nor Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I know what the company values are.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Most maintenance personnel know and live the company values.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Most production personnel know and live the company values.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>I live the company values.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>I respect my maintenance/production colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>My manager knows what the company values are.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>My manager lives the company values.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>I know what the core purpose of the company is.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>I know what the company vision is.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Production goals and targets are clearly defined.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Maintenance goals and targets are clearly defined.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Production goals and targets are aligned to those of the organisation.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Maintenance goals and targets are aligned to those of the organisation.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Production and maintenance goals are aligned to each other.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>I am clear about my departments’ roles, responsibilities, and accountabilities.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Cooperation between the maintenance and production departments is essential to each department achieving their goals.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>My manufacturing unit achieves its goals.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Maintenance and production personnel work together to solve problems.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Relationships within my own (i.e. production or maintenance) function are good.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Relationships between the maintenance and production functions are good.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>The current relationships between production functions and maintenance functions are better than they have been in the past.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Poor relationships within my own function often cause conflict between my function and the maintenance/production function.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Relationships between the production managers and the plant engineers are good.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Please place a cross in the block that is most applicable to you.

<table>
<thead>
<tr>
<th>No.</th>
<th>Sources of Conflict</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Disagree nor Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>Relationships between the artisans and team managers are good.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Communication between plant engineers and production managers is effective.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Communication between artisans and team managers is effective.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Communication between my manager and me is effective.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Communication within my own function is effective.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Communication between my manager and me is effective.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Information recorded on Job cards is accurate.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>Job cards are completed for all jobs.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>Inaccurate information is a source of conflict between maintenance and production personnel.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>Misinterpretation of information is a source of conflict between maintenance and production personnel.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>Lack of communication is a source of conflict between maintenance and production personnel.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>Communication between shifts and shift handovers in my department are effective.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>Sufficient time is allocated weekly for preventative maintenance activities.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>Maintenance makes effective use of the time that is allocated for preventative maintenance activities.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>There are sufficient maintenance resources in my manufacturing unit to carry out both breakdown and preventative maintenance activities.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>There is sufficient time in my manufacturing unit to identify and carry out continuous improvement initiatives.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>I receive recognition when I feel that I deserve it.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>I am satisfied with my remuneration (Salary).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Annexure B

Please place a cross in the block that is most applicable to you.

<table>
<thead>
<tr>
<th>No.</th>
<th>Sources of Conflict</th>
</tr>
</thead>
<tbody>
<tr>
<td>42</td>
<td>Most team managers are skilled at their jobs.</td>
</tr>
<tr>
<td>43</td>
<td>Most artisans are skilled at their jobs.</td>
</tr>
<tr>
<td>44</td>
<td>Most operators are skilled at their jobs.</td>
</tr>
<tr>
<td>45</td>
<td>Most team managers have positive attitudes about their work.</td>
</tr>
<tr>
<td>46</td>
<td>Most artisans have positive attitudes about their work.</td>
</tr>
<tr>
<td>47</td>
<td>Most operators have positive attitudes about their work.</td>
</tr>
<tr>
<td>48</td>
<td>Most team managers are knowledgeable about their work.</td>
</tr>
<tr>
<td>49</td>
<td>Most artisans are knowledgeable about their work.</td>
</tr>
<tr>
<td>50</td>
<td>Most operators are knowledgeable about their work.</td>
</tr>
</tbody>
</table>
### Section E: Conflict and Diversity

Please place a cross in the block that is most applicable to you.

<table>
<thead>
<tr>
<th>No.</th>
<th>Conflict and Diversity</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Disagree nor Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(DivCA) I have attended a formal diversity awareness course.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>(DivCA) Personnel in my department appreciate diversity.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>(DivCA) Personnel in the maintenance/production department appreciate diversity.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>(DivCA) I appreciate diversity.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>(DivCE) I tend to experience more conflict with people at work whose cultural backgrounds are significantly different from my own.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>(DivCE) I tend to experience more conflict with people at work whose cultural backgrounds are similar to my own.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>(DivCE) I tend to experience more conflict with people at work whose age is significantly different from my own.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>(DivCE) I tend to experience more conflict with people at work whose age is similar to my own.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>(DivCE) I tend to experience more conflict with people at work of the opposite gender.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>(DivCE) I tend to experience more conflict with people at work who are the same gender as me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>(DivCE) I tend to experience more conflict with people at work whose religious beliefs differ significantly from my own.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>(DivCE) I tend to experience more conflict with people at work whose political views differ significantly from my own.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section F: Structures

Please circle the correct choice.

In your opinion which of the following structures is most likely to promote better working relationships between production and maintenance?

1. Manufacturing Unit MBA
   - Production Manager
   - Plant Engineer
   - Engineering Technician
   - Team Managers
   - Artisans and Electricians

2. Manufacturing Unit MBA
   - Production Manager
   - Plant Engineer
   - Engineering Technician
   - Team Managers
   - Artisans and Electricians

3. Manufacturing Unit MBA
   - Production Manager
   - Plant Engineer
   - Engineering Technician
   - Team Managers
   - Artisans and Electricians

4. Manufacturing Unit MBA
   - Production Engineering Manager
   - Team Managers
   - Engineering Technician
   - Artisans and Electricians

5. Manufacturing Unit MBA
   - Production Engineering Manager
   - Maintenance Manager
   - Engineering Technician
   - Artisans and Electricians

6. Manufacturing Unit MBA
   - Production Engineering Manager
   - Team Managers
   - Artisans and Electricians
   - Engineering Technician

7. Manufacturing Unit MBA’s
   - Production Manager
   - Team Managers
   - Plant Engineer
   - Engineering Technician
   - Artisans and Electricians

8. Site Engineering Unit
   - Production Manager
   - Plant Engineer
   - Maintenance Manager
   - Team Managers
   - Artisans and Electricians
   - Engineering Technician
Annexure B

What do you feel would be some of the benefits and challenges associated with your choice of structure?

____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________

If there were one thing that you would “fix” in order to improve the relationship between maintenance and production what would it be? (Note: if you feel that the production – maintenance relationship is not an issue please state N/A for this question).

____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
Annexure C

Annexure C: Graphical Presentation of Data Collected for all Production and Maintenance Groups

Graphical presentation of the data collected for the Chocolate Making and Moulding group

- Chocolate Making and Moulding Production

Figure C1.1: Showing the Demographic Profile for the Production Chocolate Making and Moulded Group

Source: Authors own construct (2007).

Figure C1.2: Radar Chart Showing the Responses to the Conflict Management Style Questions for the Production Chocolate Making and Moulding Group

Source: Authors own construct (2007).
Annexure C

Figure C1.3: Bar Chart Showing the Number of Responses to Affective and Substantive Conflict Questions for Production Chocolate Making and Moulded Group

Source: Authors own construct (2007).

Figure C1.4: Pareto Analysis on the Sources of Conflict for the Production Chocolate Making and Moulding Group

Source: Authors own construct (2007).
Figure C1.5: Pareto Analysis on Conflict Diversity Elements for the Chocolate Making and Moulding Production Group

Source: Authors own construct (2007).

Figure C1.6: Bar Chart Showing the Choice of Preferred Structure by Members of the Chocolate Making and Moulding Production Group.

Source: Authors own construct (2007).
### Chocolate Making and Moulding Maintenance

**Figure C2.1:** Showing the Demographic Profile for the Maintenance Chocolate Making and Moulded Group

<table>
<thead>
<tr>
<th>Age Population Group</th>
<th>Gender</th>
<th>Highest Level of Education Obtained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 21 - 25</td>
<td></td>
<td>High School (NQF 3)</td>
</tr>
<tr>
<td>Age 26 - 30</td>
<td></td>
<td>Technical College (NQF 4)</td>
</tr>
<tr>
<td>Age 31 - 35</td>
<td></td>
<td>Graduate National Diploma (NQF 5)</td>
</tr>
<tr>
<td>Age 36 - 40</td>
<td></td>
<td>Graduate Degree (NQF 6)</td>
</tr>
<tr>
<td>Age 41 - 45</td>
<td></td>
<td>Post Graduate (NQF 7)</td>
</tr>
<tr>
<td>Age 46 - 50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 51 - 55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 56 - 60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coloured</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of Respondents</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Authors own construct (2007).

**Figure C2.2:** Radar Chart Showing the Responses to the Conflict Management Style Questions for the Maintenance Chocolate Making and Moulded Group

Source: Authors own construct (2007).
Figure C2.3: Bar Chart Showing the Number of Responses to Affective and Substantive Conflict Questions for Maintenance Chocolate Making and Moulded Group

Source: Authors own construct (2007).

Figure C2.4: Pareto Analysis on the Sources of Conflict for the Chocolate Making and Moulding Maintenance Group

Source: Authors own construct (2007).
**Annexure C**

**Figure C2.5:** Pareto Analysis on Conflict Diversity Elements for the Chocolate Making and Moulded Maintenance Group

![Pareto Analysis Chart]

Source: Authors own construct (2007).

**Figure C2.6:** Bar Chart Showing the Choice of Preferred Structure by Members of the Chocolate Making and Moulding Maintenance Group.

![Bar Chart]

Source: Authors own construct (2007).
Graphical presentation of the data collected for the Countlines group

- Countlines Production

**Figure C3.1:** Showing the Demographic Profile for the Production Countlines Group

Source: Authors own construct (2007).

**Figure C3.2:** Radar Chart Showing the Responses to the Conflict Management Style Questions for the Production Countlines Group

Source: Authors own construct (2007).
**Annexure C**

**Figure C3.3:** Bar Chart Showing the Number of Responses to Affective and Substantive Conflict Questions for the Production Countlines Group

Source: Authors own construct (2007).

**Figure C3.4:** Pareto Analysis on the Sources of Conflict for the Production Countlines Group

Source: Authors own construct (2007).
Annexure C

Figure C3.5: Pareto Analysis on Conflict Diversity Elements for the Production Countlines Group

![Pareto Analysis Graph]

Source: Authors own construct (2007).

Figure C3.6: Bar Chart Showing the Choice of Preferred Structure by Members of the Countlines Production Group.

![Bar Chart Graph]

Source: Authors own construct (2007).
• Countlines Maintenance

Figure C4.1: Showing the Demographic Profile for the Maintenance Countlines Group

Source: Authors own construct (2007).

Figure C4.2: Radar Chart Showing the Responses to the Conflict Management Style Questions for the Maintenance Countlines Group

Source: Authors own construct (2007).
Figure C4.3: Bar Chart Showing the Number of Responses to Affective and Substantive Conflict Questions for the Maintenance Countlines Group

Source: Authors own construct (2007).

Figure C4.4: Pareto Analysis on the Sources of Conflict for the Maintenance Countlines Group

Source: Authors own construct (2007).
Annexure C

Figure C4.5: Pareto Analysis on Conflict Diversity Elements for the Maintenance Countlines Group

Source: Authors own construct (2007).

Figure C4.6: Bar Chart Showing the Choice of Preferred Structure by Members of the Countlines Maintenance Group.

Source: Authors own construct (2007).
Annexure C

Graphical presentation of the data collected for the Panning and Assortments group

- Panning and Assortments Production

**Figure C5.1:** Showing the Demographic Profile for the Production Panning and Assortments Group

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Gender</th>
<th>Highest Level of Education Obtained</th>
</tr>
</thead>
<tbody>
<tr>
<td>21 - 25</td>
<td>Male</td>
<td>High School (NQF 3)</td>
</tr>
<tr>
<td>26 - 30</td>
<td>Female</td>
<td>Technical College (NQF 4)</td>
</tr>
<tr>
<td>31 - 35</td>
<td>Male</td>
<td>Graduate (NQF 5)</td>
</tr>
<tr>
<td>36 - 40</td>
<td>Female</td>
<td>National Diploma (NQF 5)</td>
</tr>
<tr>
<td>41 - 45</td>
<td>Male</td>
<td>Graduate Degree (NQF 6)</td>
</tr>
<tr>
<td>46 - 50</td>
<td>Female</td>
<td>Post Graduate (NQF 7)</td>
</tr>
<tr>
<td>51 - 55</td>
<td>Male</td>
<td></td>
</tr>
<tr>
<td>56 - 60</td>
<td>Female</td>
<td></td>
</tr>
</tbody>
</table>

Source: Authors own construct (2007).

**Figure C5.2:** Radar Chart Showing the Responses to the Conflict Management Style Questions for the Production Panning and Assortments Group

Source: Authors own construct (2007).
Annexure C

Figure C5.3: Bar Chart Showing the Number of Responses to Affective and Substantive Conflict Questions for the Production Panning and Assortments Group

Source: Authors own construct (2007).

Figure C5.4: Pareto Analysis on the Sources of Conflict for the Production Panning and Assortments Group

Source: Authors own construct (2007).
**Annexure C**

**Figure C5.5**: Pareto Analysis on Conflict Diversity Elements for the Production Panning and Assortments Group

![Pareto Analysis Chart]

Source: Authors own construct (2007).

**Figure C5.6**: Bar Chart Showing the Choice of Preferred Structure by Members of the Panning and Assortments Production Group.

![Bar Chart]

Source: Authors own construct (2007).
Annexure C

- Panning and Assortments Maintenance

**Figure C6.1:** Showing the Demographic Profile for the Maintenance Panning and Assortments Group

Source: Authors own construct (2007).

**Figure C6.2:** Radar Chart Showing the Responses to the Conflict Management Style Questions for the Maintenance Panning and Assortments Group

Source: Authors own construct (2007).
Figure C6.3: Bar Chart Showing the Number of Responses to Affective and Substantive Conflict Questions for the Maintenance Panning and Assortments Group

Source: Authors own construct (2007).

Figure C6.4: Pareto Analysis on the Sources of Conflict for the Maintenance Panning and Assortments Group

Source: Authors own construct (2007).
**Annexure C**

**Figure C6.5:** Pareto Analysis on Conflict Diversity Elements for the Maintenance Panning and Assortments Group

![Pareto Chart](image-url)

Source: Authors own construct (2007).

**Figure C6.6:** Bar Chart Showing the Choice of Preferred Structure by Members of the Panning and Assortments Maintenance Group.

![Bar Chart](image-url)

Source: Authors own construct (2007).
Annexure C

Graphical presentation of the data collected for the Sugar group

- Sugar Production

Figure C7.1: Showing the Demographic Profile for the Production Sugar Group

![Graphical representation of demographic profile](image)

Source: Authors own construct (2007).

Figure C7.2: Radar Chart Showing the Responses to the Conflict Management Style Questions for the Production Sugar Group

![Radar chart image](image)

Source: Authors own construct (2007).
Annexure C

Figure C7.3: Bar Chart Showing the Number of Responses to Affective and Substantive Conflict Questions for the Production Sugar Group

Source: Authors own construct (2007).

Figure C7.4: Pareto Analysis on the Sources of Conflict for the Production Sugar Group

Source: Authors own construct (2007).
Figure C7.5: Pareto Analysis on Conflict Diversity Elements for the Production Sugar Group

Source: Authors own construct (2007).

Figure C7.6: Bar Chart Showing the Choice of Preferred Structure by Members of the Sugar Production Group.

Source: Authors own construct (2007).
Annexure C

• Sugar Maintenance

Figure C8.1: Showing the Demographic Profile for the Maintenance Sugar Group

Source: Authors own construct (2007).

Figure C8.2: Radar Chart Showing the Responses to the Conflict Management Style Questions for the Maintenance Sugar Group

Source: Authors own construct (2007).
Figure C8.3: Bar Chart Showing the Number of Responses to Affective and Substantive Conflict Questions for the Maintenance Sugar Group

Source: Authors own construct (2007).

Figure C8.4: Pareto Analysis on the Sources of Conflict for the Maintenance Sugar Group

Source: Authors own construct (2007).
**Annexure C**

**Figure C8.5:** Pareto Analysis on Conflict Diversity Elements for the Maintenance Sugar Group

Source: Authors own construct (2007).

**Figure C8.6:** Bar Chart Showing the Choice of Preferred Structure by Members of the Sugar Maintenance Group.

Source: Authors own construct (2007).
Graphical presentation of the data collected for the Learnership group

- Production Learnerships

**Figure C9.1:** Showing the Demographic Profile for the Production Learnership Group

<table>
<thead>
<tr>
<th>Age Group</th>
<th>No. of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 21-25</td>
<td>3</td>
</tr>
<tr>
<td>Age 26-30</td>
<td>2</td>
</tr>
<tr>
<td>Age 31-35</td>
<td>1</td>
</tr>
<tr>
<td>Age 36-40</td>
<td>6</td>
</tr>
<tr>
<td>Age 41-45</td>
<td>8</td>
</tr>
<tr>
<td>Age 46-50</td>
<td>5</td>
</tr>
<tr>
<td>Age 51-55</td>
<td>2</td>
</tr>
<tr>
<td>Age 56-60</td>
<td>1</td>
</tr>
</tbody>
</table>

- Population Group: Black, White, Coloured, Indian
- Gender: Male, Female
- Highest Level of Education Obtained: High School (NQF 3), Technical College (NQF 4), Graduate, National Diploma (NQF 5), Graduate Degree (NQF 6), Post Graduate (NQF 7)

Source: Authors own construct (2007).

**Figure C9.2:** Radar Chart Showing the Responses to the Conflict Management Style Questions for the Production Learnership Group

Source: Authors own construct (2007).
Figure 9.3: Bar Chart Showing the Number of Responses to Affective and Substantive Conflict Questions for the Production Learnership Group

Source: Authors own construct (2007).

Figure C9.4: Pareto Analysis on the Sources of Conflict for the Production Learnership Group

Source: Authors own construct (2007).
Annexure C

Figure C9.5: Pareto Analysis on Conflict Diversity Elements for the Production Learnership Group

![Pareto Analysis](image)

Source: Authors own construct (2007).

Figure C9.6: Bar Chart Showing the Choice of Preferred Structure by Members of the Production Learnerships Group.

![Bar Chart](image)

Source: Authors own construct (2007).
• Maintenance Learnerships

Figure C10.1: Showing the Demographic Profile for the Maintenance Learnership Group

Source: Authors own construct (2007).

Figure C10.2: Radar Chart Showing the Responses to the Conflict Management Style Questions for the Maintenance Learnership Group

Source: Authors own construct (2007).
Figure C10.3: Bar Chart Showing the Number of Responses to Affective and Substantive Conflict Questions for the Maintenance Learnership Group

Source: Authors own construct (2007).

Figure C10.4: Pareto Analysis on the Sources of Conflict for the Maintenance Learnership Group

Source: Authors own construct (2007).
Figure C10.5: Pareto Analysis on Conflict Diversity Elements for the Maintenance Learnership Group

Source: Authors own construct (2007).

Figure C10.6: Bar Chart Showing the Choice of Preferred Structure by Members of the Maintenance Learnership Group.

Source: Authors own construct (2007).
Annexure C

Graphical presentation of the data collected for the Production Manager, Plant Engineer, and Engineering Technician groups

- Production Managers

Figure C11.1: Showing the Demographic Profile for the Production Manager Group

Source: Authors own construct (2007).

Figure C11.2: Radar Chart Showing the Responses to the Conflict Management Style Questions for the Production Manager Group

Source: Authors own construct (2007).
Figure C11.3: Bar Chart Showing the Number of Responses to Affective and Substantive Conflict Questions for the Production Manager Group

Source: Authors own construct (2007).

Figure C11.4: Pareto Analysis on the Sources of Conflict for the Production Manager Group

Source: Authors own construct (2007).
Annexure C

Figure C11.5: Pareto Analysis on Conflict Diversity Elements for the Production Manager Group

![Pareto Analysis Chart]

Source: Authors own construct (2007).

Figure C11.6: Bar Chart Showing the Choice of Preferred Structure by Members of the Production Managers Group.

![Bar Chart]

Source: Authors own construct (2007).
Annexure C

- Plant Engineers

**Figure C12.1:** Showing the Demographic Profile for the Plant Engineer Group

![Demographic Profile Chart](image)

Source: Authors own construct (2007).

**Figure C12.2:** Radar Chart Showing the Responses to the Conflict Management Style Questions for the Plant Engineer Group

![Radar Chart](image)

Source: Authors own construct (2007).
Figure C12.3: Bar Chart Showing the Number of Responses to Affective and Substantive Conflict Questions for the Plant Engineer Group

Source: Authors own construct (2007).

Figure C12.4: Pareto Analysis on the Sources of Conflict for the Plant Engineer Group

Source: Authors own construct (2007).
Figure C12.5: Pareto Analysis on Conflict Diversity Elements for the Plant Engineer Group

Source: Authors own construct (2007).

Figure C12.6: Bar Chart Showing the Choice of Preferred Structure by Members of the Plant Engineers Group.

Source: Authors own construct (2007).
• Engineering Technicians

Figure C13.1: Showing the Demographic Profile for the Engineering Technician Group

Source: Authors own construct (2007).

Figure C13.2: Radar Chart Showing the Responses to the Conflict Management Style Questions for Engineering Technician Group

Source: Authors own construct (2007).
Annexure C

Figure C13.3: Bar Chart Showing the Number of Responses to Affective and Substantive Conflict Questions for Engineering Technician Group

![Bar Chart](image)

Source: Authors own construct (2007).

Figure C13.4: Pareto Analysis on the Sources of Conflict for Engineering Technician Group

![Pareto Chart](image)

Source: Authors own construct (2007).
Figure C13.5: Pareto Analysis on Conflict Diversity Elements for Engineering Technician Group

Source: Authors own construct (2007).

Figure C13.6: Bar Chart Showing the Choice of Preferred Structure by Members of the Engineering Technicians Group.

Source: Authors own construct (2007).