The relationship between healthy workplace practices and the maturity of continuous improvement initiatives at a South African food manufacturer

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ABSTRACT

Many companies fail to deliver adequate value from their continuous improvement (CI) initiatives. Both CI initiatives and organisational health and wellness programs aim to deliver significant organisational benefits. This research investigates whether there is a relationship between higher levels of healthy workplace practices (HWP), an outcome of successful organisational health and wellness programs, and the success and maturity of CI initiatives. Through quantitative research the levels of four HWP (healthy lifestyle habits, employee health, employee involvement and work-life balance) were investigated at the three manufacturing facilities of Heinz Foods South Africa (HFSA). The levels of these practices were then compared to the level of maturity for CI initiatives at these facilities, measured by means of a structured self-assessment. The empirical research showed that there was no clear evidence of a relationship between the HWP at HFSA and the maturity of CI initiatives. The research also showed that none of the four individual HWP displayed a significant relationship to any of the ten CI elements measured in the research. The research further showed that as the level of education increased, healthy lifestyle habits deteriorated but employee health improved. Employee involvement was higher for permanent and male employees and work-life balance was negatively correlated to job grade. This study provided insight in terms of where focus should be given when developing health and wellness programs at HFSA. Programs should focus on specific target groups and address specific needs, rather than being broad-based. Although employees are a critical element in the implementation of any CI initiatives, this research seems to suggest that the health and wellness of these employees are probably not the major contributing factor to the success of these initiatives. One limitation of this study was the low levels of CI maturity observed. Further research could consider whether improvements in healthy workplace practices over time will result in improvements in CI maturity.

LIST OF ABBREVIATIONS

CCI	Competitive Capabilities International
CI	Continuous improvement
DMAIC	Define, Measure, Analyse, Improve, Control
FMCG	Fast moving consumer goods
HFSA	Heinz Foods South Africa
HGPS	Heinz global performance system
HWP	Healthy workplace practices
JIT	Just-in-time
LM	Lean manufacturing
OHW	Organisational health and wellness
SADHS	South Africa Demographic and Health Survey
SAMRC	South African Medical Research Council
SME	Small and medium enterprises
SPC	Statistical process control
TPM	Total production management
TPS	Toyota production system
TQM	Total quality management
WHO	World Health Organization
WLB	Work-life balance

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CHAPTER 1

1 NATURE AND SCOPE OF THE STUDY

1.1 INTRODUCTION

The purpose of this study is to investigate the impact of selected healthy workplace practices (HWP) on the success and maturity of continuous improvement (CI) initiatives in an organisational setting. The study was conducted at Heinz Foods South Africa (HFSA), a well-known food manufacturing company in South Africa.

In this chapter the author introduces the concepts of CI, organisational health and wellness (OHW) as well as HWP and broadly discusses how these concepts contribute to increased organisational and financial performance. The problem statement is delivered and the primary and secondary research objectives are defined. Furthermore, the research methodology is described along with the population and the measuring instruments that were used. Finally, the limitations of the study are addressed.

Modern companies are under constant pressure to deliver shareholder value through the efficient use of available company resources in order to produce goods and services at the lowest possible cost. Thereby companies will be able to deliver shareholders a maximum profit, thus adding value to the organisation. Additionally, organisations operate in markets where increasingly more informed customers demand higher quality products and services at the lowest possible cost. Companies must therefore make optimal use of all available resources in order to remain competitive.

“The job and work organisation occupy a central place in the life of most employees and consume more time and energy than almost any other life activity”, therefore “organisations need to identify programs, policies, and practices that help employees thrive” (Grawitch, Ballard, Ledford and Barber, 2009:122). Organisational health promotion, according to Dejoy and Wilson (2003:337), is concerned with the interaction

between organisational and individual factors, and how these factors affects the optimal use of people resources. Most employers strive to establish a workforce that is both psychologically and physically healthy. This is because poor wellbeing of employees tends to cost the organisation in terms of absenteeism, turnover and decreased performance (Kuoppala, Lamminpää and Husman, 2008:1217). The healthy workplace typically includes the following five broad practices: Work-life balance (WLB), employee involvement, employee growth and development, health and safety, as well as employee recognition. Programmes that target these areas have been shown to positively affect organisational effectiveness and employee health and wellbeing (Grawitch *et al*., 2009:124).

Most companies' driving force behind implementing such policies seems to be a reduction in health care costs associated with the successful implementation of such OHW programmes. Low-risk health habits of employees are associated with less expensive health care costs (Kumar, McCalla and Lybeck, 2009:581). The following section covers the basic theory behind CI and explains how OHW and CI complement each other in the pursuit of organisational performance.

CI, according to Jorgensen, Boer and Laugen (2006:328), is the "planned, organised and systematic process of ongoing, incremental and company-wide change of existing practices aimed at improving company performance". CI can be defined in terms of either a noun or a verb. When used as a verb, it refers to the process by which organisational-wide change initiatives consisting of incremental improvements are planned and implemented with existing resources (Jorgensen *et al*., 2006:328). When used as a noun, the term CI refers to the outcome of that process (Bessant, Caffyn and Gallagher, 2001:68). A recent study by Jorgensen *et al.* (2006) showed that CI positively influences speed-, cost- and organisational performance.

CI has its origins in Japan, is commonly referred to as 'kaizen', and is considered to be one of the cornerstones of good management (Jorgenson *et al.,* 2006:328). Standard

practices associated with CI include lean manufacturing (LM), total quality management (TQM), total production management (TPM) and the six sigma methodologies.

HFSA has started a CI program termed the Heinz Global Performance System (HGPS). This program consists of ten elements specifically aimed at increasing performance, especially in the operations and supply chain environments. The ten elements of HGPS can broadly be grouped into the four standard CI practices as shown in Table 1-1 below.

Table 1-1: Continuous improvement as defined by the HGPS program

Continuous Improvement and the HGPS Elements				
	Lean	**TQM**	**TPM**	**Six Sigma**
1. Leading and Managing Change	X	X	X	X
2. Teamwork	X	X	X	
3. 5S		X	X	
4. Visual Management	X		X	
5. Focused Improvement				X
6. Quality	X	X		X
7. Business Centered Maintenance			X	
8. Autonomous Maintenance			X	
9. Set-up Time Reduction	X			
10. Environmental Health and Safety	X			

(Source: CCI, 2012)

For the purpose of the present study, the CI literature is based on the broader elements of CI and not on the specific elements of HGPS. The following section introduces the three theoretical elements of CI covered in the present.

LM was initially developed by Toyota in Japan as the Toyota Production System (TPS). The main purpose of LM is to increase productivity, reduce lead times and costs, and improve quality (Wong, Wong and Ali, 2009:267). Research on the impact of LM on

business performance has showed that LM is positively associated with higher levels of market and financial performance (Yang, Hong and Modi, 2010).

TQM is defined by Jacobs, Chase and Aquilano (2009:308) as “managing the organisation so that it excels on all dimensions of products and services that are important to the customer”. TQM was popularised in the Western world by W. Edwards Deming in his 1986 book “Out of Crises”. From the studies assessed by Rahman (2004:415), it is shown that factors such as leadership commitment, employee empowerment and customer focus, typically associated with TQM, are all positively associated with organisational performance.

Six sigma is a management strategy that, through cultural change and improvement focus, helps organisations to drastically improve their profits by minimising waste and enhancing customer satisfaction in everyday business (Schroeder, Linderman, Liedtke and Choo, 2008:536-537); (Oke, 2007:110). Six sigma can be applied to a wide range of disciplines and scenarios, e.g.: simple process improvements, to initiatives in project management, cultural change, defect definition and problem solving (Naslund, 2008:271).

Studies show that OHW programs and CI initiatives share some of the same organisational outcomes, namely increased performance. Kumar *et al.* (2009:581) found that employees who displayed certain elements of healthy lifestyles were found to be more productive. Secondly, many of the human outcomes of OHW programs are essential inputs to the success of CI initiatives. Research proposes that CI teams, lean production systems and employee ownership (all elements of successful CI programs) only become viable with moderate to high employee involvement (Grawitch *et al.*, 2009:126)

This section provided an introduction to the study of the impact of HWP on the success and maturity of CI initiatives at HFSA. Hereunder follows the detailed problem statement and a definition of the research objectives.

1.2 PROBLEM STATEMENT

Human resources are primarily the holders of a company's intangible assets, made up of knowledge assets and behavioural patterns. These assets are difficult to replicate and contribute greatly to establishing longevity and a competitive advantage in the market (Bressant *et al*., 2001:67). The various methodologies and tools used in CI have been around since being popularised by Deming and Juran in the 1980's, but many organisations still fail in the implementation of CI initiatives. The reasons for these failures can be widespread and are dependent on the individual scenario or company.

Even though it has been known for over ten years that personal attributes such as motivation, inspiration and high energy levels contribute to successful CI implementation, little literature is available on the human aspects of CI (Jorgenson *et al.*, 2007:363-364). The outcomes of a successful OHW program seems to align with some of the human attributes required for the successful implementation of a CI initiative, however companies seem to neglect these human CI issues.

In line with HJ Heinz global, HFSA recently started implementing the HGPS system, a CI program aimed at ensuring long-term competitiveness and world class capabilities for the group. The HGPS program is a re-branded version of the commercial product TRACC™, developed and owned by Competitive Capabilities International (CCI). As the maturity of CI in HFSA and the implementation of this program are still in its infancy, the company could easily follow in the footsteps of many of its predecessors by failing to get significant value from their CI program. The author of the present study, as the newly appointed CI manager at HFSA, is tasked with the rollout of the HGPS system and CI in general, and therefore also has a vested interest in the success of these initiatives.

The present study investigates whether HWP could positively influence the success and maturity of HGPS and other CI initiatives planned at HFSA. Through a better understanding of the link between these two elements, the research hopes to support

the successful implementation of HGPS at HFSA. With the background of the problem statement, the next section introduces the reader to the objectives of the study.

1.3 OBJECTIVES OF THE STUDY

1.3.1 Primary objective

The primary objective of the study is to establish the relationship between the state of HWP and the success and maturity of CI initiatives between the three factories of HFSA.

The research question reads as follows:

Do better HWP have a positive influence on the success and maturity of CI at HFSA?

1.3.2 Secondary objectives

In order to achieve the primary objective, the following secondary objectives were formulated:

Through a literature review:

- define CI and the ten elements of the HGPS program;
- define the elements that make up HWP in general;
- define any potential touch-points between HWP and CI.

Furthermore, through an appropriate research methodology:

- assess the level of healthy workplace practices at HFSA by means of a questionnaire to individual employees;
- determine the success and maturity of CI initiatives on a site specific level through a structured self-assessment against a set of pre-defined CI criteria as defined by the HGPS program;
- Determine whether there is any relationship between the constructs of HWP as independent and CI maturity as dependent variables.

The following section defines the scope of the study in terms of the field of study, business sector and the specific business under investigation.

1.4 SCOPE OF THE STUDY

1.4.1 Field of the study

The field of this study is two-fold, covering both organisational behaviour and operations management. It investigates specific elements to be considered by management when operational improvement initiatives are implemented in an organisational setting.

1.4.2 The business sector and geographical area

The study was conducted in the fast moving consumer goods (FMCG) industry and in particular the 'food and beverage' sector. The food and beverage industry is a part of the larger R 1 508 billion per annum South African manufacturing industry. Of this total figure, food products and beverages contribute 15% or R 225 billion annually (Statistics South Africa, 2008:2). The majority of the income generated in this sector (90.8%) is generated by large enterprises (turnover above R 51 million per annum). According to this criterion HFSA can therefore be classified as a large enterprise.

The food and beverage sector employs around 194 828 people, which is 14.4% of the total manufacturing industry employment (Statistics South Africa, 2008:12). The proportion of male employees is 61.5% for the sector, compared to 67.6% for the entire industry. This in mostly due to the lower impact work required in the food and beverage sector compared to that of other large sectors like 'basic metals, metal products, machinery and equipment' in which male employees constitute 83% of the total workforce. This is important as the study will also highlight any measured differences between the gender groups.

The study was conducted in South Africa, and in particular the Western Cape and Gauteng provinces.

1.4.3 The business under investigation

HFSA is an international joint venture between global food group HJ Heinz and Pioneer Foods in South Africa. HFSA combines powerful international and local brands, including Heinz tomato ketchup; Heinz baked beans and noodles; Wellington's, HP and Lea & Perrins sauces; John West tuna as well as the frozen foods brands Mama's and Today (Pioneer Foods, 2012).

The HFSA head office is situated in Paarl, South Africa. The company owns and operates three production facilities located in Atlantis, Wellington (both Western Cape) and Spartan (Gauteng) respectively. The Atlantis factory produces mainly frozen goods, in particular the Mama's and Today range of products. The Wellington factory produces the majority of the sauces, and also serves as a hub for the imported Heinz sauces, noodles and soups and John West canned products. The Spartan facility also produces frozen products (Heinz, 2012). At the time of conducting this study (August 2012), the company employed 313 permanent staff members, and on average around 186 contract workers.

This section discussed the scope of the study as well as the company and industry in which the research will take place. The following section introduces the research methodology that was followed.

1.5 RESEARCH METHODOLOGY

1.5.1 Research approach

Before deciding upon a research approach, the researcher must first define which type of research approach is most appropriate to the specific objectives of the study. The two main approaches used in scientific research is the quantitative (positivist) and the qualitative (anti-positivist) approaches (Welman, Kruger and Mitchell, 2005:6). Both of these approaches are described below.

The quantitative approach holds that “research must be limited to what we can observe and measure objectively, that which exists independently of the feelings and opinions of individuals” (Wellman *et al*., 2005:6). The qualitative research approach on the other hand, is based on the subjective experience of human behaviour. The quantitative approach looks at general laws of human behaviour, whereas the qualitative approach aims to understand the behaviour. The most notable difference is that qualitative research deals with subjective data whilst quantitative research deals with objective data. In qualitative research the researcher tries to understand the subject’s point of view through unstructured interviews, whereas quantitative research tries to infer the respondents’ point of view through empirical methods. Lastly, in qualitative research validity is more important as objectivity must be proven, whereas reliability is more important in quantitative research.

Table 1-2 below, based on Welman *et al.* (2005:8-9), summarises the main differences between the two approaches.

Table 1-2: Qualitative vs. Quantitative Research

Qualitative vs. Quantitative Research		
	Qualitative	**Quantitative**
Type of Data	Subjective data	Objective data
Purpose	Deals with daily events and behaviour of people Try to understand the subject's point of view by means of unstructured interviewing and detailed observation	Deals with abstraction of reality Try to understand the subjects point of view through the use of remote, empirical and inferential methods
Research process	Work with dynamic and changeable nature of reality	Stable and not easily subject to change Focus on causal aspects of behaviour
Approach	Holistic Collection of a wide array of data	Particularistic Control investigation and structure of research in order to identify and isolate variables
Reliability and Validity	Validity considered more important because the objectivity of the study must be represented	Reliability considered more important as the consistency, stability and replicability must be proven

(Source: Wellman, *et al.,* 2005:8-9)

This study is about establishing a relationship or correlation between a particular set of variables and is based on a fixed population of individuals. As the researcher has already identified the variables in question, a quantitative research approach seems more appropriate and is therefore used. To better understand the importance of reliability and validity of the research and the findings, the two concepts are briefly discussed below.

1.5.1.1 Reliability and validity

According to Wellman *et al.* (2005:107), the internal validity of a study establishes to what extent a change in the dependent variable are due to changes in the independent

variable and not some other factors. External validity plays a role in research design, and factors such as population validity and ecological validity must also be considered. The major threats to internal and external validity, as well as the proposed mitigating measures used in this research study are shown in Table 1-3 below.

Table 1-3: Controlling threats to validity

Controlling threats to validity

	Threat	Threat Level	Mitigation for Research Study
Internal Validity	History	Medium	Conduct test at similar times with groups of similar sizes. Ensure that a similar environment is established for all test subjects.
	Maturation	Low	Not likely to affect validity due to length of study.
	Testing	Low	Not likely to affect validity as questionnaire will be administered only once
	Statistical Regression	Low	Outliers will be excluded from the study
	Instrumentation	Low	Not likely to affect validity as questionnaire will be administered only once
	Selection	Medium	A high response rate will ensure that the study population is adequately represented
	Experimenter Bias	Medium	The author will ensure that the findings are also validated by an independent third party
	Mortality	Low	Not likely to affect validity as questionnaire will be administered only once
External Validity	Demand characteristics	High	Ensure that anticipated results are kept hidden from the participants
	Hawthorne effects	Low	Not likely to impact external validity
	Order effects	Medium	Questionaires about different topics will be administered in random order
	Treatment interaction effects	Low	Not likely to impact external validity

(Source: Allpsych.com, 2011)

Reliability on the other hand tests the credibility of the research findings and whether the scores may be generalised (Wellman *et al.*, 2005:145). Anyone else repeating the research should obtain the same results. The questionnaire was administered to a test population beforehand in order to detect flaws in the measuring procedures and identify unclear or ambiguous items (Wellman *et al.*, 2005:148). Additionally, the Cronbach's alpha coefficient test for reliability was used to verify that the data obtained study is indeed reliable. A Cronbach's alpha coefficient of more than 0.70 is deemed reliable (Santos, 1999).

1.5.2 Literature review

In conducting the literature review, various publications were consulted. These publications included textbooks on operations management and organisational behaviour; research studies in the fields of OHW and CI; as well as journals such as the *International Journal of Productivity and Performance Management, Technovation* and *Consulting Psychology: Practice and Research.* Particular focus was given to publications by experts in the study fields, among others Bressant *et al.* (2001), Grawitch *et al.* (2009) and Jorgensen *et al.* (2006). Care was taken to, where possible, use the most recently published studies to ensure relevance. An objective viewpoint was established by ensuring that when contrasting viewpoints were observed in the literature, both were considered. In-house literature from HFSA was also consulted.

1.5.3 Empirical research

The following topics are included as part of the empirical research:

- the background and theory of CI in general, as well as the elements of CI as defined in the HGPS framework;
- general theory and applications pertaining to OHW programmes and HWP;
- the expected outcomes (personal, organisational and financial) of successful OHW programmes and HWP;

- the expected organisational and financial outcomes and benefits of successful CI initiatives; and
- the required organisational inputs, particularly related to personnel, for successful CI programs.

The aim of the empirical research design described in this section is to plan beforehand how research participants are obtained and how information is collected for the purpose of the research (Wellman *et al*., 2005:52).

The descriptive nature of the study makes a questionnaire more appropriate in measuring the following elements:

- the respondent's demographic information, level of health and wellness and his/her lifestyle habits;
- the level to which the respondent exhibits the required HWP associated with successful OHW programs.

The level and maturity of the organisations CI initiatives was measured by direct observation by means of a pre-defined self-assessment checklist. The checklist measures the extent to which each of the ten HGPS elements have been implemented. The checklist was administered by the author in order to eliminate any bias.

1.5.3.1 Construction of the questionnaire

The following four specific HWP was included in the study: healthy lifestyle habits, employee health, employee involvement and WLB. A questionnaire was developed to evaluate the respondents' healthy lifestyle habits based on smoking habits, alcohol consumption, regular exercise and healthy eating habits.

A shortened version of the SF-36 Health Survey questionnaire, a "multi-purpose, short-form health survey" and a generic measure of the respondents' physical and mental health status (Ware and Gandek, 1998:903) was used to measure employee health. The SF-36 instrument has been used extensively, both locally and internationally, as

shown in the studies by Van Rensburg, Kulich, Carlsson and Wiklund (2006); Wouter, Heunis, Van Rensburg and Meulemans (2009); Hoffman and Dukes (2008) and Birtanem, Uzunca, Nurettin and Tuna (2007). Validity scores for the SF-36 scales have been found to be above 0.80 (Ware and Gandek, 1998:906-907).

Employee involvement was measured by means of the job involvement measuring instrument developed by Lodahl and Kejner (1965). This instrument is a 20 item scale measured by means of a five-point Likert scale. WLB was measured by means of a ten-item instrument as used by Dex and Bond (2005). This instrument consists of ten statements regarding WLB measured on a five-point Likert scale.

The checklist for the maturity of the CI initiatives was adapted from the standard HGPS self-assessment used to evaluate a specific site or factory's current level of maturity of the ten HGPS elements. This is standard practice in the implementation of the HGPS program.

1.5.3.2 The study population

The target population for the study was all the employees at the three HFSA manufacturing sites: Atlantis, Wellington and Spartan, as well as all management personnel at the HFSA head office in Paarl. Contract workers were also included in the study population as many contract workers have worked for the company for extended periods of time. Contract workers were asked to indicate the length of their involvement with HFSA.

The payroll department was asked to supply a list of all current permanently employed personnel. The total number of permanent employees at the time of the study was 313, with approximately 186 contract employees. The distributions of employees across the four locations are shown in Table 1-4 below.

Table 1-4: HFSA Employee Distribution

HFSA Employment Distribution			
	Permanent	Contract FTE	TOTAL
Paarl Office	26	0	26
Atlantis	163	136	299
Wellington	88	24	112
Spartan	36	26	62
TOTAL	313	186	499

1.5.3.3 Data gathering

Data was gathered by distributing questionnaires as either hard copies or by means of electronic questionnaires. The assistant factory managers at each facility assisted in the distribution and collection of questionnaires from factory-related personnel or those who do not have access to a computer. Prior to the distribution of the questionnaires, the reason for the study was explained to employees, assuring them of the confidentiality of the information. To ensure external validity, care was taken not to communicate the expected outcome of the study to the respondents.

1.5.3.4 Statistical analyses

The data collected was statistically analysed using the statistical software packages Statistica (Statsoft, 2012) as well as the PH-Stat add-in for MS-Excel (Pearson Higher Education, 2012). Descriptive statistics was done on demographics, location, age and other units of measure. Furthermore, the relationships between the HWP and the ten CI elements were determined by means of regression analysis. The validity of the questionnaire was assessed by calculating Cronbach's alpha coefficient for each of the HWP constructs. After introducing the research methodology in the preceding section, the next section briefly discusses the expected limitations during the study.

1.6 LIMITATIONS OF THE STUDY

The first expected limitation of the study is that it was only done on the employees of HFSA and can therefore not be taken to be representative of the manufacturing, FMCG or the food and beverage industry as a whole. However, the study methodology was designed so that the study could be replicated at other organisations.

Secondly, as the study was conducted across cultural groups, certain cultural elements may have influenced the result of the study. The author took cognisance of this fact during the statistical analysis and interpretation of the results by applying regression to identify any correlation.

Thirdly, due to time limitations and the fact that this study was only on the level of a mini-dissertation, not all of the HWP identified were included in the research.

Finally, as the HGPS programme is not rolled out to all factories in parallel, the amount of exposure of each site to the elements of HGPS may differ. Therefore, the effect of this was quantified by means of adding the level of previous exposure to HGPS as a nuisance variable.

1.7 LAYOUT OF THE STUDY

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

Chapter 1: Nature and scope of the study
Chapter 2: Literature study
Chapter 3: Data, research methods and techniques
Chapter 4: Data analysis, interpretation and results.

1.8 CONCLUSION

In this chapter the author introduced the concepts of CI, OHW programs and HWP. The effects of each of these concepts in contributing to increased organisational and financial performance were briefly discussed. The problem statement was delivered and the primary and secondary research objectives were defined. Furthermore the research methodology was described along with the proposed study population and the measuring instruments to be used. Lastly, the limitations of the study were discussed.

The next chapter consists of a full literature review of the concepts that was covered in the present study.

CHAPTER 2

2 LITERATURE STUDY

2.1 INTRODUCTION

Human resources are primarily the holders of a company's intangible assets, made up of knowledge assets and behavioural patterns. These assets are difficult to replicate and contribute greatly to establishing longevity and a competitive advantage in the market (Bressant *et al*. 2001:67). Recently, employers have started to realise the positive impact that HWP can have on measures like organisational effectiveness (Grawitch, *et al*., 2009:124). Because of this realisation, OHW programs are being implemented by more organisations as part of their employee assistance programs (Lategan, Lourens and Lombard, 2011:489).

According to Thompson, Peteraf, Gamble and Strickland (2012:418), CI is an incremental process, focusing on small gains in a "never-ending stream" of actions focused on improved productivity, product quality, customer satisfaction and reduced costs. Achieving operational excellence is essential in ensuring long-term sustainability in the marketplace.

This chapter consists of a literature review of the major concepts and theory associated with the present study. The first section deals with the concept of OHW. Research into the effect of successful OHW programs on certain HWP, and how these practices predict or impact organisational and financial performance will be discussed. The second section presents a discussion of the popular CI initiatives: TQM, six sigma and LM and the research that provides evidence of the effect of these initiatives on organisational and financial performance.

This chapter – based on the evidence presented in the literature review - proposes a model that is used as baseline for the present study into the relationship between HWP and the success and maturity of CI initiatives.

2.2 ORGANISATIONAL HEALTH AND WELLNESS (OHW) PROGRAMS

This section defines the broader concept of what OHW is as well as the concept of OHW programs. This forms the basis of further discussion into the effects of successful OHW programs on employees and the organisation.

Organisational health promotion has, over the last 35 years, grown rapidly as a field of study and practice. Where less than 10% of organisations in the United States offered health promotion programs in the early 1980's, the number grew to over 90% by the late 1990's. This growth has also driven a vast array of academic studies into the subject as well as many degree programs in the field. Although physical exercise is still the dominant element, programs now also focus on addressing nutrition, stress management and smoking control. In the 21st century the focus has moved to evaluating the impact these programs could have on the organisation in terms of both costs and benefits (O'Donnell, 2001:xiv-xv).

Globally HJ Heinz offers a wide variety of programs focusing on enhancing the health of its 35000 employees. These programs and initiatives vary from country to country and include promoting physical activity, emphasising the benefits of healthy eating habits, providing education on personal health and doing personal health checks at work (Heinz, 2012).

Organisational wellness does not only refer to the safety and physical wellbeing of the employee at work, but also extend further to include quality of life, psychological and social aspect at the workplace and beyond (Kuoppala *et al.*, 2008:1216). Literature presents a broad range of definitions for OHW. Grawitch *et al*., (2009:122) best describes the higher purpose behind OHW programs by saying: "the job and work

organisation occupy a central place in the life of most employees and consume more time and energy than almost any other life activity - organisations need to identify programmes, policies, and practices that help employees thrive". Possibly the best way to define what constitutes an OHW program is to look at it from both the organisational and employee perspective. The job wellbeing pyramid (Kuoppala *et al.*, 2008:1217), shown in Figure 2-1, is a hierarchical model of the working environment and its relationship with employee health. The pyramid's three sides, seen as interdependent entities, are Job and Work Environment, Work Ability and Action.

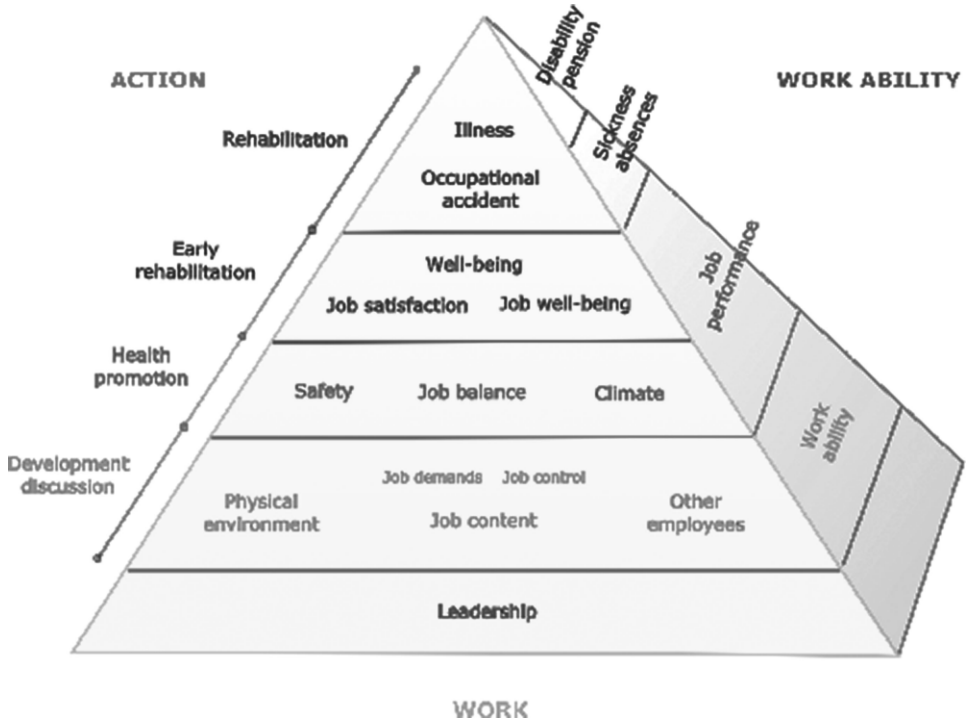


Figure 2-1: Job wellbeing pyramid

(Source: Kuoppala *et al.*, 2008:1217)

In the job wellbeing pyramid, the factors in the 'work' section of the pyramid influence other factors in the 'work ability' and 'action' sections of the pyramid in a bottom-up way. For instance, a lack of leadership at the foundation will require more focus on the second tier of 'work' elements like job control and content. This in turn will reduce 'work

ability' and require 'development discussion' as the appropriate action to rectify. Therefore, preventing and treating minor work-related problems at the lowest level can prevent major organisational problems and action in the upper levels. From this model it is clear that development, discussion and health promotion influences job wellbeing, safety and the physical environment, which should have a positive effect on job performance.

Studies considering the concept of a healthy workplace have identified a majority of factors that distinguish a 'healthy' workplace from an 'unhealthy' one. A meta-analysis of these studies by Dejoy and Wilson (2003:338) concluded that five core themes emerged from these studies:

1. Most evidence of a healthy workplace appears when considering work life, defined by job-design, organisational climate and job future.
2. The culture and leadership resources that enable and drive the success and sustainability of a healthy workplace.
3. People's perceptions of the organisation's qualities are as important as the actual qualities.
4. Creating a healthy workplace requires altering of the employer-employee relationships in terms of opportunities for information exchange and employee engagement.
5. The major outcome of a healthy workplace is organisational effectiveness.

Organisations choose to implement OHW programs in different ways. According to O'Donnell (1986:5) there are three types of wellness programs:

1. Wellness educational programs focusing on making employees aware of personal health and the consequences of an unhealthy lifestyle;
2. Wellness programs that offer employees the opportunities to alter their unhealthy lifestyles;

3. Wellness programmes designed to assist employees to maintain a healthy lifestyle at the work site.

Parks and Steelman (2008:58) mirrors this sentiment, categorising wellness programs as either being comprehensive programs focusing on fitness and education or as education-only programs.

A business drivers behind the implementation of OHW program are the reduction of health care costs associated with the successful implementation of such programs. Low-risk health habits of employees are associated with less expensive health care costs than employees with high-risk habits (Kumar, Kumar, De Grosbois and Choisne, 2009:581).

In the following sections the research into the effect of each of these HWP on organisational performance is discussed.

2.2.1 Healthy Workplace Practices (HWP)

Grawitch *et al.* (2006:136) defined five HWP and used the PATH model to reflect on the positive effect of each of the practices on both employee wellbeing and organisational improvement. The five HWP are: WLB, employee growth and development, health and safety, recognition and employee involvement. However, due to the limitations mentioned in Chapter 1, only WLB, employee involvement and employee health are included in the scope of the present study.

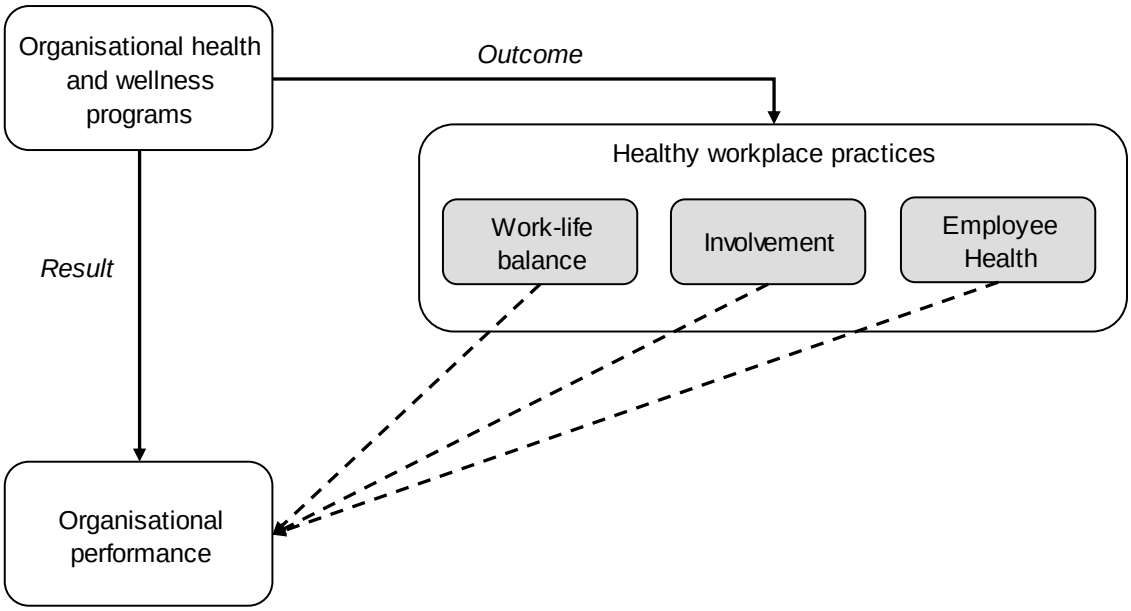


Figure 2-2: Framework for HWP literature review

Figure 2-2 above illustrates the framework for the literature review into the three HWP as outcomes of successful OHW programs. From the preceding section it is clear that OHW programs as a whole result in improved organisational effectiveness. The following section is a literature review into the three HWP and investigates whether there is any evidence from previous research that each of these elements individually influence organisational effectiveness and performance.

2.2.1.1 Work-life balance (WLB)

Awareness around the competing demands of work and home responsibility has increased over the past few years. This is mainly due to factors such as a rising number of women in the workforce, an ageing population, longer work hours and technological advances ensuring almost full-time contact with the workplace (Beauregard and Henry, 2009:9). Companies are being forced to adapt their views and shift from the traditional assumptions based on the male as primary provider in a one-earner family. WLB can successfully be managed when it is realised that employees also have personal responsibilities outside of the working environment.

In studies conducted in Europe, the number of men and women in the workplace are nearly equal, with between 42% and 79% of households consisting of dual income earners (Poelmans and Sahibzada, 2004:410). In South Africa this ratio skewed towards male dominance, with 55% male employees in the workplace. This ratio is further skewed when considering employees in managerial positions, where only 32% of employees are female (Department of Labour, 2011:16). Even though the ratio of women in managerial positions in the workplace is still low, this ratio has been increasing over the past years (as shown in Table 2-1). This trend is important for South African companies, as the number of women in the workplace could be seen as a precedent for the requirement for more flexible working conditions and the importance of ensuring policies are in place to support WLB.

Table 2-1: South African Labour Market - Women in the Workplace

South African Labour Market - Women in the workplace			
	1995	**2005**	**2011**
Male	60.9%	57.4%	55.5%
Female	39.1%	42.6%	44.5%

(Source: Department of Labour, 2011:16)

WLB practices vary, but according to Beauregard and Henry (2009:9) include “flexible working hours, a compressed work-week, work from home, job-sharing, family leave programs and onsite childcare” or childcare assistance. Employers voluntarily introduce these types of initiatives in order to “facilitate the reconciliation of employees' work and personal lives” (McCarthy, Darcy and Grady, 2010:159). In a recent study, WLB was ranked as one of the mayor challenges facing human resource management (McCarthy *et al.*, 2010:159).

Despite the strides made on respecting the challenges faced by employees in balancing work and family life, in many instances the relationship is still seen as parasitic. From the

home perspective, work (parasite) consumes the energy of the host (employee) leaving little energy to maintain family vitality. Of course, the perception that the reverse is also true is there as well (Werbel and Walter, 2002: 295).

WLB practices have been shown to have a positive effect on organisational performance. Benefits on an organisational level are mostly associated with cost-saving due to lower overheads, longer working hours and increased productivity. In a study of medium-sized companies in the US, 82% of these companies regarded their flexible work arrangements as being at least cost-neutral. Most claimed a positive return on investment (Beauregard and Henry, 2009:18). Moreover, other workplace issues such as turnover, job satisfaction, stress and productivity have been shown to be impacted by WLB practices (McCarthy *et al.*, 2010:159).

However, despite the proven benefits of WLB practices, the consistent occurrence of these practices are surprisingly low (Dulebohn, Molloy, Pichler and Muray, 2009:97). Many reasons are given for this, but one of the main ones listed is the fear of negatively impacting future career aspirations – especially for women. Poelmans and Sahibzada (2004:413) identified factors that contribute to firms' reluctance to implement work-family (or WLB) policies. Some of these factors are listed below:

1. Concerns for the bottom line;
2. Incompatibility with the current business model;
3. Too many points of view regarding the subject;
4. Supervisor and co-worker resistance; and
5. Implementation problems.

The preceding section discussed the elements, advantages and effects of WLB practices on the employee as well as the effect of these practices on the organisation. Employee involvement, the second health workplace practice, is discussed in the following section.

2.2.1.2 Employee involvement

In the literature the words ‘employee engagement’ and ‘involvement’ are often used as synonyms. Hallberg and Schaufeli (2006:119) investigated and showed that on an empirical level there are differences between the concepts of work engagement and job involvement. However, a meta-analysis by Brown (1996:237) showed that job involvement also has a significant impact on turnover intention and organisational commitment. Therefore, based on this overlap of outcomes, engagement and involvement are considered synonyms when discussed in the context of a healthy workplace practice in the present study.

Recently, research in workplace psychology has shifted to what is referred to as ‘positive psychology’. Work involvement is essentially an “affective-motivational state of work-related wellbeing” (Bakker, Schaufeli, Leiter and Taris, 2008:188). Involvement has attracted more academic attention over recent years, particularly with the shift in industrial psychology focus from employee “weaknesses” to “happiness, human strengths and optimal functioning” (Rothmann and Rothmann, 2010:1). Nortje (2010:18) defines engagement as “the extent to which employees commit to something or someone in the organisation, how hard they work as a result of this commitment and how long they intend to stay with the organisation”. Because engaged employees can identify with their work, they are known to put much effort into it (Rothmann and Rothmann, 2010:2).

Rothman and Rothman’s (2010:10) study on the elements affecting engagement in a South African context, based on the work engagement model of Schaufeli and Bakker (2004), showed job resource and growth opportunity to have a strong effect on employee engagement. Additionally, the study showed that when employees see their jobs as a way of expressing themselves, it creates a sense of meaning which in turn is a positive predictor of engagement.

The positive influence of high employee involvement on the organisation has been well researched in recent times. Figure 2-3 below graphically depicts the effect of

involvement of the various personal and organisational outcomes, based on the literature review. Involvement predicts both 'hard' organisational outcomes such as profitability and productivity, as well as 'softer' organisational outcomes such as a reduction in employee burnout, reduced staff turnover and higher commitment and dedication. As can be expected, the links to the employee outcomes are stronger than is the case for the organisational results. This is probably due to the fact that there will be a lot of other factors at play when considering metrics, such as profitability, and the effect of involvement might be smaller in comparison.

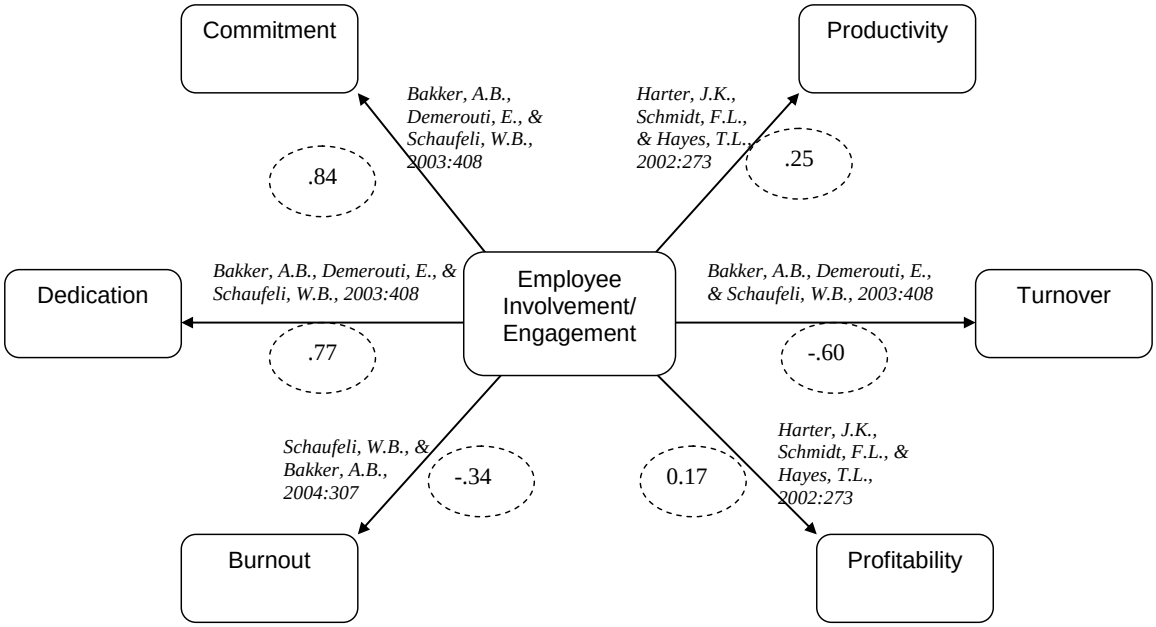


Figure 2-3: Organisational outcomes of employee engagement

(Source: Various as listed in figure)

More involved employees not only help provide the organisation with a competitive advantage, but these employees also show higher level of resources available to them (Bakker *et al.*, 2008:196). It could be conceived that these employees play a part in developing these resources for themselves.

This section of the literature review discussed theory behind the concept of employee involvement. Because CI teams and lean production systems only become viable once a moderate level of employee involvement is reached (Grawitch *et al.*, 2009:126), it is considered an important driving factor in the successful implementation of CI programs. The following section discusses the third healthy workplace practice: employee health.

2.2.1.3 Employee Health

Health and safety in an organisational context traditionally developed from the need for the organisation to identify, manage and control risks associated with the individual employee and his interaction with the workplace (Dejoy and Wilson, 2003:338). The present study does not focus on the safety aspect, usually incorporated into an organisations operational risk management program, but rather on the effect of low levels of individual health and unhealthy lifestyles and its impact on the organisation.

Even though the human body is designed to do physical work, our workplaces are becoming more sedentary in nature (Pronk and Kottke, 2009:316). Research has shown that health habits associated with a generally more sedentary lifestyle and increased levels of obesity results in rising health-care costs due to rising incidents of diseases and an increase in work-related injuries (Gebhardt and Crump, 1990:262). The positive impacts of employees' healthy lifestyles are well-documented, mostly through the knock-on effects of improved employee health in terms of reduced health care costs, lower employee turn-over and absenteeism, as well as improved job performance and morale (Gebhardt and Crump, 1990:262; Pronk and Kottke, 2009:320).

In the South African context, the benefit of a healthy workforce takes on an even more important role in the organisational sphere. The South African general public is notoriously unhealthy. Much of this could probably be attributed to a lack of knowledge regarding health matters as well as the high prevalence of poverty. The South African Medical Research Council (MRC) completed the South Africa Demographic and Health Survey (SADHS) in 2003, detailing the overall state of the country's citizen's health. Of

particular significance to the present study is the section on 'Adult Health Risk Profiles' (SAMRC, 2008:258-297). Table 2-2 below summarises some of the key findings of the SADHS. The statistics refer only to the adult working population between the ages of 25 and 65 years.

Table 2-2: South Africa - Physical Health Statistics

South African Physical Health Statistics

	Measure	Men	Women
Smoking	Smoke daily	31.0%	5.8%
Dietary Intake	Poor dietary intake	20.0%	21.2%
Alcohol Dependence	Alcohol intake classified as hazardous or harmfull	Between 22.5% and 25.4%	
Physical Activity	Sufficently active	13.7%	12.2%
Anthropometric Measurements	Average Weight	65.8	67.9
	Average Body Mass Index (BMI)	23	27
	% Outside normal BMI	42.3%	61.1%

(Source: SAMRC, 2008:258-297)

These figures are quite disturbing, indicating high levels of harmful alcohol intake, insufficient levels of activity and bodyweight outside normal limits. This is even more problematic when compared with some additional statistics published by the World Health Organization (WHO, 2008). The current average life expectancy at birth in South Africa is only 51.0 years. This means that the average South African workforce will have to be replaced 14 years before the official retirement age of 65 – a reduction of almost 30% in the adult working life of 47 years (18 to 65). Additionally, South Africa has only 2 community health workers per 10 000 people and the government only spends around 42%, as a percentage of the total per capita spent, on health care (WHO, 2008). This means that a substantial portion of the county's health care burden falls on the private sector, either directly or indirectly.

Another unique problem in South Africa is the prevalence of HIV and AIDS. The effect of the pandemic on the South African workforce is well-documented and although not directly included in the present study, it is certainly relevant not only to the study but also to society as a whole. It is therefore critical that South African companies take an interest in the psychological and physical wellbeing of their employees.

The preceding section discussed the theory behind OHW programs as well as the three elements of a healthy workplace forming part of this study, namely: WLB, employee involvement and employee health. It showed that OWH programs, through the establishment of HWP contribute not only to improved employee related measures (improved productivity and lower turnover intention) but also to improved organisational measures (reduced costs and increased profits). In the following section the concept of CI, its inputs and organisational outcomes are discussed.

2.3 CONTINUOUS IMPROVEMENT

This section introduces the reader to the theory and concepts related to CI. It discusses the most popular CI concepts such as six sigma, LM and TQM as well as the link between each of these concepts, employee outcomes and organisational performance.

The term ‘continuous improvement’ seems to provide some ambiguity as to its interpretation in practice. When used as a verb, it refers to the process by which organisational-wide change initiatives consisting of incremental improvements are planned and implemented with existing resources (Jorgensen *et al*., 2006:328). When used as a noun, the term CI refers to the outcome of that process (Bressant *et al.* 2001:68). In the present study, when referring to CI, it will refer to the process rather than the outcome. A recent study by Jorgensen *et al.* (2006) showed that CI positively influences speed, cost and organisational performance.

In the challenging market conditions facing organisations today, a multitude of factors are driving companies to improve themselves in an effort to achieve a competitive advantage over their competition. These factors include increased competition due to globalisation, the speed of technological advances, demanding shareholder expectations as well as changing customer demands and consumer preferences. In this context, the "objective of improvement strategies is to do business better, faster, and cheaper" (Tersine, 2004:15).

CI has its roots in industrial engineering and is considered to be one of the cornerstones of good management (Jorgensen *et al.,* 2006:328). Improvement is categorised as being either incremental change or innovative step changes. These two are seen as complementary routes to achieving progress or improvement (Bond, 1999:1320). The model below graphically depicts the difference between the two concepts.

The incremental change component of the model below is more-often associated with the strict definition of CI, with innovative step change being associated with activities such as business process re-engineering. The three CI concepts discussed in this literature review all focus on incremental organisational improvements.

The study by Ni and Sum (2009:1047) reported that CI had a significant influence on organisational performance measures such as "productivity, delivery reliability, cost, lead time and production volume". Their research showed that CI positively influences organisational learning which in turn helps to enhance CI, thereby improving performance.

To substantiate the proposed link between OHW programs and CI initiatives, reference is drawn to the proposed continuum along which employee involvement moves, as proposed by Grawitch *et al.* (2009:126). The continuum, as shown below in Figure 2-5, proposes that CI teams, lean production systems and employee ownership (all elements of successful CI programs) only become viable between moderate to high employee involvement, already identified as one of the HWP.

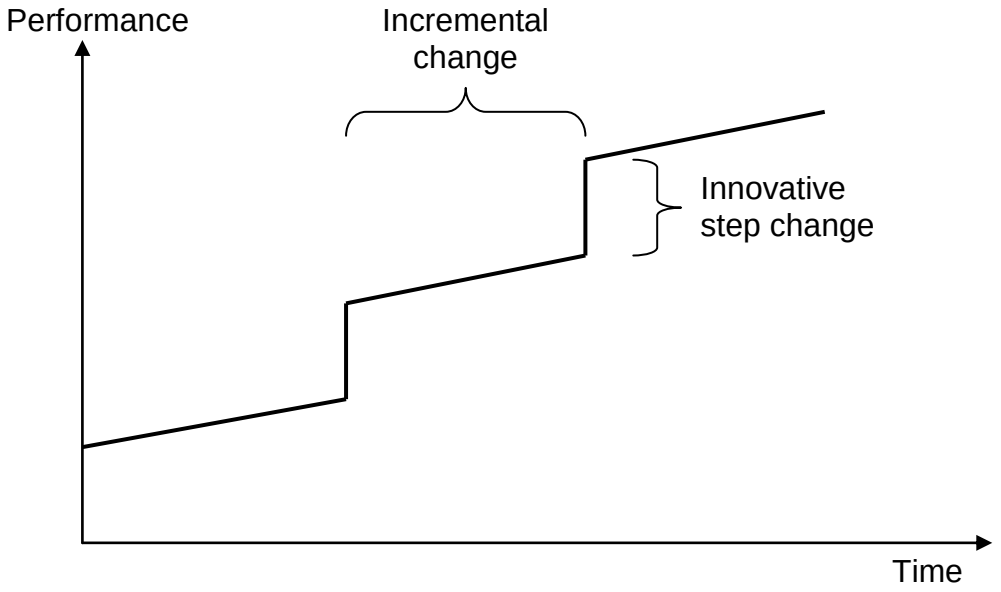


Figure 2-4: Incremental change vs. innovative step change

(Source: Bond, 1999:1320)

Employee Involvement Continuum

Low Involvement	Management Driven Initiative
	Open Door Policies Suggestion Forums Employee Surveys
Moderate Involvement	Participative Management
	Joint Employee-Management Committees Employee Committees/Task Forces Continuous Improvement Teams Lean Production Systems
High Involvement	High Involvement Systems Self-Managed Work Teams Employee Ownership

Figure 2-5: Employee involvement continuum

(Source: Grawitch, *et al*., 2009:126)

Although many tools and approaches are associated with CI, only three of the most popular are discussed as part of the literature review of CI. They are:

- LM;
- TQM; and
- Six sigma methodologies.

The literature relating to each of these approaches, their link to OHW as well as their impact of organisational performance are briefly discussed in the subsequent sections.

2.3.1 Lean Manufacturing (LM)

2.3.1.1 Background literature and concepts

LM is a methodology where a focus is put on the elimination of waste in resources, processes and inventory, ensuring that each element in the value chain is actively adding value to the product or service (Jacobs *et al.*, 2009:404; Foss, Stubbs and Jones, 2011:1599). LM is defined by Furlan, Vinelli and Dal Pont (2011:836) as "an integrated set of socio-technical practices", highlighting the common theme seen in CI literature: the human aspects of any CI initiative is paramount to its success.

Originally developed as the TPS and later re-labelled in the mainstream as LM, it has the main purpose of increasing productivity, reducing lead times and costs, and improving quality (Wong *et al.*, 2009:267). LM encompasses an array of management practices and is most frequently associated with eliminating the seven important wastes:

1. Overproduction
2. Waiting
3. Unnecessary transport or conveyance
4. Over-processing or incorrect processing
5. Excess inventory
6. Unnecessary movements
7. Defects

Various authors have defined and grouped LM principles and methods. One of the most well-known methods used in LM is that of Just-in-Time (JIT). JIT is “an inventory strategy companies employ to increase efficiency and decrease waste by receiving goods only as they are needed in the production process, thereby reducing inventory costs” (Investopedia, 2011). JIT is extensively used in automotive manufacturing, where car makers aim to operate with very low inventory levels. The entire supply chain is designed in such a way that parts from suppliers arrive only as and when they are needed. This is a major shift away from old strategies where components were kept in stock and on site ‘just-in-case’ they were needed. Pieterse (2006:48) likens JIT to having to regularly feed a large dragon with a very small teaspoon.

Lean principles have been extended to areas of business other than manufacturing, with world-class companies aiming to become lean enterprises (James-Moore and Gibbons, 1997:899).

2.3.1.2 Lean manufacturing and OHW

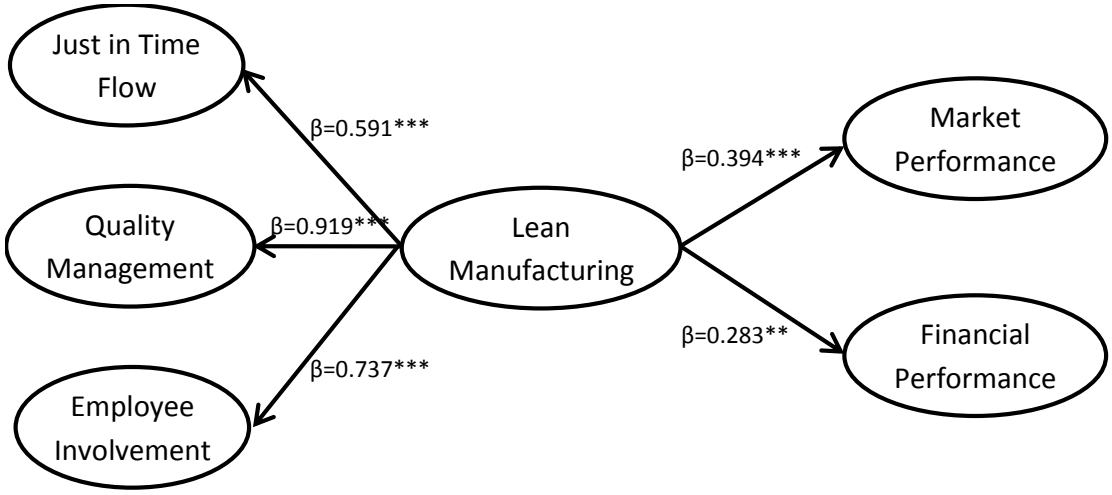
One of the critical components of TPS, the forerunner of LM, is a philosophy of respect for people and the environment. This philosophy sees employee involvement as critical to the success of CI at Toyota (Toyota, 2012). When considering the literature about the link between LM and human resource management (HRM) practices, it can almost be seen in light of the proverbial ‘chicken and egg’ argument. According to Furlan *et al.* (2011:846), investing in HRM practices is a prerequisite for the successful implementation of lean practices. On the other side of the argument, it has been found that “world-class plants displayed high commitment human resource management practices” (Oliver, Delbridge, Jones and Lowe, 1994:S59) and that through the elimination of waste and wasteful activities, LM has contributed to creating a safer work environment for the employees at the manufacturing concern in question (Nikolou-Walker and Lavery, 2012:454). As has previously been stated, ‘health and safety’ is one

of the five HWP that drive successful OHW programs, a key element of the broader practice of HRM.

2.3.1.3 Lean and organisational performance

Implementation of lean practices is often linked to improvements in labour productivity, quality, reduced lead times and lower manufacturing costs (Shah and Ward, 2003:133). Hallgren and Olhager (2009) conducted a study on the effect of LM on organisational performance. They found a significant positive relationship between LM and quality conformance, delivery speed, delivery dependability, cost and volume flexibility. Shah and Ward (2003:146) also proved that the implementation of lean practices is associated with better manufacturing performance.

In a study conducted by Yang, Hong and Modi (2010), the impact of LM on business performance was investigated. They postulated that business performance can be measured on two dimensions, market performance and financial performance, with the view that an organisation's responsibility towards their shareholders is that of profit maximisation. Their study measured the effect of LM practices on these two performance measures, as indicated by the adapted structural model below (Figure 2-6). From the correlation coefficients shown, there is some indication of a positive relationship between LM and market and financial performance.



*p < 0.1, ** p < 0.05, ***p < 0.01.

Figure 2-6: Structural model of LM's effect on business performance

(Source: Yang *et al*., 2011:256)

This section introduced the literature concerning LM, a CI practice focusing on the elimination of waste in the value chain. It was shown than LM both requires and has a positive effect on HRM practices and that it contributes positively to a number of organisational performance measures. The next session discusses the CI practice of TQM.

2.3.2 Total Quality Management (TQM)

2.3.2.1 Background literature & concepts

TQM is defined by Jacobs *et al*. (2009:308) as "managing the organisation so that it excels on all dimensions of products and services that are important to the customer". Rahman (2004:411) defines TQM as "a management approach for improving organisational performance that encompasses a variety of topics both technical and behavioural". TQM is an integrated business system and management philosophy, including all departments and functions of the organisation from grassroots to executive

level. In addition, it extends horizontally through the entire supply chain from customers to suppliers (Chung, Tien, Hsieh and Tsai, 2008:368).

W. Edwards Deming is mainly credited with popularising the TQM movement in the United States. In his 1986 book *Out of Crises*, Deming developed "The Deming Management Method". This 14-point framework, together with the work done by Juran and Crosby, provided the foundation for what we know as TQM (Jacobs *et al.*, 2009:309). The 14 points are summarised in Table 2-5 below:

Table 2-3: 14 Point Deming Management Model

14 point Deming Management Model	
Point 1	Constancy of purpose toward improvement with the aim to become competitive, stay in buisness and create jobs
Point 2	Adopt a new philosophy, with management accepting their responsibility as the leaders of change
Point 3	Build quality into the product thus eliminating the need for mass inspection.
Point 4	Establish long-term relationships with suppliers based on loyalty and trust
Point 5	Constant improvement to improve quality, productivity and decrease costs
Point 6	Institute training on the job
Point 7	Institute leadership on all levels
Point 8	Drive out fear, so that everyone works effectively
Point 9	Break down the departmental barriers and collaborate between departments
Point 10	Eliminate slogans and targets that ask for results that lie outside the power of the workforce
Point 11	Substitute work standards and management by objectives with leadership
Point 12	Remove barriers that rob workersof their pride to workmanship.
Point 13	Institute a program of education and self-improvement
Point 14	Put everyone in the company to work to accomplish transformation

(Source: Anderson *et al.*, 1994:475)

Over the years, many authors have attempted to identify the critical factors of TQM. Anderson, Rungtusanatham and Schroeder (1994:480) proposed seven elements: visionary leadership, internal and external cooperation, learning, process management, CI, employee fulfilment and customer satisfaction. Ahire, Golhar and Waller (1996) listed

11 elements including top management commitment, customer focus, benchmarking, teamwork structures, employee empowerment and design quality. Rahman (2004:414) used Ahire *et al.*'s (1996) proposed elements, as well as elements from other similar studies (Saraph, Benson and Schroeder, 1989; Flynn, Schroeder and Sakakibara, 1994 and Black and Porter, 1996) and classified the elements into two categories: 'soft' TQM and 'hard' TQM elements. 'Soft' TQM deals primarily with people issues such as training and education, loyalty and teamwork; whereas 'hard' TQM refer mainly to process management tools and methods, benchmarking and JIT practices. Table 2-4 below categorises the critical elements of TQM, as proposed by the literature, into 'soft' TQM and 'hard' TQM.

Table 2-4: The elements of 'soft' TQM and 'hard' TQM

The elements of 'soft' TQM and 'hard' TQM	
Soft TQM	**Hard TQM**
Top management leadership	Use of advanced manufacturing systems
Employee involvement	Usage of JIT principles
Employee empowerment	Process management
Employee training	Quality data and reporting
Teamwork and communication	Design quality management
Strategic management alignment	SPC usage
Customer focused	Benchmarking
	Zero defect mentality

(Source: Rahman, 2004:414)

From Table 2-4 the proposed link between HWP and CI is clearly evident. Employee involvement is listed as one of the elements of 'soft' TQM. This relationship is further developed in the following section.

2.3.2.2 TQM and OHW

As the present study primarily focuses on the impact of certain HWP (Work-life balance, involvement and employee health) on the success of CI, the discussion into the relationship between OHW and TQM focuses mainly on the 'soft' TQM elements as discussed above. Involvement, one of the three HWP included in the present study is listed in Table 2-4 above as one of the elements of TQM. In addition, a culture of organisational learning is an important element of CI as this "will contribute to an organisation's CI programmes" (Ni and Sun, 2009:1041). In essence TQM in itself is the desired outcome of a change in organisational culture towards a commitment to customer satisfaction.

Once again, as with LM, studies have shown that some of the benefits of a successful TQM program will also have positive employee outcomes. Some of the major human benefits include improved employee involvement and improved morale (Seetharaman, Sreenivasan and Boon, 2006:679).

2.3.2.3 TQM and organisational performance

The practise or promotion of TQM has been shown to have a significant impact on various elements of business performance. Chung *et al.* (2008:377), through a study of 15 enterprises that had won the Taiwan National Quality Award over a ten-year period, concluded that these enterprises all showed "above-average overall performance in their industries". The companies were compared based on business value measures such as financial construction, management ability, profiting ability, cash flow and debt paying ability. As business and financial performance are drivers of company value, it is of little surprise that Seetharaman *et al.* (2006:679), in a literature study on TQM success factors, found that firms that have effective TQM programs have better performing stock prices.

Studies investigating the relationships between key TQM elements and organisational performance have shown that some of these elements have a significant positive

relationship with organisational performance. From the studies assessed by Rahman (2004:415), factors such as leadership commitment, employee empowerment and customer focus have been found to be associated with organisational performance. These results are supported by Agus and Hassan (2011:1658) who showed that TQM practices, driven by supplier relations, benchmarking, quality measurement and process improvements, have a significant positive relationship on production performance and customer related performance measures. Vanichichinchai and Igel (2011:3405) found that TQM practices "has a significant direct positive impact" on both supply chain management practices, but also on a firm's supply performance. Kannan and Tan (2005:159) concluded that organisations that incorporate TQM practices into their organisational strategy are better suited to respond to competitive pressures, whilst at an operational level; TQM can contribute to the creation of value.

On the flipside of the TQM argument there are studies that show that the financial performance advantage obtained by larger firms through TQM does not necessarily materialise in small and medium enterprises (SME). A study of over 3700 SME's found no evidence that TQM improved financial performance (Kober, Subraamanniam and Watson, 2012:421). The reasons for this are not immediately clear, but one reason may be due to economy of scale benefits that larger firms have to their advantage.

2.3.2.4 Why TQM fails

TQM is often criticised, and many companies have failed in their implementation of it. According to Seetharaman *et al.* (2006:682), the major reasons why TQM efforts fail are a "lack of management commitment, unrealistic expectations, under-reliance on statistical methods and failure to develop and sustain a quality oriented culture.

What is very important though, in the implementation of TQM, is to evaluate the program only with a long-term view in mind. The success of a TQM program is influenced by many variables, specifically by organisational culture, customers, capability and infrastructure. However, when implemented correctly it can be a very powerful driver

towards achieving business excellence (Seetharaman *et al.*, 2006:693). As discussed earlier in this chapter, some of these influencing factors are the outcomes of successful human resource management practices.

After this review of the TQM literature and the impact of TQM on organisational and business performance, the next section discusses the last of the three CI practices, Six Sigma.

2.3.3 Six Sigma

2.3.3.1 Background literature & concepts

Six Sigma, originally developed by Motorola in 1987, is a method that aims to “improve process capability and enhance process throughput” (Naslund, 2008:269). Various definitions exist as to what exactly Six Sigma entails, with some proponents referring to it as a set of statistical tools and approaches focussed on reducing waste and improving product and process capability. Others prefer to look at it from a management strategy point of view, requirement cultural change and a new approach to improvement (Schroeder, Linderman, Liedtke and Choo, 2008:536-537). This second approach is in line with the proposed relationship between HWP and CI investigated in this research study. Oke (2007:110) noted that Six Sigma “is a quality improvement programme that allows organisations to drastically improve their bottom line by designing and monitoring everyday business activities in ways that minimise waste and resources, while enhancing customer satisfaction”. Through the Six Sigma approach defects are reduced to as low as only 3.4 defects per million opportunities.

Six sigma can be approached on two implementation levels. On the corporate level it requires management to assist in developing a strategy for adapting the Six Sigma methodologies, including developing business key performance indicators, ensuring organisational readiness and setting down improvement goals. On a project implementation level: extensive training, an understanding of the need for change as well as the use of the Define-Measure-Analyse-Improve-Control (DMAIC) methodology

helps to capitalise on opportunities (Metri, 2007:59). Six Sigma encompasses, and can be applied to, a wide range of disciplines and scenarios. It is found from simple process improvements, to initiatives in project management, cultural change, defect definition and problem solving (Naslund, 2008:271). Six Sigma takes form as part of a wide variety of strategies, principles, tool and techniques. Some of the business strategies include: data-based decision making, process control planning, the 'Belt' system and the DMAIC process. Tool and techniques often used in Six Sigma is: statistical process control (SPC), quality function deployment, root cause analysis and process mapping (Oke, 2001:115).

The DMAIC model is the main component of the Six Sigma methodology. Hereby structure, discipline and a logical procedure is provided for achieving improvements (Su, Chou and Chen, 2009:304). The DMAIC cycle is shown in Figure 2-7, with a short description of each of the five elements of the cycle given below:

- **Define** the opportunity for improvement
- **Measure** current process performance relative to the customer's requirements
- **Analyse** the process and performance data for root causes that drive defects and waste
- **Improve** the process through finding solutions that eliminate root causes
- **Control** the process through on-going measurement (Naslund, 2008:272).

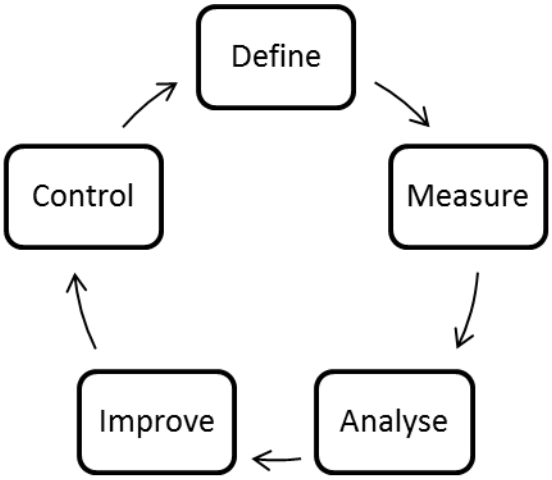


Figure 2-7: Six Sigma DMAIC Cycle

The elements and factors that are critical to the success of a Six Sigma implementation, as defined by Oke (2007:123) are:

1. Link Six Sigma practices to projects
2. Effective communication is essential
3. Assessment of equipment status and needs should highlight risks
4. Understand the basics of the process first
5. Teach by example
6. Strong team culture
7. Top management commitment is crucial
8. Integrate Six Sigma with existing quality initiatives
9. Well-planned and implemented training
10. Draw on as much experience as possible.

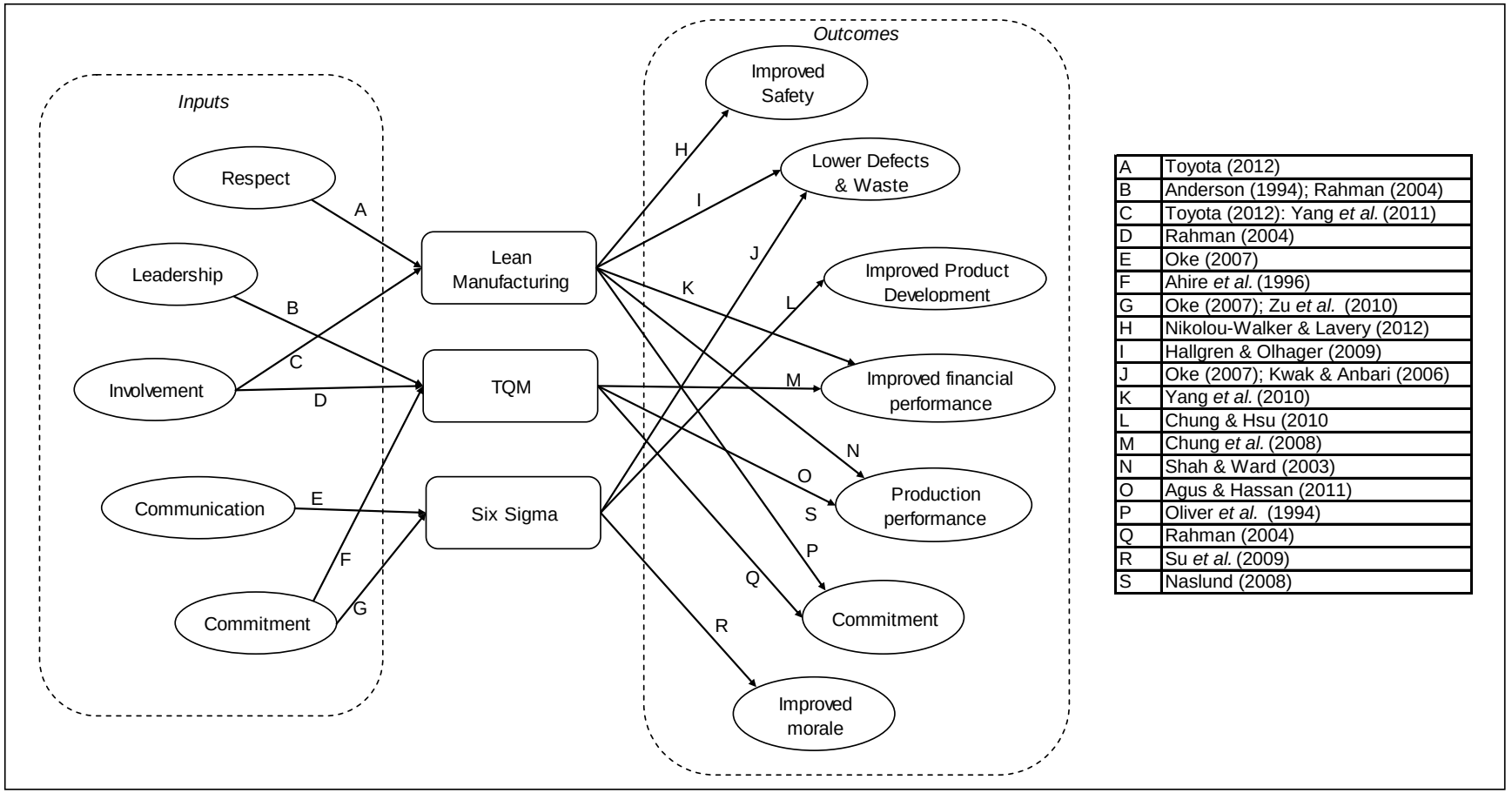
When considering the relationship between HWP and Six Sigma, studies have shown that commitment and cooperation are the most important cultural practices for overall Six Sigma implementation (Zu, Robbins and Fredendall, 2010:97). When considering Oke's (2007) list above, some of these elements could also be associated with HWP. Communication, team culture and management commitment are typical examples.

Organisational structure is critical to the successful adoption of Six Sigma, and most often a change in organisational structure and culture will be required. Kwak and Anbari (2006) found in their study that “encouraging and accepting cultural change” was a key factor for implementing a successful Six Sigma program, “with issues in organisational culture” seen as an obstacle.

2.3.3.2 Six Sigma and organisational performance

Kwak and Anbari (2006) reported on the range of benefits experienced by large corporations like Motorola, Johnson & Johnson and General Electric through the implementation of Six Sigma. These benefits range from reductions of in-process defects to reduced turnaround times and significant financial savings. Chung and Hsu (2010:615) reported that following ‘design for Six Sigma’ strategies during the new product development process improved new product development performance. A study of the use of Sig Sigma in the manufacturing environment concluded that the methodology contributed positively to the reduction of defects and waste, the increase in process and yield rate, significant cost savings as well as improved morale and cooperation (Su *et al.*, 2009:304).

The preceding discussion introduced the concept of CI and three of the best-known CI practices: LM, TQM and Six Sigma. It showed that all three these practices require certain human resource practices and employee attributes to be in place in order to ensure success. However, once successfully implemented, CI initiatives can positively influence a number of organisational performance measures. These inputs and outcomes are graphically summarised by means of the literature framework presented in Figure 2-8 below. This framework is used to further develop the HWP model presented earlier in this chapter (Figure 2-2). It can be contemplated that in order for organisations to continue to be relevant and retain their competitive advantage in a demanding business environment they will have to find the common touch points between HWP and CI initiatives. This proposed relationship, which is explored in this study, is developed and discussed further in the following section.



A	Toyota (2012)
B	Anderson (1994); Rahman (2004)
C	Toyota (2012): Yang *et al.* (2011)
D	Rahman (2004)
E	Oke (2007)
F	Ahire *et al.* (1996)
G	Oke (2007); Zu *et al.* (2010)
H	Nikolou-Walker & Lavery (2012)
I	Hallgren & Olhager (2009)
J	Oke (2007); Kwak & Anbari (2006)
K	Yang *et al.* (2010)
L	Chung & Hsu (2010
M	Chung *et al.* (2008)
N	Shah & Ward (2003)
O	Agus & Hassan (2011)
P	Oliver *et al.* (1994)
Q	Rahman (2004)
R	Su *et al.* (2009)
S	Naslund (2008)

Figure 2-8: Continuous improvement inputs and outcomes

2.4 OHW, HWP AND CI RELATIONSHIP FRAMEWORK

The previous section of the literature review discussed the main concepts that form part of the research study: HWP and CI. It focuses on the employee as well as the organisational outcomes of each of these concepts. This next section develops a framework for the proposed relationship between the two concepts, based on the literature review, forming the framework that is used as the basis for the present study.

In the present study, specific outcomes from a successful organisation health and wellness (OHW) program, defined as the three HWP mentioned (HWP), is the independent variable in exploring the relationship between HWP and the success and maturity of CI initiatives. A positive relationship between individual and collective levels of employee health, employee involvement and WLB and the success and maturity of CI initiatives provide possible scope for future research into causal relationships between these variables. The research framework, together with the scope of the present research study is shown graphically in Figure 2-9 below. The study does not focus on the inputs of HWP or on the organisational performance results of either OHW programs or CI, as these have been discussed extensively in other research, as mentioned in this Chapter.

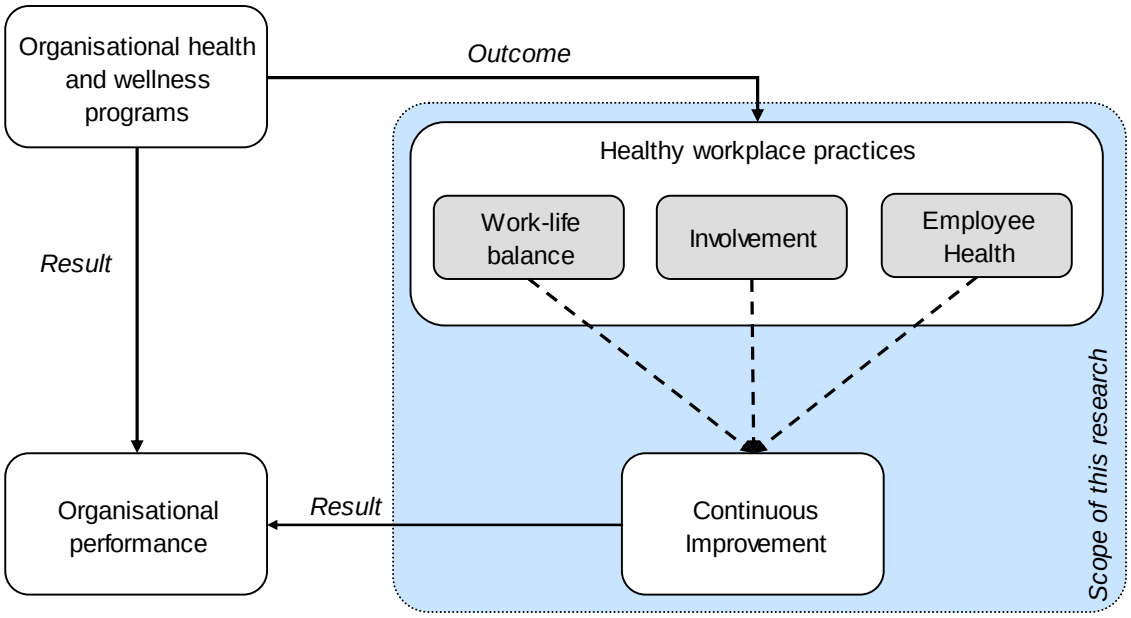


Figure 2-9: Research Framework: HWP and continuous improvements

Chapter 2 consisted of a literature review of the two main concepts of the research study: OHW and CI. It showed that both these variables positively contribute to organisational performance. Furthermore, it showed that some of the outcomes of a successful OHW program, namely HWP, are seen as required inputs into successful CI initiatives. However, no study could be found that specifically explores this relationship. Therefore, the present study explores the relationship between successful OHW practices, defined by the levels of three HWP, and the maturity of CI initiatives. This is then the conclusion of the literature review conducted in Chapter 2. Chapter 3 presents a discussion of the empirical research.

CHAPTER 3

3 DATA, RESEARCH METHODS AND TECHNIQUES

3.1 INTRODUCTION

The previous chapter introduced the reader to the literature behind the concepts of HWP and CI that form part of this study. The literature review discussed OHW, programs implemented by companies to support and enhance OHW, the positive business and personal outcomes of these programs and the concept of HWP. It also reviewed the impact of successful CI programs on organisational performance and concluded with the development of a framework (Figure 2-9) to illustrate the proposed relationship between HWP and CI that is investigated in this study.

In this chapter the population and sample, data gathering procedures and the research methods and techniques used in the study is discussed. This allows the reader to evaluate whether the methods are appropriate to the results obtained and presented in Chapter 4, as well as providing future researchers with enough information should they care to replicate the study (Welman, *et al*., 2005:250).

3.2 DATA COLLECTION

3.2.1 Population

HFSA is a food manufacturing company jointly owned by global food company HJ Heinz and South African food company Pioneer Foods. HFSA operates three manufacturing facilities, located in Atlantis, Wellington and Spartan respectively. The company's administrative corporate office is situated in Paarl. Due to fluctuating market demand and seasonality, the company employs personnel on both a permanent and on a part-time contract basis. Table 3-1 summarises the number of employees at each of the four locations.

Table 3-1: HFSA employee distribution

HFSA Employment Distribution			
	Permanent	Contract FTE	TOTAL
Paarl Office	26	0	26
Atlantis	163	136	299
Wellington	88	24	112
Spartan	36	26	62
TOTAL	313	186	499

As can be seen in Table 3-1, a large component (186) of employees at HFSA (37%) is contract personnel. As will be explained in more detail in this chapter, HWP was measured by means of a questionnaire to HFSA employees. Because such a large component of employees is contract employees, it is important that they be included in the final sample. Therefore, in this research the study population refers to all employees who are employed by HFSA, both permanent and contracted.

The contract employees that were included as respondents in this study were considered to be a sample of the entire population of contract workers used at the three factories. Even though some contract workers have been used by the company over extended periods of time, others positions are filled on a daily basis by labour brokers. As shown in Table 3-1 above, contract workers are considered on a full-time equivalent (FTE) basis. The FTE calculation is used as most contract employees do not work a full 45 hour work-week. The number of FTE's for a specific time period is calculated by dividing the total number of hours worked by contract employees in a specific period by the standard full-time working hours over the same period. This calculation is shown below:

Equation 3-1: Full time equivalent

$$Full\ time\ equivalent\ (FTE) = \frac{\sum[(Total\ contract\ hours\ for\ period])}{Working\ hours\ for\ a\ single\ employee\ over\ the\ same\ period}$$

Due to the temporary nature of the contract positions, the exact size of the entire population of contract workers is difficult to determine. The number of contract employees listed in the main table below refers to the average full time equivalent (FTE) for the 6-month period between January 2012 and June 2012. The contract employees who participated in the study served as a sample of the total population of contract employees. The characteristics of the total population of contract employees is nigh impossible to determine due to the frequent changes. The sample of contract employees can be considered an accidental sample as the "most convenient collection of members of the population that are near or readily available" (Welman, *et al*., 2005:68) were selected. Only those contract employees who were present on the day when the questionnaire was administered were included in the sample.

All three factories that form part of the HFSA business, as well as the Paarl office were included in this research study.

3.2.2 Data gathering

The data used in this study can be considered primary data, as it was collected by the researcher for the purpose of this study (Welman, *et al*., 2005:149). This section describes the two methods by which data was collected for this study.

3.2.2.1 HWP Questionnaire

Data related to the three HWP were collected by means of a structured questionnaire. The questionnaire was distributed to the respondents either by email or by hand. Employees who have access to a company email were emailed a link to an online questionnaire. The researcher obtained a list of all permanent employees from the Human Resources department. The email included instructions for completing the questionnaire as well as the option to complete the questionnaire in English or

Afrikaans. A total of 165 email questionnaires were distributed. Respondents were given 14 days to complete their questionnaires.

For those employees who did not have access to a company email, the second method of data collection was implemented - which consisted of distributing a hard-copy of the questionnaire to the respondents. For factory-related personnel, line supervisors were asked to assist in the distribution and collection of the hard-copy questionnaire. The same applied to other departments, like Engineering, where the direct supervisors were asked to distribute and collect the questionnaires from their subordinates. All contract or temporary employees who were part of the team or department at the day of administering the questionnaires were included in the data collection. These contract workers constituted the sample of the total population of contract employees. This method of sampling is best described as an accidental sample, as the "most convenient collection of members of the population" (Welman, *et al.*, 2005:68) were used for the research.

3.2.2.2 Continuous improvement self-assessment

Data collection on the maturity of CI initiatives was done by means of a structured self-assessment. According to Caffyn (1999:1151) such a self-assessment can be an effective way to determine the level and maturity of CI in a company, irrespective of size. It also provides evidence of how deep or superficial these practices are ingrained in the company. The HGPS, introduced in Chapter 1, includes such a self-assessment as a means to evaluate the maturity of each of the ten elements of the Heinz Global Performance System (HGPS). Data on the maturity of CI initiatives at each of the three factories were collected through the completion of this self-assessment.

3.2.3 Measuring instrument

Where the preceding sections discussed the methods of data collection, the next sections describes in more detail the content of the two measuring instruments used in this study.

3.2.3.1 HWP questionnaire

Firstly, a structured questionnaire, consisting of four parts, was used to collect data from respondents on their personal information and the three HWP. Part A of the questionnaire collected personal information about the respondent. This included information on the respondent's personal characteristics, demographic information as well as information about the respondents' lifestyle habits, level and length of employment and level of formal education. This part of the questionnaire consists of 14 items. This section of the questionnaire allows for the compilation of a demographical profile of the sample as well as assisting the researcher in dividing the data into the units of measure as described in Section 3.3, later in this chapter.

Part B of the questionnaire collects data relating to the respondents physical health profile using the SF-36 Health Survey questionnaire. The standard SF-36 questionnaire "is a multi-purpose, short-form health survey which contains 36 questions". The SF-36 questionnaire is a generic measure of health status that yields an eight-scale profile related to both physical and mental health (Ware and Gandek, 1998:903). In this case, only the questions relating to physical health were included in the questionnaire, reducing the number of items in this part of the questionnaire to 21. Because this is a standard questionnaire used extensively in industry, the original scales were used in the present study. Six different scales are therefore used to test the 21 items in the questionnaire. The SF-36 instrument includes four of the most frequently used physical health concepts: physical functioning, role-physical, bodily pain and general health. Ware and Gandek (1998:906) found evidence of "content, concurrent, construct, criterion and predictive validity" in a wide array of studies to date. Previous studies have tested reliability using both the internal consistency and test-retest methods. Based on research into previous studies, reliability scores for the physical health component of the survey (as used in the present study) were shown to be 0.92 (Ware and Gandek, 1998:906-909).

Part C of the questionnaire relates to employee involvement. Employee involvement was measured by means of the job involvement measuring instrument developed by

Lodahl and Kejner (1965). This instrument is a 20-item scale with a five-point Likert response format. Respondents were asked to select a single, most appropriate answer out of the following categories of response: strongly agree, agree, neutral, disagree and strongly disagree.

Part D of the questionnaire measures WLB by means of the Industrial Society's Work–Life Checklist, a ten-item scaled instrument as used by Dex and Bond (2005). The original instrument is a three-point Likert format, but for the purpose of the present study the scale was expanded to a five-point Likert format with the following categories of response: strongly agree, agree, neutral, disagree and strongly disagree.

An example of the questionnaire that was used can be seen in Annexure B.

3.2.3.2 CI Self-assessment

The second measuring instrument is a structured self-assessment that measures the maturity of the ten CI elements that form part of the HGPS structure. The ten elements of HGPS are shown in Table 3-2 below. The instrument was developed by the company CCI as part of the commercial product TRACC®, for which HFSA has bought a license in order to use as the HGPS. The web-based assessment takes the assessor through a range of questions or statement for each of the ten elements. Each question relates to a particular stage along a continuum of maturity for the specific element. For each question or statement the respondent has the option of either a 'Yes' or a 'No' answer. The lowest achievable stage of maturity for any element is Stage 1, correlating to a score of 1.00. On the other side of the continuum is Stage 5, the highest achievable stage or maturity, equal to a score of 5.00. Any 'Yes' answer will move the maturity score along this continuum as shown in Figure 3-1 below. It is important to note that the assessment does not need all answers in a particular stage to be 'Yes' before progressing to the next stage of questions.

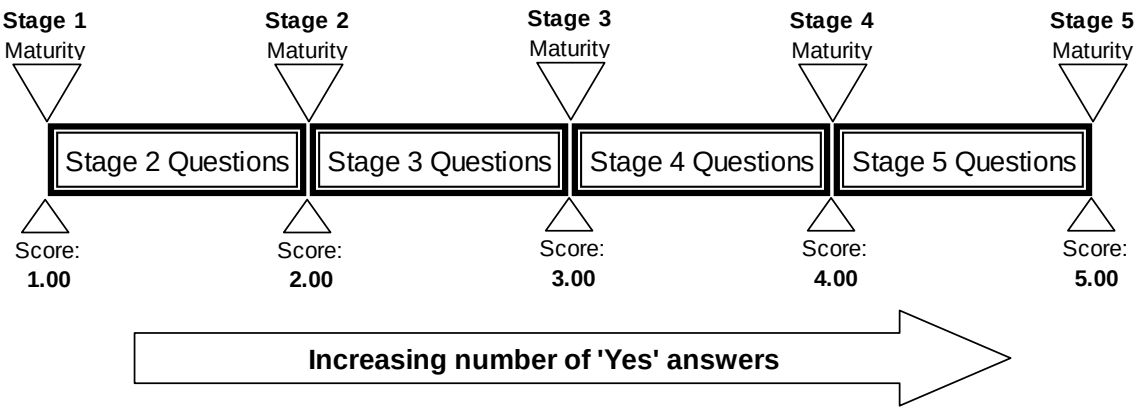


Figure 3-1: HGPS staged progression

The self-assessment questionnaire consists of 1279 questions in total. The split of the questions along the ten elements and along the assessment stages are summarised in Table 3-2 below. The full self-assessment questionnaire has been added as Annexure B. The data analysis for this self-assessment is discussed in detail in Section 3.3.3.

Table 3-2: Assessment questions per HGPS element

Number of assessment questions per HGPS element

Element	Stage 2	Stage 3	Stage 4	Stage 5	Total
1. Leading and Managing Change	42	57	46	32	177
2. Teamwork	33	30	28	29	120
3. 5S	33	28	27	19	107
4. Visual Management	35	24	21	23	103
5. Focused Improvement	37	34	27	30	128
6. Quality	45	47	39	33	164
7. Asset Care	29	26	29	23	107
8. Autonomous Maintenance	51	49	40	35	175
9. Set-up Time Reduction	23	20	22	17	82
10. Environmental Health and Safety	42	31	28	15	116
Total Questions	370	346	307	256	1279

3.2.4 Response rate and sample

This section describes the response rate and final sample used in the present study. A total of 320 questionnaires were distributed using both the electronic and hard copy methods described in Section 3.2.2 above. A total of 209 responses were received, 54 of which via the electronic channel. Of the 155 completed hard copy questionnaires received back, 34 were excluded on the basis of being incomplete. In most of these cases one or more questions were not completed, and in some cases whole sections of the questionnaire were incomplete. Therefore the total number of responses used in the study was 175, relating to a total response rate of 55%. A summary of the responses are shown in Table 3-3 below.

Table 3-3: Response rate summary

Response rate

	Electronic	Hard Copy	Total
A. Distributed	**165**	**155**	**320**
B. Responses received	**54**	**155**	**209**
***C. less* Unusable**	**0**	**-34**	**-34**
D. Responses included in study (B-C)	**54**	**121**	**175**
E. Response rate (%) (D/A x 100%)	**33%**	**78%**	**55%**

The sample of 175 responses that was used in the present study represents 35% of the total study population of 499 employees as described in Table 3-1 earlier in this chapter. Even though a full analysis of the sample descriptive statistics is done in Chapter 4, Table 3-4 shows some of the most relevant sample demographics. As evident from the information in this table, the majority of respondents are female (52.6%). The coloured demographic was the most represented (47.4%) with 83 responses, followed by the black demographic with 52 (29.7%) of the responses. The majority of responses were between 31 and 40 years old (31.4%). The distribution of the age profile indicates an

ageing workforce, with 31% of respondents being over the age of 41 years. The majority (61%) of respondents are permanently employed by HFSA.

The number of responses from each location is aligned with the number of employees at each facility. Atlantis is the largest factory and represents 60% of the total workforce. Sixty-two per cent of the responses received were from the Atlantis factory. The least responses were received from the Paarl office. This is probably explained by means of the fact that all Paarl employees were asked to complete the questionnaire electronically. As shown above in Table 3-3, the response rate for electronic questionnaires was significantly lower than for hard-copy questionnaires.

Table 3-4: Study sample demographics

	Male	Female				Total
Gender	83	92				175
	47.4%	52.6%				100.0%
	White	Coloured	Indian	Black	Other	Total
Ethnicity	35	83	4	52	1	175
	20.0%	47.4%	2.3%	29.7%	0.6%	100.0%
	< 25 yrs	26 - 30 yrs	31 - 40 yrs	41 - 50 yrs	>51 yrs	Total
Age	26	39	55	44	11	175
	14.9%	22.3%	31.4%	25.1%	6.3%	100.0%
	Paarl	Atlantis	Spartan	Wellington		Total
Factory/Location	13	108	34	20		175
	7.4%	61.7%	19.4%	11.4%		100.0%
	Permanent	Contract				Total
Employment Status	107	68				175
	61.1%	38.9%				100.0%

This section described the study population and sample, measuring instruments used as well as the method of data collection used in the research study. The next section discusses the methods used for data analysis.

3.3 DATA ANALYSIS

Where the previous section discussed the population, sample, measuring instrument and methods of data collection, the following section discusses the methods of data analysis.

3.3.1 Units of measure

The units of measure in this study were two-fold. Firstly, when considering HWP, groups were used. Employees were grouped according to:

- Gender,
- Ethnicity,
- Age,
- Healthy lifestyle habits,
- Location (factory/office),
- Employment status,
- Length of employment,
- Level of employment, and
- Level of education.

The second unit of measure was the different factories, namely Atlantis, Wellington and Spartan. As the Paarl office did not have a measure for its CI maturity, it was excluded as a location in the final analysis.

3.3.2 Healthy workplace practices questionnaire

The Healthy workplace practices (HWP) questionnaire consists of four parts. Part A gathers the respondents' personal information, employment profile, demographic background as well as information regarding his or her healthy lifestyle habits. The information from this section is used to assign the specific response to one of the predetermined groups as listed in the preceding section on units of measure.

The respondent's healthy lifestyle (construct abbreviated as HL) habit score was calculated from four items in Part A of the questionnaire. Respondents were allocated a score between 1 and 5 based on their response to items 6 – 9 in Part A of the questionnaire. The questionnaire can be seen in Annexure A. A score of 5 corresponds to the most healthy lifestyle habits and a score of 1 corresponds to the least healthy lifestyle habits. A respondent's combined healthy lifestyle habit score will be calculated from the average of the four items described above. The formula for this calculation is shown below. The range of possible scores is between 1 and 5 points.

Equation 3-2: Healthy lifestyle habit score

$$Healthy\ Lifestyle\ Habit\ score = \frac{\sum(Score\ achieved\ for\ items\ 6\ to\ 9)}{4}$$

Part B of the HWP questionnaire deals with the employee's level of physical health (denoted by EH). As described in Section 3.2.3.1, a shortened version of the standard SF-36 health questionnaire was used. This part of the questionnaire consists of 4 sub-constructs, namely physical functioning, role physical, bodily pain and general health. These four sub-items are detailed in Table 3-5 below.

Table 3-5: SF-36 questionnaire item sub-scales

SF-36 Physical Health Sub-scales		
Physical Health	**Abbreviation**	**Items in scale**
Physical functioning	**GH**	**10**
Role physical	**RF**	**4**
Bodily pain	**BP**	**2**
General health	**GH**	**5**

As mentioned earlier, this section of the questionnaire consists of a number of different scales. In order to convert the responses, each item was re-coded according to the methodology shown in Table 3-6 below. Sub-item number six included both positive and negative questions and has been coded accordingly, as shown in the table below. From the coded scores, the total raw score was calculated as the sum of the coded scores from the 11 items in this part of the questionnaire. Additionally, a transformed score, on a 1 to 5 scale, was calculated as follows for each of the respondents:

Equation 3-3: Employee health transformed score

$$EH\ Transformed\ Score = 1 + 4\left(\frac{Raw\ Score - Minumum\ Score}{Score\ Range}\right) \times 100\%$$

In the above formula, the 'minimum score' is equal to 21, the lowest possible raw score achievable by any respondent. The 'score range' is 62, equal to the difference between the highest (73) and lowest (21) achievable score of a single respondent.

Table 3-6: SF-36 Questionnaire coded scores

SF-36 Physical Health Assigned Coded Scores

Item	Question	Sub-items						
1	"In general, would you say your…"	All	Response	Excellent	Very Good	Good	Fair	Poor
			Item score	5	4	3	2	1
2	"The following items are about activities…"	All	Response	Yes, limited a lot	Yes, limited a little	No, not limited at all		
			Item score	1	2	3		
3	"During the past 4 weeks, have you had…"	All	Response	Yes	No			
			Item score	1	2			
4	"How much bodily pain have…"	All	Response	None	Very mild	Moderate	Severe	Very Severe
			Item score	5	4	3	2	1
5	"During the past 4 weeks, how much…"	All	Response	Not at all	A little bit	Moderately	Quite a bit	Extremely
			Item score	5	4	3	2	1
6	"How TRUE or FALSE is each of the…"	a, c	Response	Definitely True	Mostly true	Don't know	Mostly false	Definitely false
			Item score	1	2	3	4	5
6	"How TRUE or FALSE is each of the…"	b, d	Response	Definitely True	Mostly true	Don't know	Mostly false	Definitely false
			Item score	5	4	3	2	1

Part C of the questionnaire deals with employee involvement (denoted by EI) and consists of 20 items measured by means of a five-point Likert scale with responses ranging from 'totally disagree' to 'totally agree'. The items in this section of the questionnaire was scored according to Table 3-7 below, with a score of 5 relating to high levels of involvement and 1 relating to low levels of involvement. The respondent's overall score for this section of the questionnaire is calculated as the average of the 20 responses.

Table 3-7: Involvement response scores

Involvement Response Scores						
Items	**Response**	**Totally disagree**	**Somewhat disagree**	**Neutral**	**Somewhat Agree**	**Totally Agree**
1 - 9, 11 - 12, 15, 20	**Item Score**	**1**	**2**	**3**	**4**	**5**
10, 13, 14, 16 - 19	**Item Score**	**5**	**4**	**3**	**2**	**1**

Part D of the questionnaire, the section considering WLB, consists of 10 items measured by means of a five-point Likert scale. The scoring of the responses was done according to Table 3-8 below, with a score of 5 relating to good WLB and a score of 1 relating to little or no WLB. The respondent's overall score for this section of the questionnaire is calculated as the average of the 10 scores.

Table 3-8: WLB response scores

Work-life Balance Response Scores						
Items	**Response**	**Totally disagree**	**Somewhat disagree**	**Neutral**	**Somewhat Agree**	**Totally Agree**
All	**Item Score**	**5**	**4**	**3**	**2**	**1**

Finally, following the scoring of the four parts of the questionnaire, an overall healthy workplace practice score for each respondent was calculated. This overall score was calculated as the average of the scores achieved for the four individual parts of the questionnaire.

Finally, a combined score for each of the four HWP (healthy lifestyle habits, employee health, involvement and WLB) as well as a combined overall HWP score were calculated for each of the three sites. These scores were calculated as an average of all the respondents' from that particular site's achieved scores.

The preceding section presented the data collection and analysis procedures for the HWP component of the research study. The following section discusses the data analysis for the CI self-assessment.

3.3.3 Continuous improvement self-assessment

The HGPS consists of ten elements considered to be best-practices in successful CI initiatives. The ten elements are listed in Table 3-9 below.

The HGPS program is structured in such a way that it dictates that as the organisation reaches maturity in the ten HGPS elements, it will progress through five stages, from "Status quo - No best practice" to "Way of life – World class". The full list of stages is:

- Stage 1: Status quo – No best practice
- Stage 2: Stabilisation and awareness
- Stage 3: Ownership and improvement
- Stage 4: Refinement and technology
- Stage 5: Way of life – World class

Table 3-9: Ten elements of HGPS

Continuous Improvement and the HGPS Elements	
Element	**Abbr.**
1. Leading and Managing Change	**01_LMC**
2. Teamwork	**02_TW**
3. 5S	**03_5S**
4. Visual Management	**04_VM**
5. Focused Improvement	**05_FI**
6. Quality	**06_QU**
7. Asset Care	**07_AC**
8. Autonomous Maintenance	**08_AM**
9. Set-up Time Reduction	**09_STR**
10. Environment, Health and Safety	**10_EHS**

Each facility was assessed for each of the ten elements, according to the structured HGPS self-assessment described in Section 3.2.2.2. This was done via the online HGPS assessment tool consisting of a range of questions in various sub-categories for each of the ten elements. Each question has only the option of a 'Yes' or 'No' answer. The score for each of the ten elements falls within the range of 1.00 (minimum relating to Stage 1 maturity) and 5.00 (maximum relating to Stage 5 maturity). As shown in Figure 3-1, there are no 'Stage 1' questions and progression is made from Stage 1 maturity equal to a base score of 1.00, along the continuum to Stage 5 and a maximum score of 5.00. Individual element maturity as well as the overall CI maturity are calculated as cumulative scores based on the number of questions answered 'Yes'. The following section describes the method of calculating the score by means of an example.

Assume that during the assessment the factory obtained the following number of 'Yes' answers for a certain element. Each 'Yes' answer signifies one point. This fictitious example is shown in the table below.

Table 3-10: Example of HGPS element score calculation

Example of element score calculation

	Stage 2*	Stage 3	Stage 4	Stage 5
A. Number answered 'Yes'	**18**	**12**	**11**	**4**
B. Number of questions	**20**	**15**	**25**	**20**

** No questions in Stage 1*

Not all the stages have an equal number of questions and the assessment may yield 'yes' answers in multiple stages. As previously stated, the lowest possible base score for any element is 1.00, signifying "No best practice". In the example above, for Stage 2 questions, only 18 out of a possible 20 questions were answered as 'Yes'; equal to 18 points out of 20. However, 12 points were obtained in the subsequent Stage 3. Therefore, two points from Stage 3 are transferred down to Stage 2 in order to fill up the complement of 20 potential points, resulting in a score of 1.00 (or 100%) for Stage 2. Due to the transfer of points, from the original 12 points obtained in Stage 3, only 10 remain. However, five points can now again be transferred from Stage 4 to Stage 3 to fill up the full complement of 15 potential points, resulting in a base score of 1.00 for Stage 3 as well. This leaves six points for Stage 4 from the original 11 points obtained. If the four points achieved in Stage 5 are then also transferred down and added to the remaining six points in Stage 4, a total of ten points are scored in Stage 4. This ten points out of a possible maximum 25 points in Stage 4, equals a 0.40 score. As there are no points left in Stage 5, the score for Stage 5 is zero. The total score for the element is then calculated as the sum of all the scores achieved in each stage, added to the minimum possible base score of 1.00. In this case, the total score achieved is 3.40. This method of calculation is displayed visually in Figure 3-2 below.

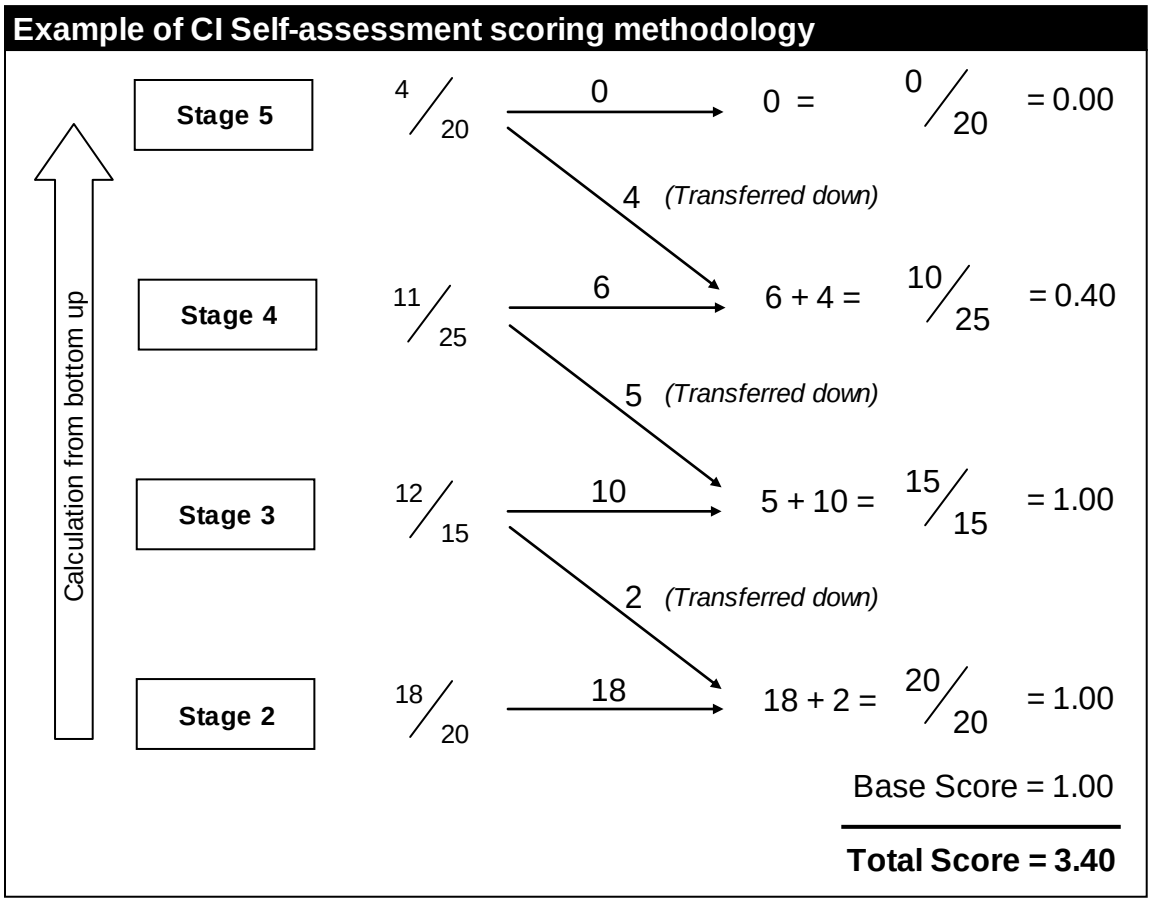


Figure 3-2: Example of HGPS element self-assessment scoring methodology

This methodology was used to calculate the score for each of the ten elements. Once all of the base scores were calculated, a total score for the assessed area was obtained through calculating an average of the ten scores achieved. Through this methodology, the minimum score that a site can obtain is 1.00 (Status quo – no best practice) and the maximum score is 5.00 (Way of life - world class). A score of more than 2.0 signifies that the area has progressed past Stage 2; a score of more than 3.0 signifies that the area has progressed to Stage 3, and so forth according to the continuum shown in Figure 3-1.

3.3.4 Nuisance variables

According to Welman *et al*. (2005:81) a nuisance variable is a variable "not mentioned in the research hypothesis that may influence the dependent variable". It is important to

identify and quantify potential nuisance variables in order to ensure that the groups differ only in terms of the dependent variables that form part of this study.

The following section identifies possible nuisance variables and describes how they were quantified. Should these nuisance variables then turn out to have a significant effect on the dependent variable, their effect needs to be controlled. One possible nuisance variable could be previous exposure to the HGPS programme. The HGPS program was launched at the Atlantis site in August 2012. Even though the CI self-assessment was administered in July 2012, prior to the launch, the site had been exposed to some of the HGPS principles. This exposure was limited to individuals from the Heinz European CI team discussing the program, its framework and benefits with the site's senior management. The other two sites, Wellington and Spartan, had no previous exposure to the HGPS program. Therefore a nuisance variable called 'HGPS Exposure' was added to the study as an independent variable.

Secondly, the level of education of senior management at a site could mean that the site's decision-maker have had previous exposure to CI - or World Class Operations programs. These individuals could have implemented and driven certain CI best practices on the site. Therefore, a nuisance variable called 'Management education' was added as an independent variable. This variable was scored per site based on the responses received in Part A of the HWP questionnaire. All respondents who were classified as being 'Middle Management' or above were used to determine the site's 'Management education'. These individuals' responses to Item 14 of the questionnaire were scored by allocating a value on a range of zero (0) for 'No education' and six for the highest level of education, 'Post-graduate qualification'. The average of all applicable respondents' scores was used as the indication of the site's 'Management education'.

Through building these two nuisance variables into the design of the study as independent variables, their potential effect could be quantified. The effect of the nuisance variables needs to be controlled if it is found to be significant.

This section described the methods of data analysis used in the research study. The following section presents the final research model.

3.4 FINAL RESEARCH MODEL

The present study investigates the relationship between HWP and the success and maturity of CI initiatives at the food manufacturer HFSA. The preceding sections described the population, methods of data gathering, the measuring instruments and data analysis techniques used in this study. This final part of Chapter 3 brings all these elements together into a final research relationship model for the study. This model is shown in Figure 3-3 below. This model aligns with the hypothesis presented in Chapter 1.

Firstly the site's overall level of HWP, derived from the four individual practices described in Section 3.2.3.1, was related to the overall site CI maturity (denoted by CIM), derived from the ten HGPS elements. Additionally, any influence on the two nuisance variables, HGPS exposure (HE) and management education (ME) were investigated on this level.

Secondly, the relationship between the four HWP (HL, EH, EI and WL) and the overall site CI maturity were investigated to see whether any single one of the practices as independent variables has any influence on the overall site CI maturity as the dependent variable. Once again, this was done on a per site basis.

Lastly, the relationship between each of the four HWP and each of the ten CI best practices (denoted by LMC, TW, 5S, VM, FI, QU, AC, AM, STR and EHS respectively) were investigated. For this part of the analysis all the data obtained for each of these elements were grouped together, independent of site.

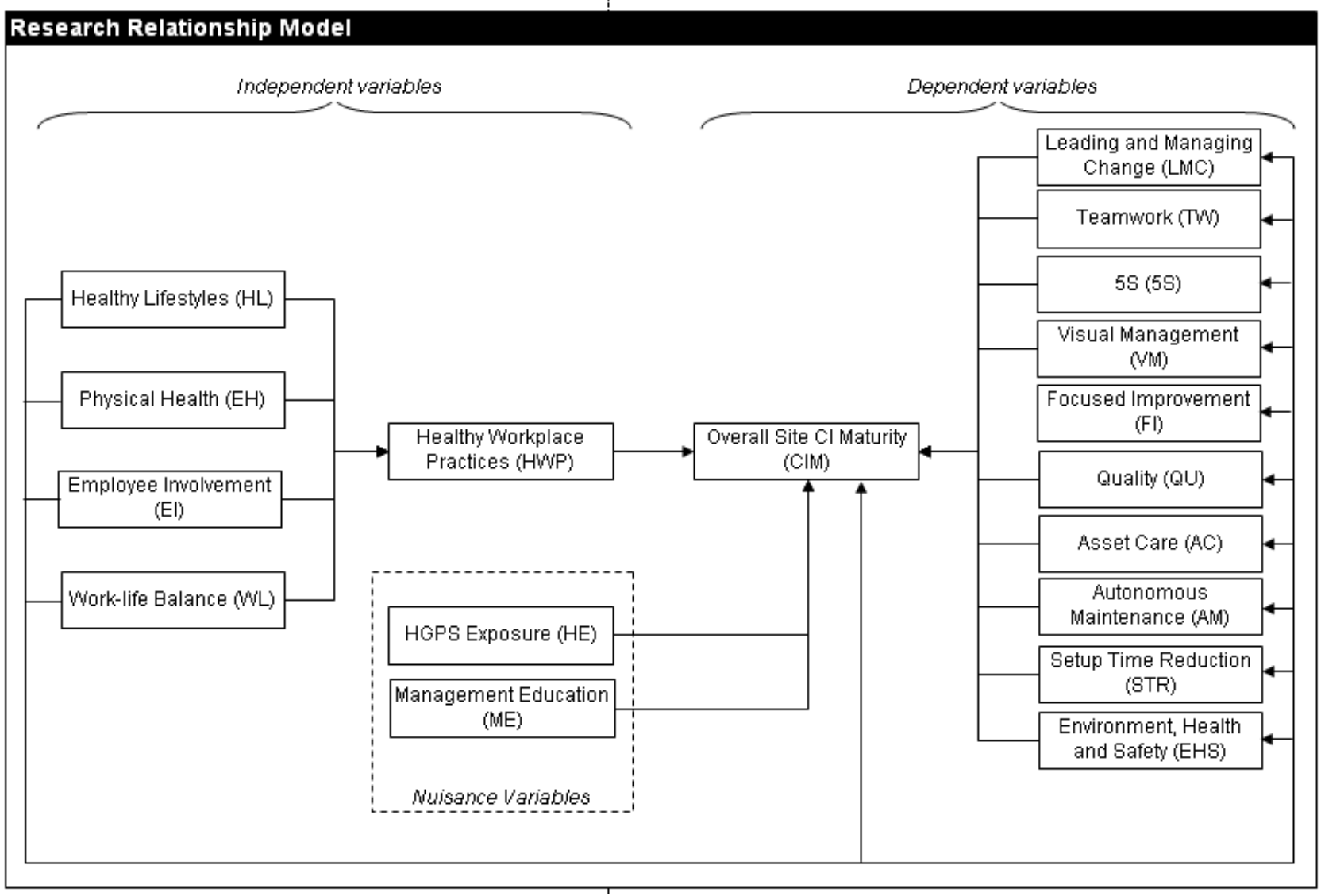


Figure 3-3: Research relationship model

3.5 CONCLUSION

Chapter 3 described the study population and sample, methods of data collection, measuring instruments, data analysis procedures and the final research model used in the research study. This chapter presents enough information should anyone wish to replicate the research study; they would be able to do so. Chapter 4 presents the results, interpretation, conclusions and management considerations of this research study.

CHAPTER 4

4 DATA ANALYSIS, INTERPRETATION AND RESULTS

4.1 INTRODUCTION

The present study investigates the relationship between HWP and the success and maturity of CI initiatives in a South African food manufacturer. The previous chapter discussed the population and sample, data gathering procedures and the research methods and techniques used in the study. In the following chapter the data obtained in the study is analysed, interpreted and the results discussed.

Data analysis was done using the statistical software 'Statistica' (StatSoft.Inc, 2011) as well as the Microsoft Excel add-in 'PH-Stat' (Pearson Higher Education, 2012). Although some of the data analysis was done by the researcher himself, the Statistical Consultation Services (SCS) of the North-West University did most of the analysis. Ms. Suria Ellis was the designated consultant on the research study.

4.2 DESCRIPTIVE STATISTICS

This section details the descriptive statistics of the 175 respondents that made up the sample used in this study. As discussed in Chapter 3, this represents a total response rate of 55%. The units of measurement identified in Chapter 3 were used as the basis for the descriptive statistics.

As seen in Figure 4-1, the sample consisted of slightly more female than male respondents. This is to be expected as the type of operations conducted at the factories includes a large component of manual packing, typically performed by female employees. The demographics of the group (Figure 4-2) seem to represent that of the communities in which the factories are situated, and the sector in which the factories

operate, with the largest portion of the sample comprising of coloured and black respondents.

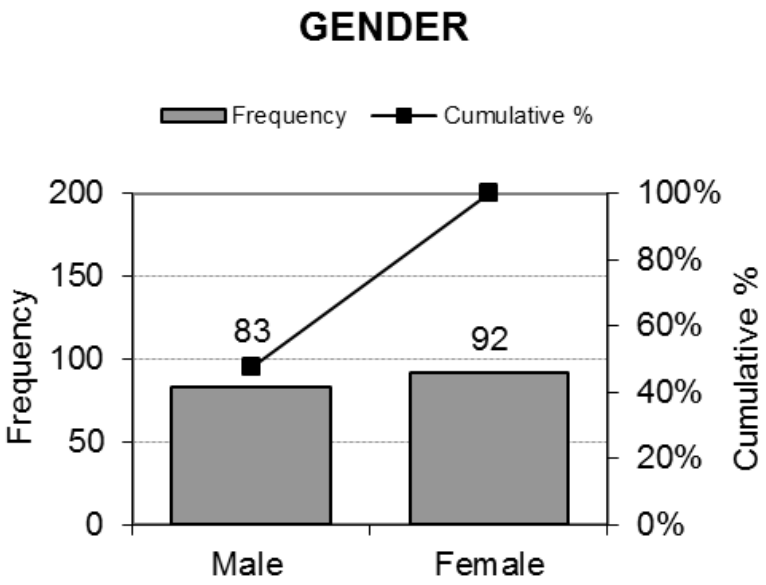


Figure 4-1: Frequency – Gender

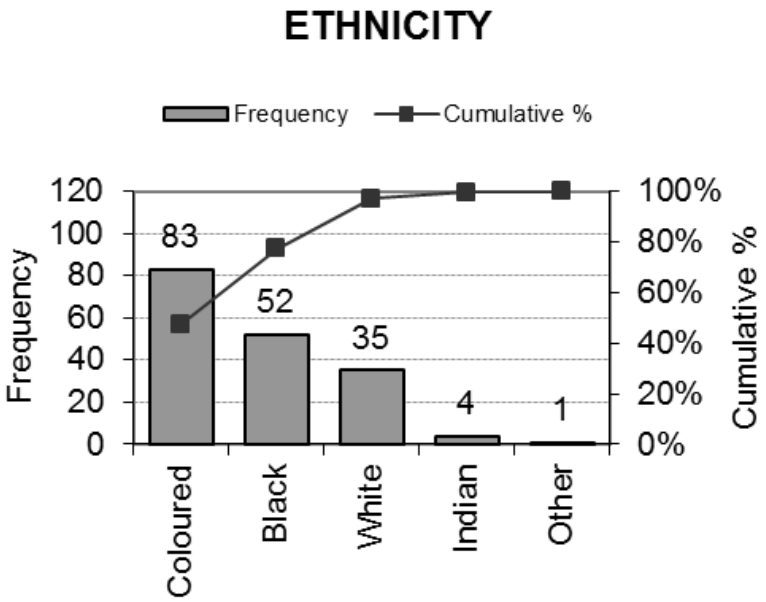


Figure 4-2: Frequency – Ethnicity

The age distribution shown in Figure 4-3, indicates that the majority of respondents (120) were below the age of 40, with 55 respondents (31.4%) ranging from 31 to 40 years of age. It is interesting to that 55 of the workforce (31%) was 41 years old and older.

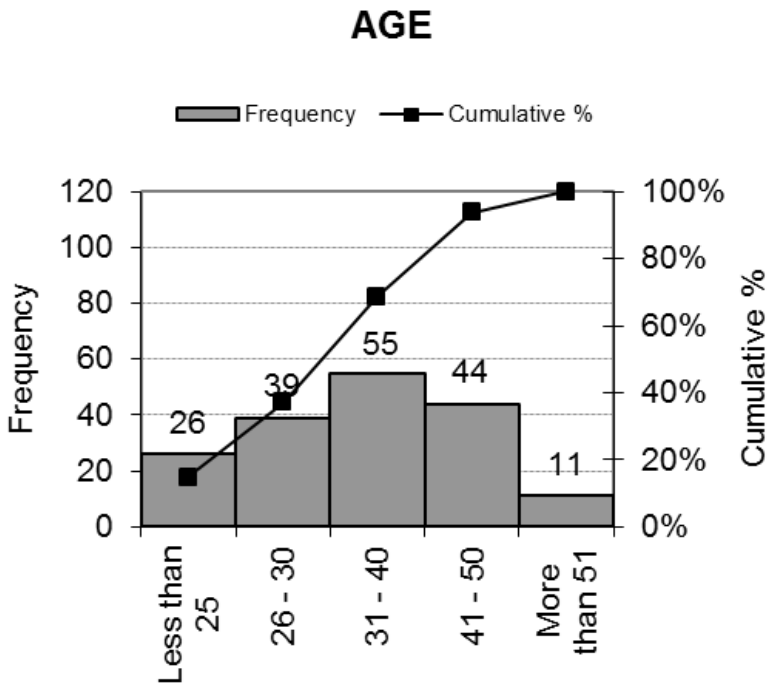


Figure 4-3: Frequency – Age

Figure 4-4 below shows that the majority of respondents work in the Atlantis factory. This is to be expected as the Atlantis factory is by far the largest in terms of headcount. The total sample represents 35% of the study population. Each location's response rate as a percentage of the site's total number of employees is shown in Figure 4-4. Even though Atlantis had the most responses, the Spartan factory had the most representative response rate, with the sample representing 55% (34 out of 62) of the total study population for that factory. The Wellington factory had the lowest response rate of all four locations (18%).

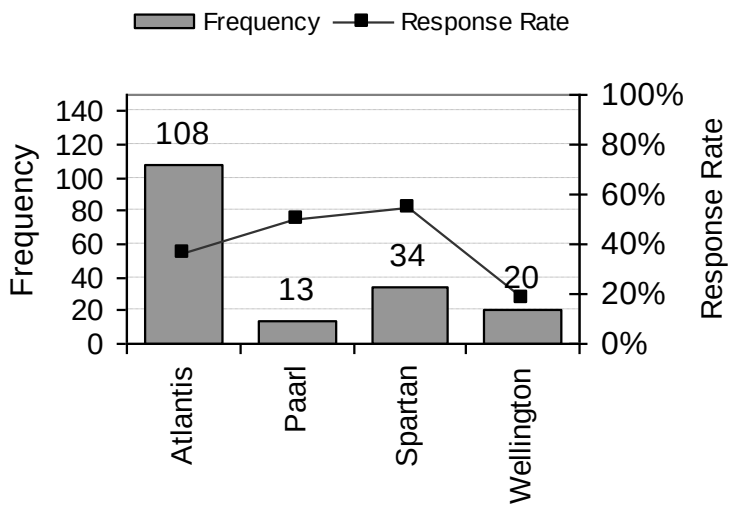


Figure 4-4: Frequency – Factory

As previously mentioned in Chapter 1 and 3, a large component of the workforce consists of contract or part-time employees. Almost 39% of the respondents included in this study were contract employees (Figure 4-6). With such a large component contract employees it is interesting to see that despite this, almost 50% of employee have worked for the company for 5 years or more, as shown in Figure 4-5.

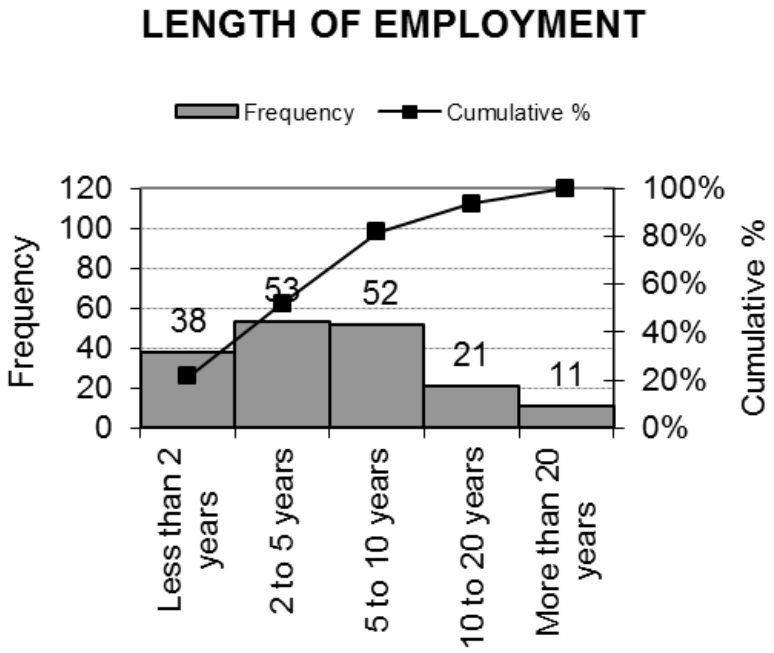


Figure 4-5: Frequency - Length of employment

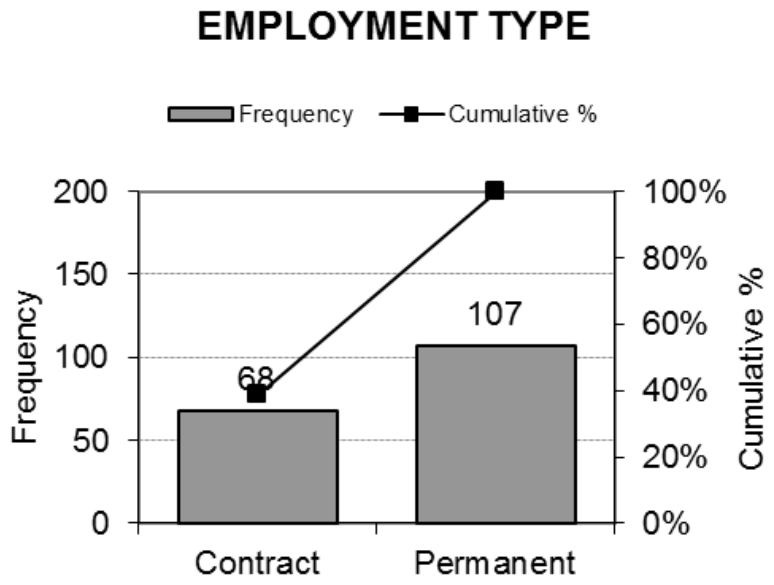


Figure 4-6: Frequency - Employment type

The level of employment of the sample is shown in Figure 4-7. The majority (74%) of respondents can be classified as being factory-related, with the remainder of the respondents being in some form of a management position. This is typical in a manufacturing organisation where the majority of tasks are manual labour, directly related to the production process.

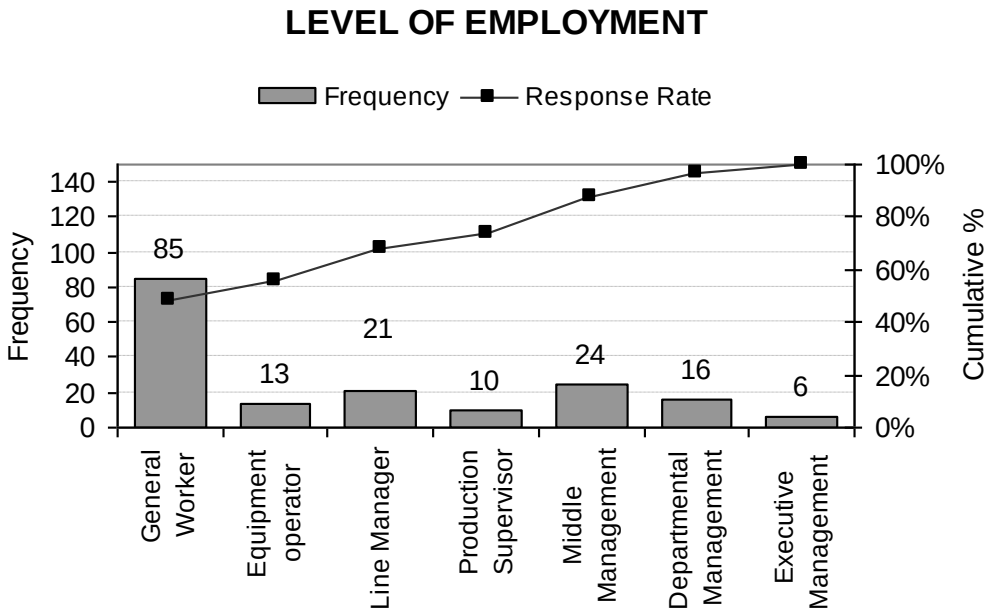


Figure 4-7: Frequency - Level of employment

Figure 4-8 shows the statistics on the respondents' level of education. As can be expected the overall level of education is quite low, with only 28% of respondents having completed some form of tertiary qualification. This can be of concern to the organisation as the lack of education could hamper the employee development process, and could mean that some specialist skills will need to be sourced externally.

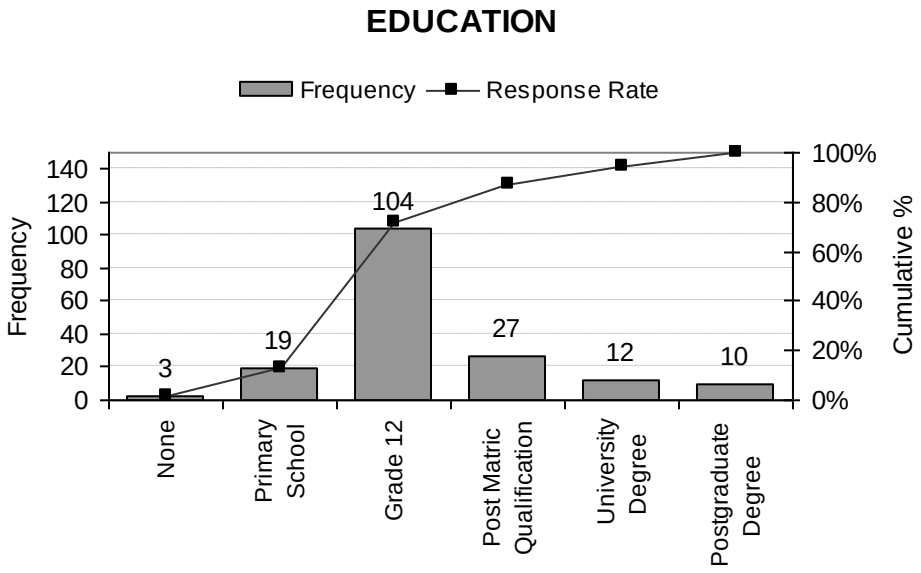


Figure 4-8: Frequency - Education

This section presented the descriptive statistics of the total sample. From these statistics the sample does adequately represent the study population in terms of gender, demographics, education and level and type of employment. There was no clear evidence that any group of individuals in the study population was not presented in the sample. The following section presents the results of the research into HWP, the independent variable in the research study.

4.2.1 Healthy workplace practices (HWP)

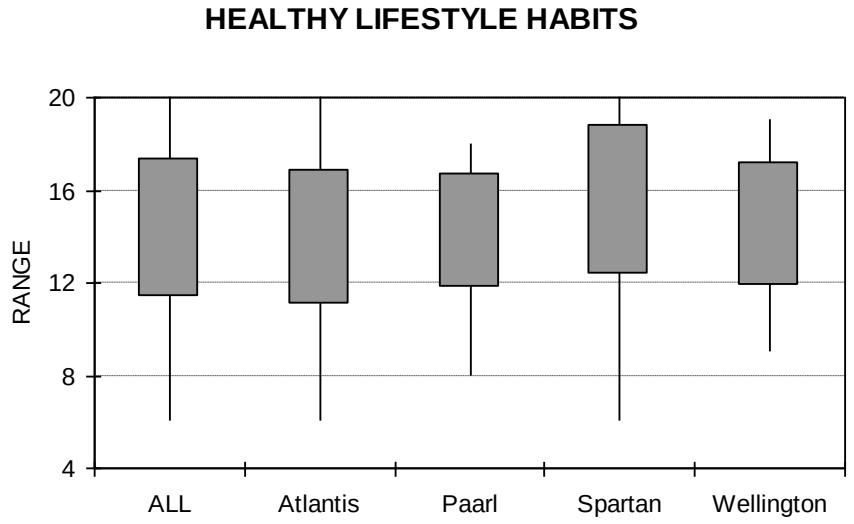
The independent variable HWP consists of four sub-constructs. The statistical analysis of each of the four items is discussed in more details in the subsequent sections.

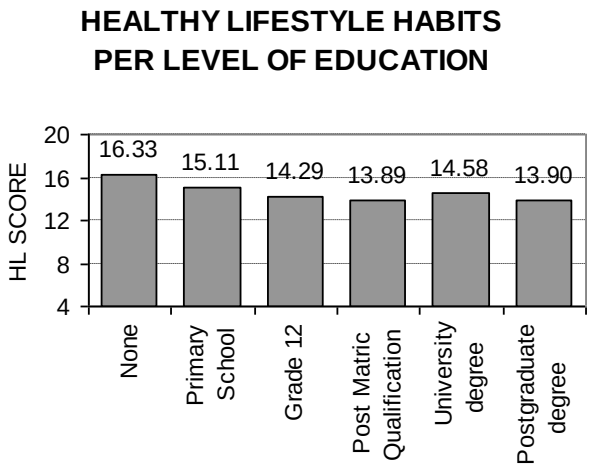
4.2.1.1 Healthy Lifestyle (HL)

The first sub-construct measured is ‘healthy lifestyle’ (HL). The mean, standard deviation and score range of this item is shown in Figure 4-9 below.

Healthy Lifestyle Habits

	Observations	Mean	Std Dev	Min Value	Max Value
ALL	**175**	**14.35**	**2.98**	**6**	**20**
Atlantis	**108**	**13.95**	**2.93**	**6**	**20**
Paarl	**13**	**14.23**	**2.49**	**8**	**18**
Spartan	**34**	**15.56**	**3.24**	**6**	**20**
Wellington	**20**	**14.50**	**2.69**	**9**	**19**





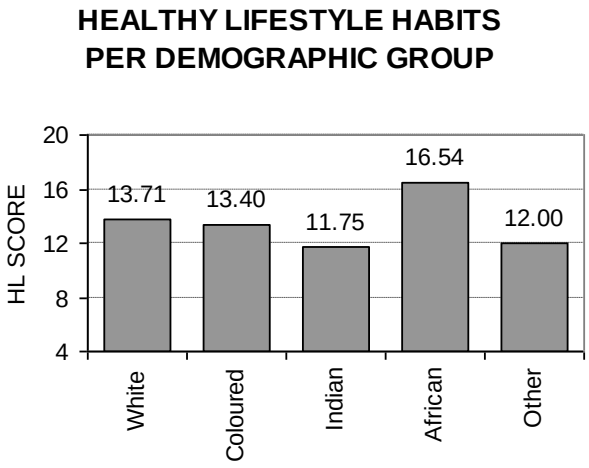


Figure 4-9: Healthy lifestyle habits (HL) descriptive statistics

The statistical reliability of this sub-construct was tested using Cronbach's alpha coefficient. The reliability of this sub-construct, measured at 0.315, was below the acceptable minimum limit of 0.70 (Santos, 1999). Therefore, in the final analysis the item healthy lifestyle habit (HL) was excluded from the dataset in determining the overall healthy workplace practice (HWP) scores.

The Spartan factory achieved the highest overall HL score, with a mean of 15.56. The lowest mean score was achieved by the Atlantis factory, indicating that the employees in the Atlantis factory had the worst healthy lifestyle habits. The consumption of alcohol and the smoking of cigarettes were some of the healthy lifestyle habits tested in the study.

The mean healthy lifestyle score for all the respondents was 14.35. The possible score range was between 4 and 20, and the lowest and highest scores achieved were six and 20 respectively. The box-whisker plots in Figure 4-9 below show that the data was slightly skewed towards the maximum score. The HL scores obtained for the Spartan factory were more skewed than the rest of the sites. This indicates that although a few individuals in Spartan indicated very low healthy lifestyle habits, the majority of respondents scored high for this construct.

The data showed that there were some differences between different demographic groups, with respondents from the 'black' demographic group achieving the highest overall mean score (16.54). This is significantly higher than the next-highest demographic group ('white') with a mean of 13.71. On the other end of the scale, the 'indian' demographic achieved the lowest mean score of 11.75. However, the 'indian' demographic group consists of only four respondents and may therefore not be an accurate reflection on this demographic in its entirety.

The data further indicated a slight decline in the HL score based on the respondent's level of education. Respondents with no formal education achieved the highest HL score, whilst respondents with the highest level of education (post-graduate degrees)

achieving the lowest score. This result could make for interesting future research into the decline of healthy lifestyle habits with higher levels of education. A possible explanation could be that higher levels of education leads to higher-level jobs with associated higher levels of stress and longer hours at work resulting in less healthy lifestyle habits.

4.2.1.2 Employee health (EH)

The second sub-item of HWP is that of employee health (EH). This construct was measured by means of a structured 20-item questionnaire. A total of 175 eligible responses, equal to a 55% response rate, were included in the dataset. Upon examining the data one possible outlier was identified. To test whether this data point was indeed an outlier, the Z-scores were calculated for the original data set. The minimum and maximum Z-scores are equal to three standard deviations from the mean of the dataset. The data point in question (nr 26) proved to be below the lower Z-score (31.7) and was therefore excluded from the data set. This analysis is shown in Table 4-1 below. The table shows the change in mean and standard deviation due to the removal of the outlier.

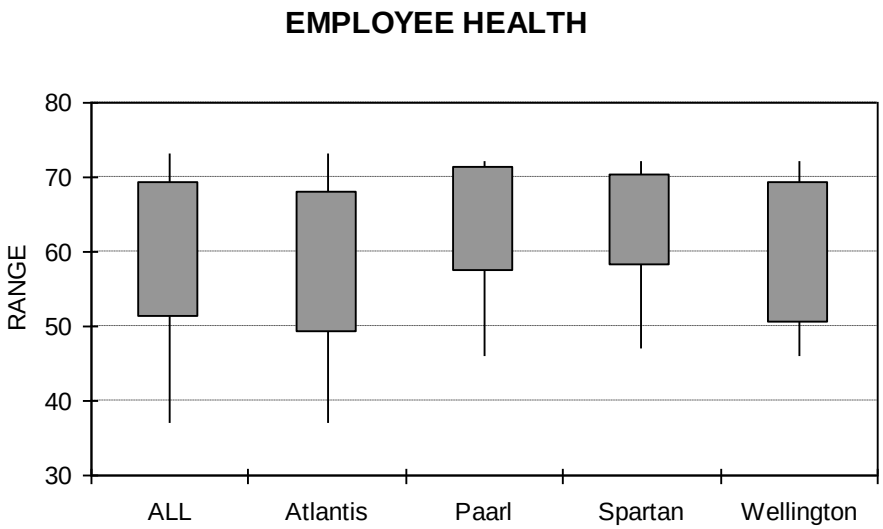
Table 4-1: Employee health - Identification of outliers

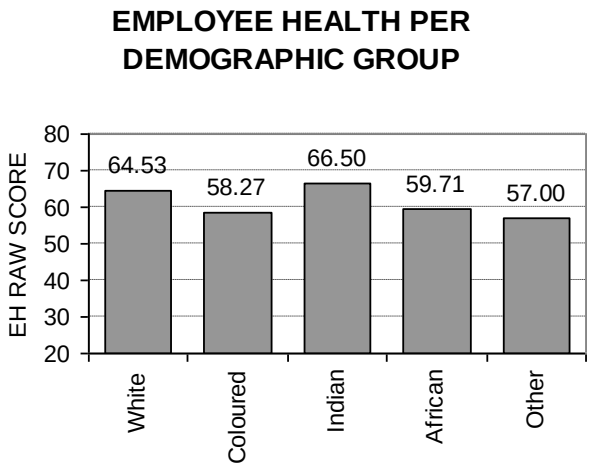
Employee Health - Identification of outliers							
	Observations	**Mean**	**Std Dev**	**Min Value**	**Max Value**	**Z - min**	**Z - max**
ALL (original)	**175**	**59.91**	**9.40**	**26**	**73**	**31.7**	**88.1**
ALL (after)	**174**	**60.10**	**9.07**	**37**	**73**	**32.9**	**87.3**

The site with the highest level of employee health was Paarl with a mean raw score of 64.23. The site with the lowest mean raw score was Atlantis with 58.38.

Employee Health

	Observations	Mean	Std Dev	Min Value	Max Value
ALL	**174**	**60.10**	**9.07**	**37**	**73**
Atlantis	**107**	**58.38**	**9.53**	**37**	**73**
Paarl	**13**	**64.23**	**7.13**	**46**	**72**
Spartan	**34**	**64.15**	**6.07**	**47**	**72**
Wellington	**20**	**59.75**	**9.39**	**46**	**72**





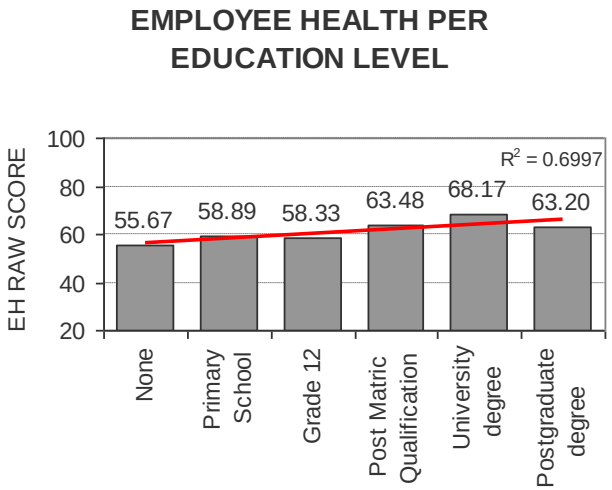


Figure 4-10: Employee Health (EH) descriptive statistics

The reliability of this section of the questionnaire was determined by calculating the Cronbach alpha coefficient for the data set. The calculated value of 0.87 was higher than the previously mentioned threshold for reliability of 0.70. The Cronbach alpha obtained for this section of the data set was in line with the reliability of 0.92 obtained in previous studies (as mentioned in Section 3.2.3.1) The data from this section of the questionnaire were therefore considered reliable and were thus included in further analysis.

Further analysis of the data showed that the 'indian' demographic group achieved the highest score for employee health, followed by the 'white' demographic. Additionally, the data showed that there seemed to be a positive linear relationship between respondents' level of education and health. The R^2 between these variables was 0.6997, as indicated in Figure 4-10 above.

Analysis indicated that there was no indication of a correlation between employee health and age, with a coefficient of determination (R^2) between the two variables equal to only 0.0241 as shown in Figure 4-11 below.

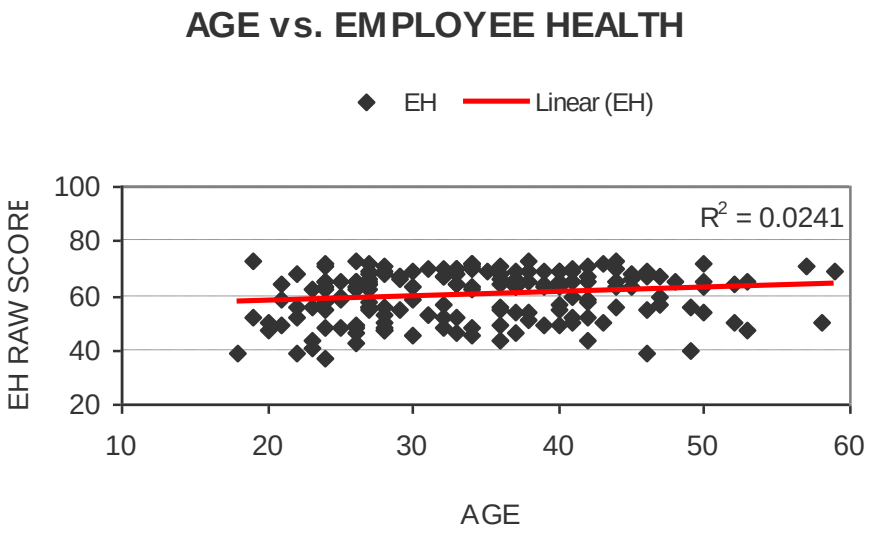


Figure 4-11: Age vs. Employee Health

4.2.1.3 Employee involvement (EI)

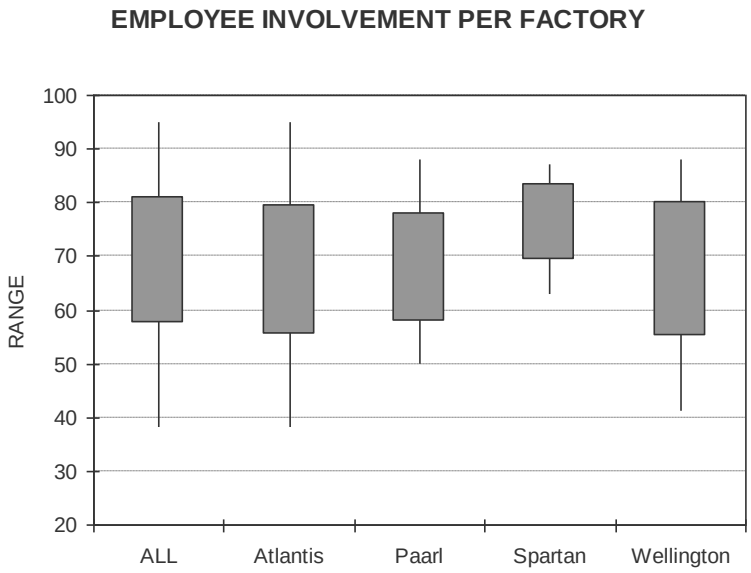
Employee involvement was measured using a 20-item structured questionnaire, measured on a five-point Likert scale. A total of 175 eligible responses were received, with no data points falling outside the limits of what would be considered an outlier. Using Cronbach's alpha coefficient, this construct's reliability was calculated as 0.72. Because this is above the threshold of 0.70, the data obtained for employee involvement were included in the final analysis.

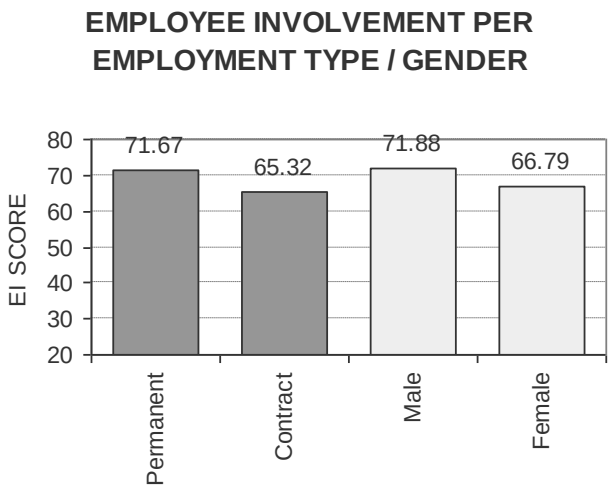
As shown in Figure 4-12, Spartan achieved the highest average for this construct, with a mean score of 76.29. Spartan also achieved the lowest standard deviation, indicating that the data points were much more centered around the mean. The three other sites' mean scores were very consistent, all achieving scores between 67.44 and 67.85. Both the maximum and minimum scores were from the Atlantis site. A summary of the descriptive statistics for EI is shown in Figure 4-12 below.

The most significant correlations when considering data grouping were around employee type and employees' level of employment, as shown in Figure 4-12. A relatively strong correlation between higher level of employment (or job grade) and higher levels of involvement is reported. Departmental managers achieved the highest level of involvement with a mean of 73.19. Permanent employees also displayed markedly higher levels of involvement than did contract employees. This has significant implications for management as the total ratio of contract to permanent employee is quite high. Thirty-seven percent of all full time equivalents are contract employees. From the literature review in Chapter 2 employee involvement was reported as one of the important 'soft' elements of TQM and a critical input into the success of LM – which both leads to improved organisational performance. Additional benefits could possibly be realised through better employee involvement by decreasing the number of contract employee. The high number of contract employees could be seen as a risk to optimal business performance.

Employee involvement

	Observations	Mean	Std Dev	Min Value	Max Value
ALL	**175**	**69.21**	**11.69**	**38**	**95**
Atlantis	**108**	**67.44**	**12.11**	**38**	**95**
Paarl	**13**	**67.85**	**10.17**	**50**	**88**
Spartan	**34**	**76.29**	**7.21**	**63**	**87**
Wellington	**20**	**67.60**	**12.59**	**41**	**88**





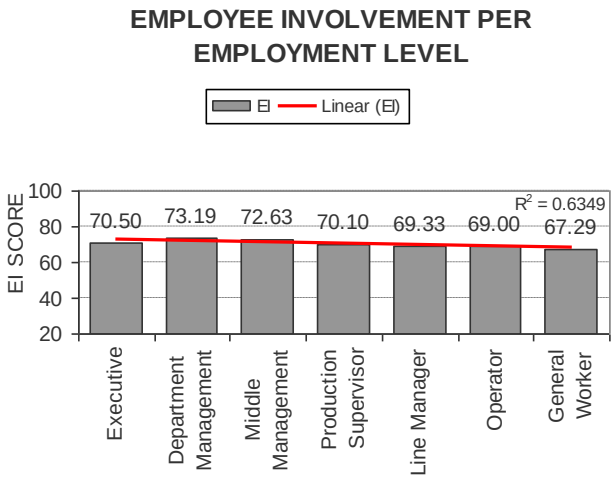


Figure 4-12: Employee involvement (EI) descriptive statistics

As shown in Figure 4-12 above, male employees displayed higher levels of involvement (71.88, 66.79) compared to their female counterparts. This is possibly due to the additional personal responsibility associated with looking after a household which is often expected from working females. With the large number of female employees that form part of the workforce, the company could benefit from programs that benefit female employees through more flexible working conditions.

4.2.1.4 Work-life balance (WLB)

The sub-construct WLB was measured using a 10-item structured questionnaire consisting of statements on a five-point Likert scale. Figure 4-13 below details the statistics regarding the 175 responses received for this portion of the questionnaire. The Cronbach's alpha coefficient for this construct was calculated as 0.87. This is above the threshold of 0.70 and made the dataset statistically reliable for the measure of WLB.

The Paarl-based respondents indicated a significantly lower mean score (24.77) for this construct. The lower mean can be explained by the correlation between the WLB score and the level of employment (job grade). Here, respondents who have more senior management positions showed lower levels of WLB.

There were slightly higher levels of WLB for the 'contract' employee and 'female' employee groups.

Work-life balance

	Observations	Mean	Std Dev	Min Value	Max Value
ALL	**175**	**31.85**	**10.53**	**10**	**50**
Atlantis	**108**	**31.94**	**9.90**	**10**	**50**
Paarl	**13**	**24.77**	**14.04**	**10**	**49**
Spartan	**34**	**34.00**	**10.33**	**12**	**46**
Wellington	**20**	**32.35**	**10.54**	**12**	**49**

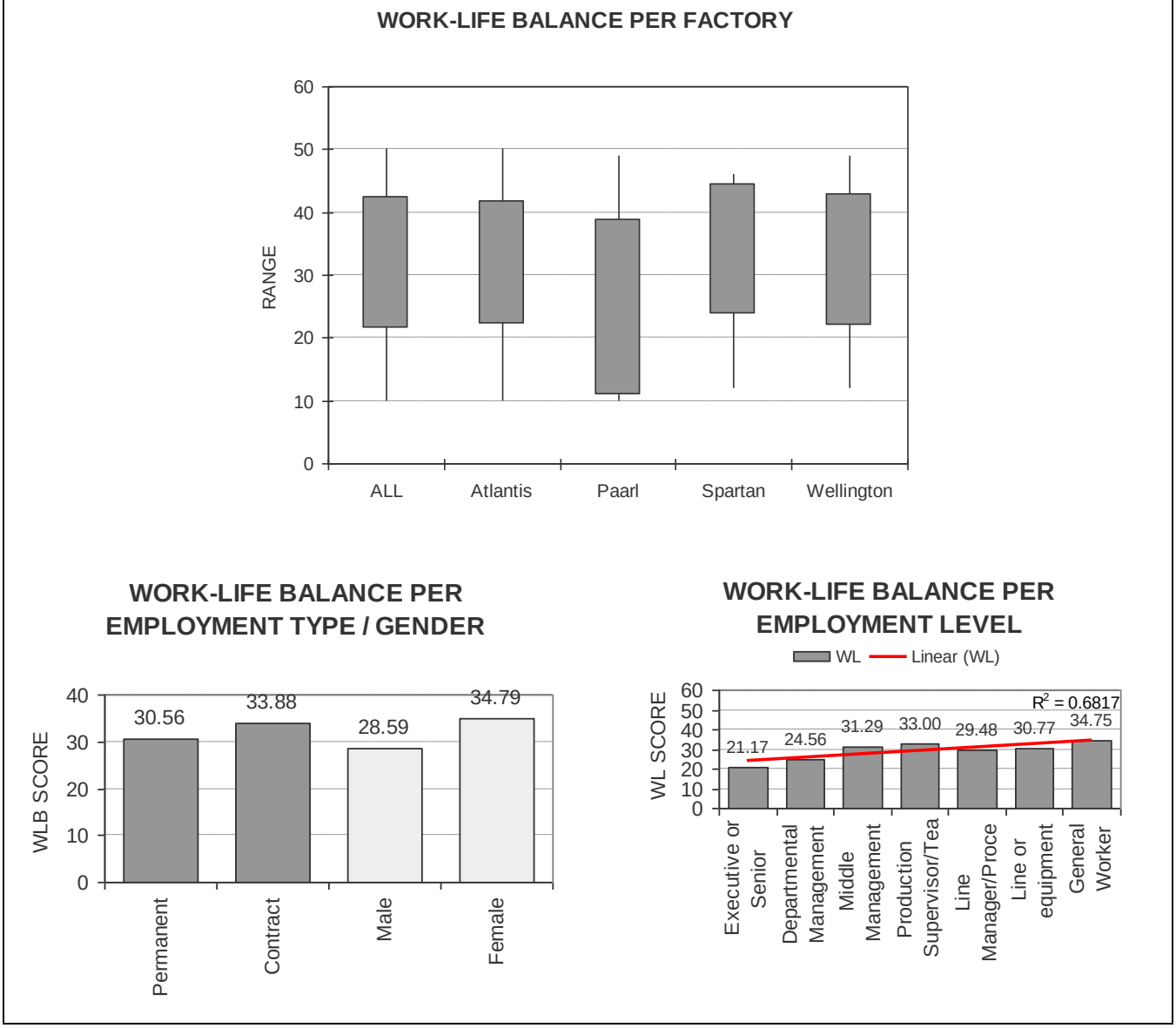


Figure 4-13: WLB descriptive statistics

4.2.1.5 Healthy workplace practices (HWP)

Based on the evidence discussed above, three of the four HWP was included in the final combined dataset when considering HWP as a collective. The three sub-constructs are employee health (EH; Alpha = 0.87), involvement (EI; Alpha = 0.72) and work-life balance (WLB; Alpha = 0.87). Each of these three constructs exceeded the threshold of 0.70 for data reliability, based on the Cronbach Alpha coeeficient.

As the main research questions revolve around the relationship between HWP and CI, only responses related to the three factories were included in the final dataset. The one data point identified as an outlier in Section 4.2.1.2 was excluded from the final dataset. Therefore, the final data set was reduced to 161 data points, split according to the factory locations (Figure 4-14).

As can be seen in Figure 4-14, the Spartan factory exhibited marginally higher HWP than the other two sites, Atlantis and Wellington. The lowest score (2.51) was obtained in Wellington, and the highest in Atlantis (4.76). Apart from having the highest mean value, Spartan also had the smallest standard deviation of data.

Healthy Workplace Practices (Average Scores)

	Observations	Mean	Std Dev	Min Value	Max Value
Atlantis	**107**	**3.48**	**0.49**	**2.63**	**4.76**
Spartan	**34**	**3.84**	**0.41**	**3.10**	**4.54**
Wellington	**20**	**3.53**	**0.58**	**2.51**	**4.56**

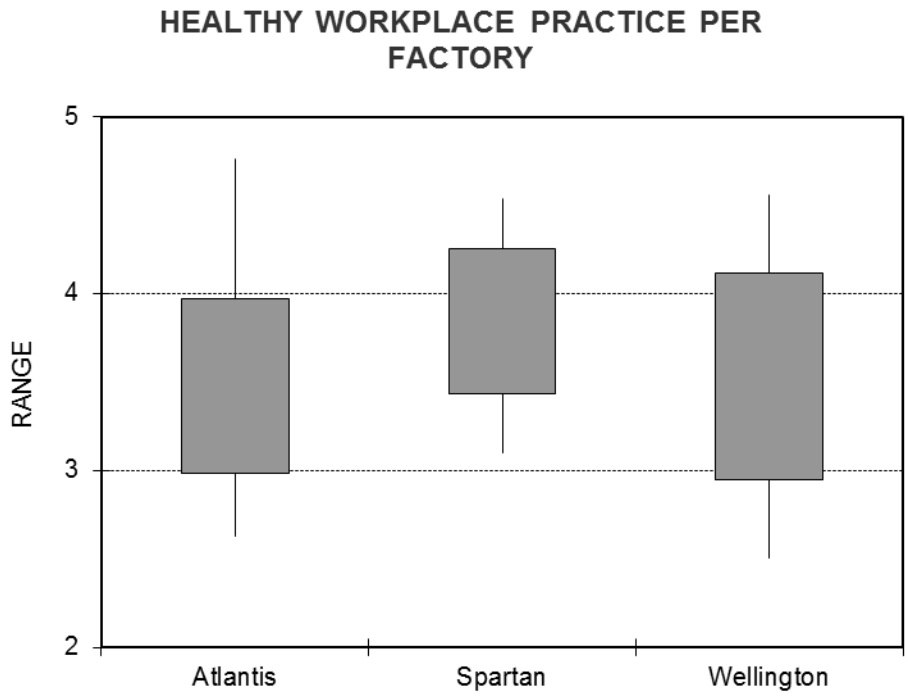


Figure 4-14: HWP descriptive statistics

This section described the descriptive statistics of the four HWP as well as the combined healthy workplace practice scores. The following section deals with the descriptive statistics of the results achieved for the three sites' CI self-assessment.

4.2.2 Continuous Improvement Maturity

The maturity of CI initiatives at each of the three sites was evaluated by means of a structured self-assessment, as described in Chapter 3. This assessment consists of 10 elements, each made up of a number of questions. Table 4-2 summarises the scores obtained for each of the ten elements at each of the sites. The overall score is shown graphically in Figure 4-15.

Table 4-2: Continuous improvement maturity scores

Continuous Improvement Maturity (CIM) Scores					
HGPS Element	**Atlantis**	**Spartan**	**Wellington**	**Mean**	**Std Dev**
01 L&MC	**1.06**	**1.07**	**1.29**	**1.14**	**0.13**
02 TW	**1.20**	**1.18**	**1.27**	**1.22**	**0.05**
03 5S	**1.08**	**1.06**	**1.15**	**1.10**	**0.05**
04 VM	**1.41**	**1.29**	**1.63**	**1.44**	**0.17**
05 FI	**1.23**	**1.19**	**1.41**	**1.27**	**0.11**
06 QU	**2.01**	**1.62**	**2.11**	**1.91**	**0.26**
07 AC	**1.35**	**1.31**	**1.35**	**1.34**	**0.02**
08 AM	**1.06**	**1.07**	**1.21**	**1.11**	**0.08**
09 STR	**1.00**	**1.00**	**1.26**	**1.09**	**0.15**
10 EHS	**1.69**	**1.48**	**1.71**	**1.63**	**0.13**
TOTAL CIM	**1.31**	**1.23**	**1.44**	**1.32**	**0.11**

The Wellington site achieved the highest overall site CI maturity (CIM = 1.44), with Spartan achieving the lowest level of CI maturity (CIM = 1.23). As described in Chapter 3, CI maturity is measured on a continuum where a minimum score of 1.00 equates to ‘Stage 1: Status quo - No best practice’ and a maximum score of 5.00 equates to ‘Stage 5: Way of life - World Class’.

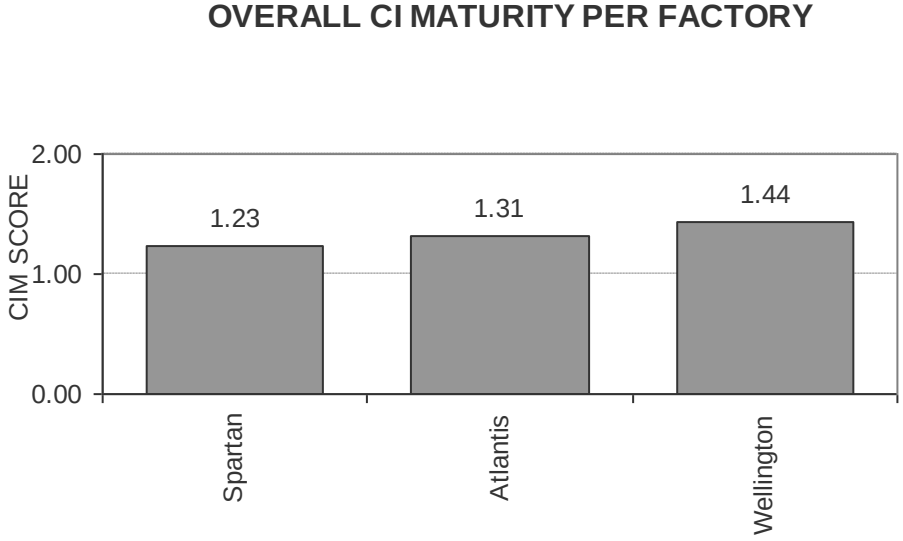


Figure 4-15: Overall CI maturity per factory

The scores shown in Figure 4-15 relates to quite low levels of CI maturity, with no site even developing up to a Stage 2 CI maturity. Considering that the CI maturity range is between 1.00 and 5.00, the difference of 0.21 points between the highest and lowest score is relatively small.

When considering the individual CI elements, the highest mean score is the Quality element (06_QU), followed by the Environment, Health and Safety (10_EHS) element. The mean scores for individual elements range from 1.09 (09_STR) to 1.91 (06_QU). Figure 4-16 below graphically displays the scores achieved by each site on each of the ten CI elements tested during the self-assessment. As can be seen, the three sites show similar trends in terms of the development of each of the ten HGPS elements. The slightly higher mean scores of the ‘Quality’ and ‘Environment, health and safety’ elements are most probably attributed to the existing Heinz global quality risk management and operational risk management programs that have been rolled out at all three sites.

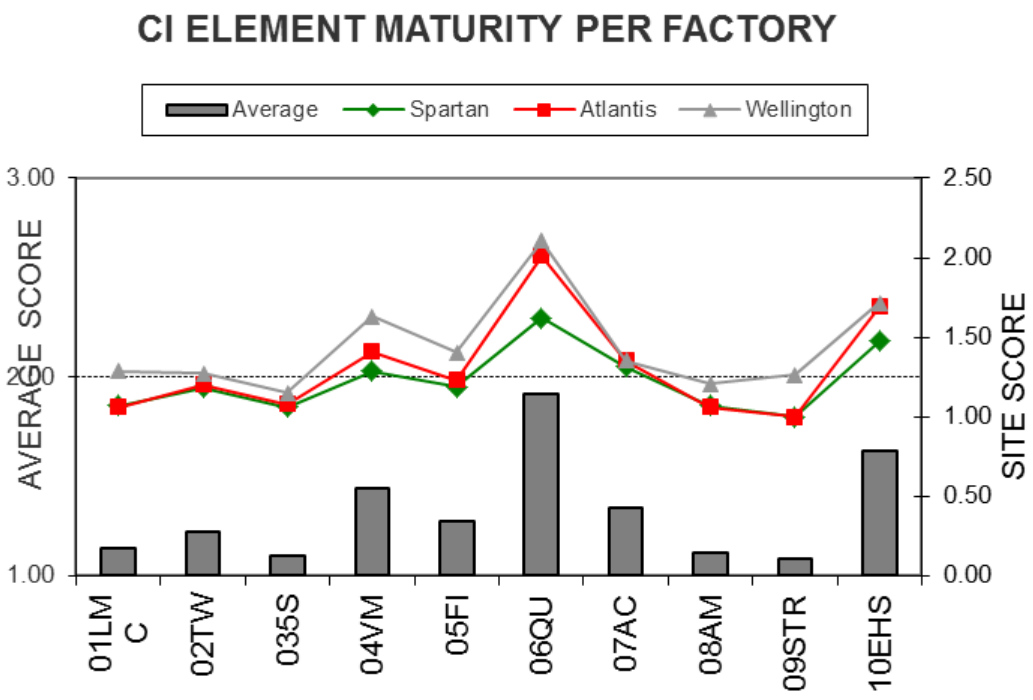


Figure 4-16: CI Element scores per factory

This section presented the data obtained during the research study by means of descriptive statistics. The various dependent and independent variables were discussed as well as the different units of analysis. The next section discusses any relationships between the dependent and independent variables in an attempt to achieve the research objectives stated in Chapter 1.

4.3 CORRELATIONS

Where the preceding section covers the descriptive statistics of the data set, the following section investigates any correlations evident between the independent, dependent and nuisance variables.

4.3.1 HWP and CI maturity

The primary objective of the study is to establish whether the level of overall HWP have an effect on the maturity of CI initiatives. To establish whether there is any relationship between these two variables, simple linear regression was used.

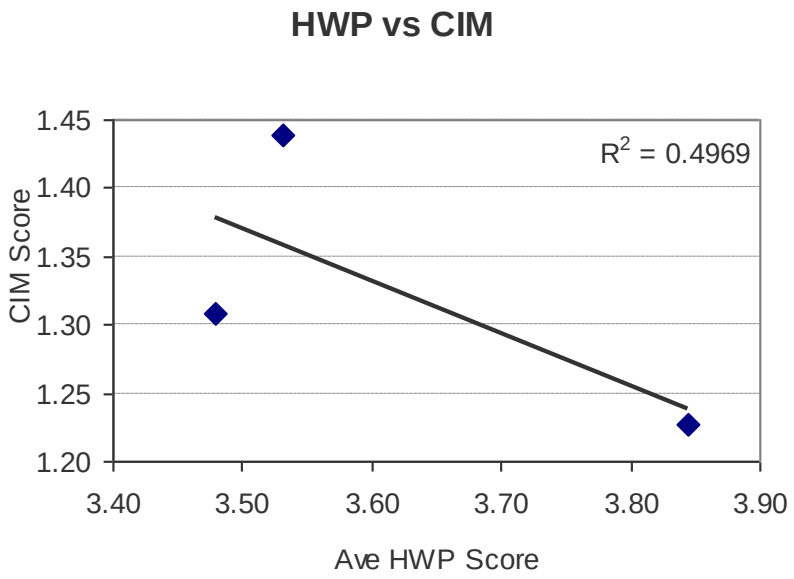


Figure 4-17: Scatterplot - HWP vs CIM

The trendline displayed in Figure 4-17 above tells us that there was a negative linear relationship between HWP and the success and maturity of CI initiatives (CIM). The coefficient of determination (R^2 = 0.4969) indicates that this was not strong relationship as only 49.69% of the variation in the CIM score could be explained by the variability in HWP score.

Table 4-4 is the output of the ANOVA analysis for these two variables. It shows that at a 5% level of significance there was no evidence of a linear relationship between HWP and CIM. This is indicated in **Error! Reference source not found.** by a *p*-value of .502, which is more than 0.05.

Table 4-3: ANOVA analysis output - HWP vs. CIM

ANOVA Results - HWP vs CIM

Regression Statistics	
Multiple R	0.705
R Square	0.497
Adjusted R Square	-0.006
Standard Error	0.107
Observations	3

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.011	0.011	0.988	0.502
Residual	1	0.011	0.011		
Total	2	0.023			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	2.700	1.385	1.949	0.302	-14.900	20.301
HWP Ave Score	-0.380	0.382	-0.994	0.502	-5.240	4.479

In order to satisfy the assumptions of regression, data were tested against the assumptions of regression. The four assumptions are linearity, independence of errors, normality of error and equal variance.

To evaluate linearity, the residuals were plotted against the corresponding data points. The results are shown in Figure 4-18 below. The residuals plot shows no evidence of a pattern in the residual points, therefore the assumption of linearity is satisfied.

All data were collected within the space of one month. Generally any significant changes to CI maturity or HWP would take an extended period of time to develop. Therefore, there is no reason to suspect that there are any time-based variances in the data-set. Therefore the assumption of independence was satisfied. The assumption of normality was tested by means of constructing a normal probability plot of the data. As can be seen in Figure 4-18 below, this plot approximates a straight line, which points to the fact that the errors are normally distributed. Lastly, equal variance was evaluated by checking if there are any increases or decreases in the residuals as the value of the independent variable increases or decreases. As this consolidated data-set has been

reduced to only three data points it was difficult to determine whether the reduced variance in the residuals observed below are the result of unequal variance or simply a function of the small data set.

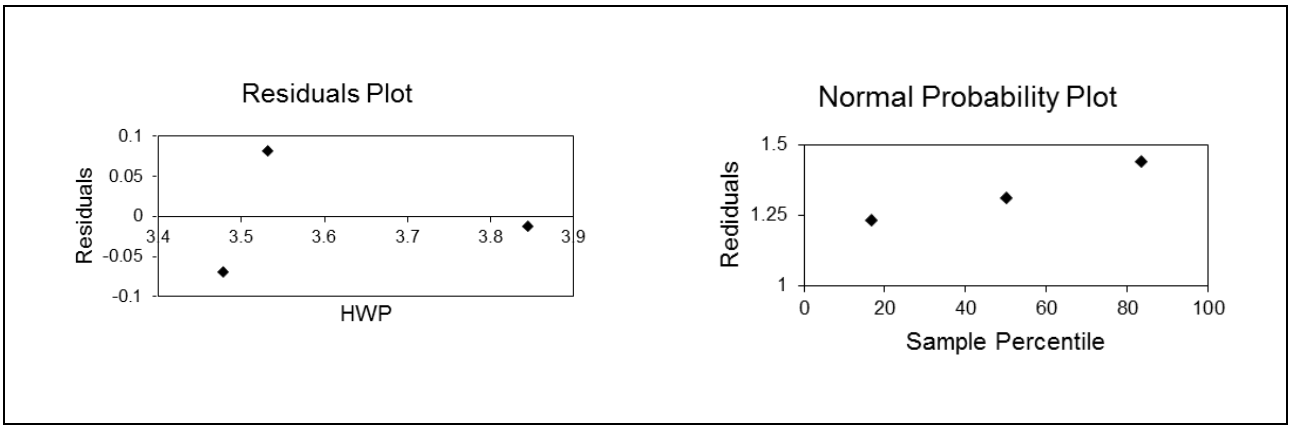


Figure 4-18: Assumptions of regression plots

Based on the discussion above, it can safely be derived that the four assumptions of regression was satisfied.

4.3.2 Nuisance variables

Two possible nuisance variables were defined in Chapter 3. The first potential nuisance variable is whether or not the site has had previous exposure to HGPS (abbreviated as the variable HE). In this case, only the Atlantis site had any previous exposure to HGPS. This was coded by assigning a value of one (1) as a positive for previous exposure, or a zero (0) for no previous exposure. The other potential nuisance variable was the level of management education. The value for each site was calculated based on the methodology explained in Section 3.3.4.

The scatterplots in Figure 4-19 below show that the variation in the level of neither of these nuisance variables has any significant effect on the variation in the dependent variable, CIM. By means of a regression analysis it was shown that at a 5% level of

significance there were no evidence of a linear relationship between either of the two nuisance variables and CIM. Both variables have a *p*-value larger than 0.05. These nuisance variables are therefore considered to be controlled in the present study and will not have any significant effect on the results.

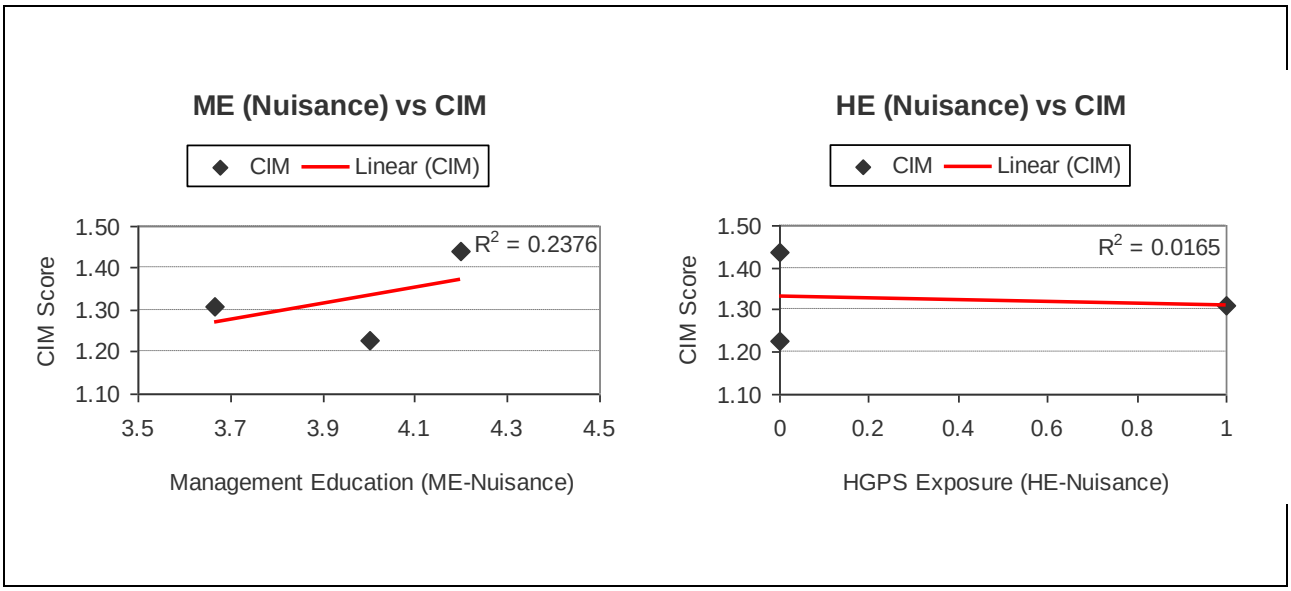


Figure 4-19: Scatterplots of nuisance variables

4.3.3 Individual HWP and CI maturity

This section of the data analysis and interpretation investigated whether any of the sub-items that make up HWP has an influence on the level of CI maturity.

The results of a linear regression analysis show that at a 5% level of significance, there was no evidence of a linear relationship between any of the individual HWP and overall CI maturity. Figure 4-20 below show the scatterplots of these combinations as well as the coefficient of determination and *p*-values obtained for each.

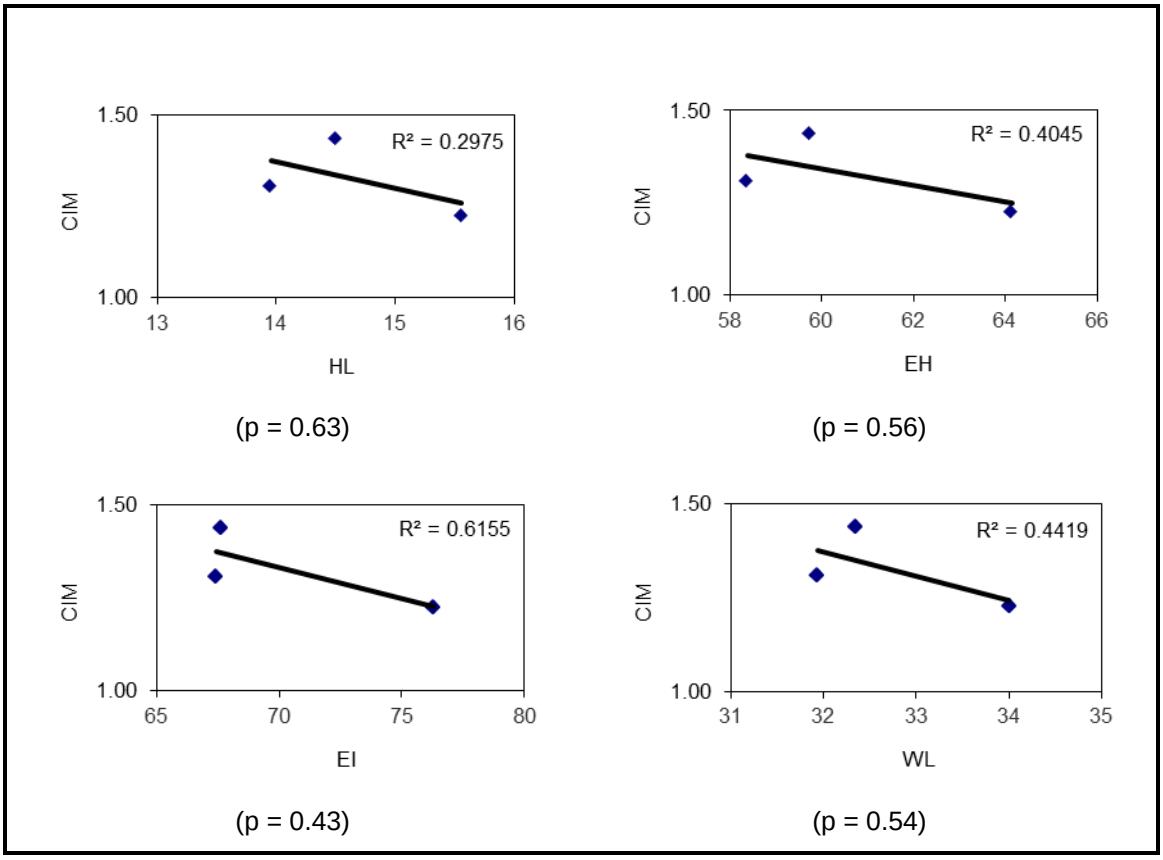
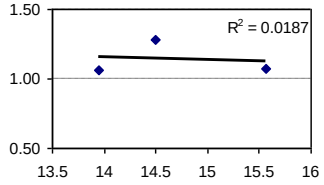
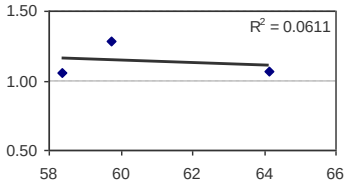
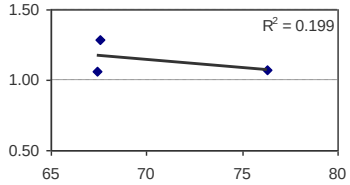
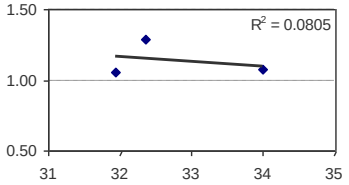
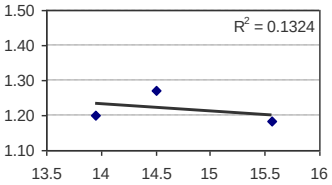
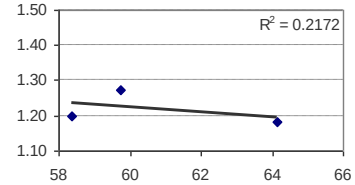
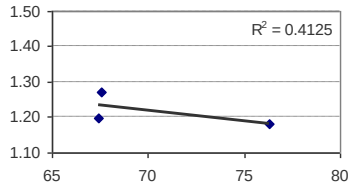
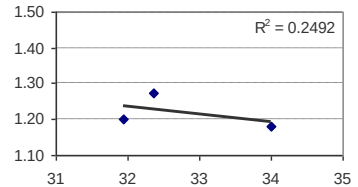
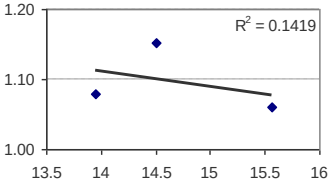
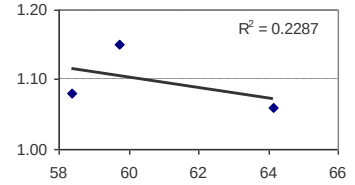
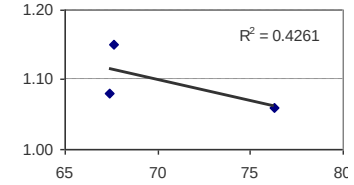
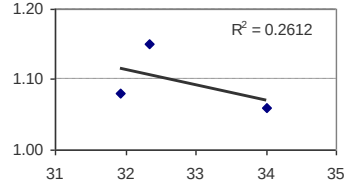
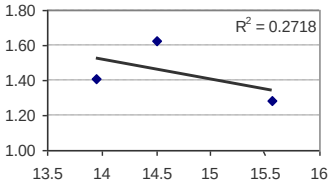
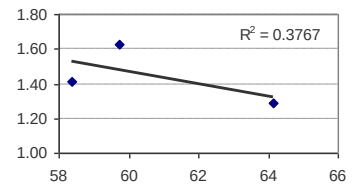
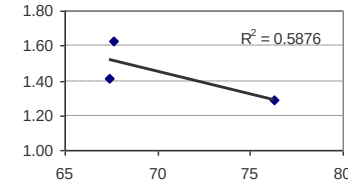
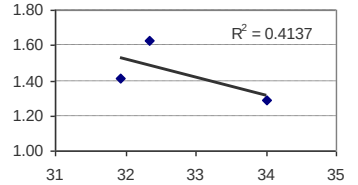


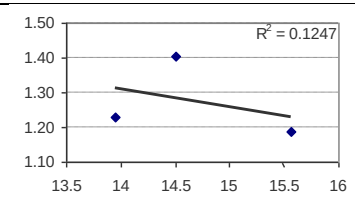
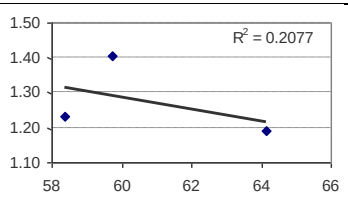
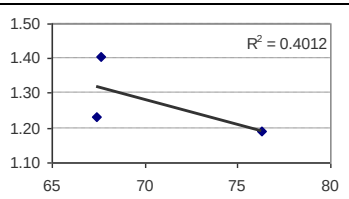
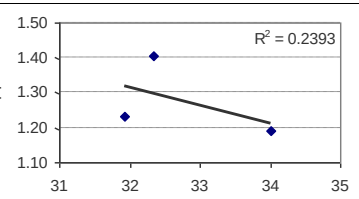
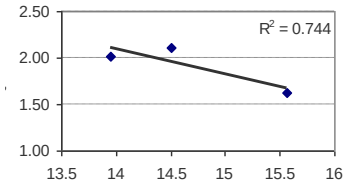
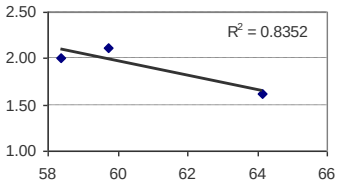
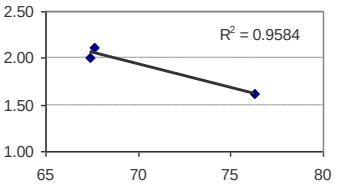
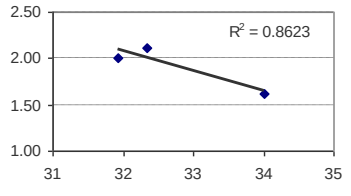
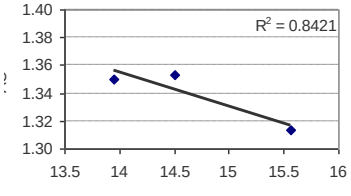
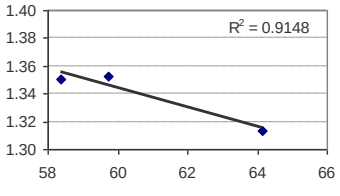
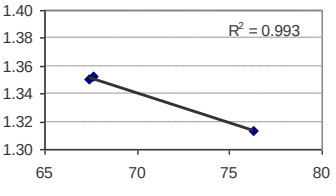
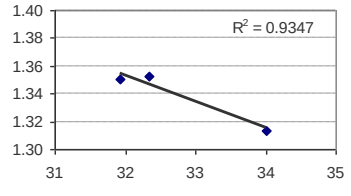
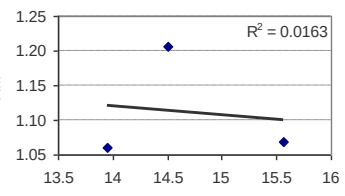
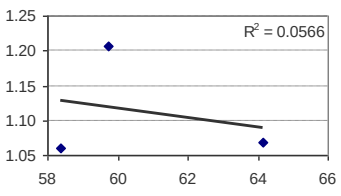
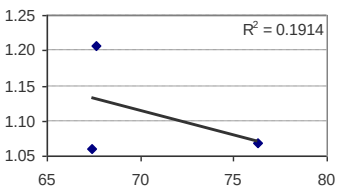
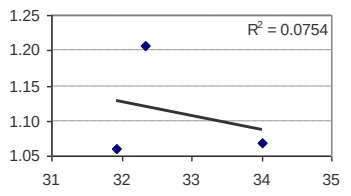
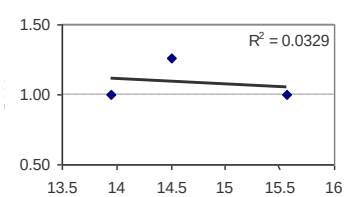
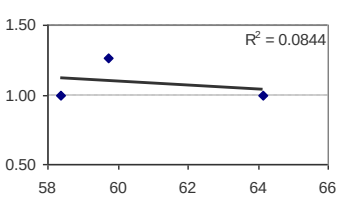
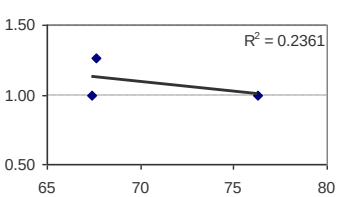
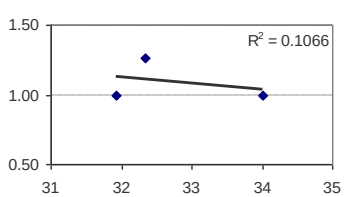
Figure 4-20: Scatterplots for HWP sub-items and CIM

4.3.4 Individual HWP and CI sub-elements

This section considers whether any of the four individual HWP sub-items as independent variables have a significant relationship to any of the CI maturity (CIM) sub-items as dependent variables. Table 4-4 below shows the scatterplots associated linear regression lines and coefficient of determination of each of these combinations.

Table 4-4: Scatterplots of sub-items of HWP and CIM

	HL	EH	EI	WL
01_LMC				
02_TW				
03_5S				
04_VM				

05_FI				
06_QU				
07_AC				
08_AM				
09_STR				

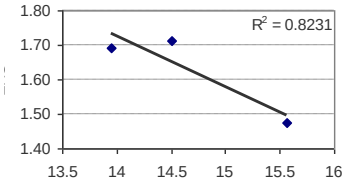
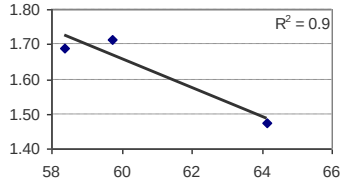
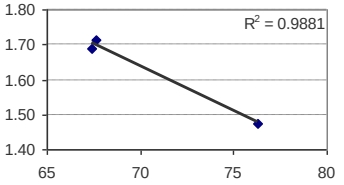
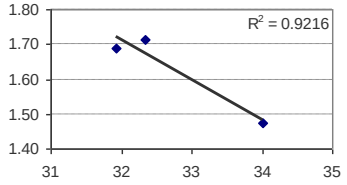
10_EHS	 1.80 1.70 1.60 1.50 1.40 13.5 14 14.5 15 15.5 16 R² = 0.8231	 1.80 1.70 1.60 1.50 1.40 58 60 62 64 66 R² = 0.9	 1.80 1.70 1.60 1.50 1.40 65 70 75 80 R² = 0.9881	 1.80 1.70 1.60 1.50 1.40 31 32 33 34 35 R² = 0.9216

Table 4-5: Summary of R^2 between sub-items of HWP and CIM

R^2 between sub-items of HWP and CIM				
Red indicates $R^2 > 0.75$				
	HL	**EH**	**EI**	**WL**
01 L&MC	**0.0187**	**0.0611**	**0.1990**	**0.0805**
02 TW	**0.1324**	**0.2172**	**0.4125**	**0.2492**
03 5S	**0.1419**	**0.2287**	**0.4261**	**0.2617**
04 VM	**0.2718**	**0.3767**	**0.5876**	**0.4137**
05 FI	**0.1247**	**0.2077**	**0.4012**	**0.2393**
06 QU	**0.7440**	**0.8352**	**0.9584**	**0.8623**
07 AC	**0.8421**	**0.9148**	**0.9930**	**0.9347**
08 AM	**0.0163**	**0.0566**	**0.1914**	**0.0754**
09 STR	**0.0329**	**0.0844**	**0.2361**	**0.1066**
10 EHS	**0.8231**	**0.9000**	**0.9681**	**0.9216**

From a linear regression analysis, it was shown that, at a 5% level of significance, there was no indication of a linear relationship between any of the abovementioned variables. For each one of the combinations, the *p*-value obtained was more than 0.05.

4.4 RESULTS, CONCLUSIONS AND RECOMMENDATIONS

The preceding sections presented the results of the research study in statistical format. These results are meant to satisfy the primary and secondary research objectives of the study.

The primary objective of the study is to establish whether there is any relationship between the level of HWP as a whole and the success and maturity of CI initiatives between the three factories of HFSA.

In order to achieve the primary objective, the following secondary objectives were formulated:

Through a literature review:

- define CI by means of the ten elements of HGPS program;
- define the elements that make up HWP in general; and
- define any potential touch-points between HWP and CI.

Furthermore, through an appropriate research methodology:

- Assess the level of the each of the sub-constructs of HWP as well as the total HWP at HFSA by means of a questionnaire to individual employees.
- Determine the success and maturity of CI initiatives on a site specific level through a structured self-assessment questionnaire against a set of pre-defined CI criteria as defined by the HGPS program.
- Determine whether there is any relationship between the constructs of HWP as independent and CI maturity as dependent variable.

The study needs to answer the main research question: Do HWP influence the success and maturity of CI initiatives at HFSA.

4.4.1 Primary research objective

Firstly, the study showed that there was no significant relationship between HWP and the success and maturity of CI initiatives at HFSA. However, this conclusion could be influenced by the fact that all three sites were still only starting out with the HGPS programmes and therefore the level of maturity of the CI initiatives was very low. The highest total score for CI maturity (CIM) was only 1.44 out of a potential maximum score of 5.00.

The literature review conducted in Chapter 2 suggested that both HWP and CIM have a positive influence on similar organisational and business performance measures. However, the results of the present study show that CI may not be the vehicle through which HWP has its influence on organisational and business performance. The results

seem to suggest that these two elements have independent influence on performance. The present study provides little or no evidence of any influence of HWP on CI maturity.

However, the lack of a significant relationship between HWP and CI presented in this study does not prove that, should the investment and effort in the HGPS program over a period of time be applied consistently across the three sites, that an improvement in HWP will not have a positive influence on the maturity of CI initiatives. This is potentially a topic for future longitudinal research into the relationship between HWP and CI maturity.

Future research could also investigate whether a change in CI maturity over time has had any influence on the level of HWP. Should this prove to be true, some of the hidden benefits of a successful CI program will be revealed.

The small sample of factories used in this study might have influenced the results obtained. For future studies it is suggested that a larger sample of factories, possibly from the European, Middle-East and Africa regions be included. This will allow the future researcher to evaluate the CI programs across a wider range of maturity. Additionally, more data points will assist in evaluating whether a relationship exists between HWP and CI maturity.

4.4.2 Secondary research objectives

After analysis and interpretation of the HWP questionnaire and CI self-assessment data, no evidence were found of a significant relationship between any of the four sub-items of HWP and the ten HGPS elements considered in the present study. In addition, none of the four sub-items of HWP had a significant relationship with total CI maturity. Once again, this is not to say that over time a change in any of the four HWP sub-items will not have a positive or negative relationship on the change in CI maturity over the same time period. This is something that future studies into the effect of HWP on CI maturity could certainly consider.

4.4.3 Other observations

The results of the present study further showed that there were some differences between the HWP sub-constructs. Healthy lifestyle (HL) habits were the best in the African demographic group, with the main drivers being lower smoking and alcohol consumption habits. Both these factors have been proven to have adverse impacts on overall health. Consequently, management should take notice of the potential higher long-term health care cost associated with the other demographic groups.

The level of education also influences the level of employee HL habits. This is cause for concern, as higher levels of education are usually associated with higher management positions with more demands and less favourable HL behaviours. The company therefore should take the appropriate action to ensure that senior level employees have adequate guidance and support in order to ensure they maintain healthy lifestyle habits. The degradation of some of these habits could be the result of excess workloads and stress.

Employee involvement (EI) was higher with permanent employee than with contract employees. The benefits of high employee involvement is well-documented in Chapter 2 and includes having a positive impact on employee commitment, productivity and dedication as well as a negative impact on burn-out and employee turn-over. With the high percentage of employees currently being employed as contract workers, HFSA is potentially losing out on the organisational benefits of the higher levels of employee involvement observed in the group of permanent employees.

Employee involvement increases with seniority. HFSA could benefit from higher levels of employee involvement at lower levels and could thus invest in determining the barriers to achieving higher levels of involvement at these lower levels. Actively addressing these barriers could positively contribute to the organisational benefits listed above.

As with employee involvement, WLB deteriorates with seniority. As discussed in Chapter 2, WLB has an effect on turnover, job satisfaction, stress and productivity. Manufacturing facilities are generally less flexible in terms of working hours and therefore make some of the most popular WLB initiatives like flexible working hours, a compressed work-week and work from home impractical. However, HFSA should consider the potential negative effect of lower levels of WLB and look at innovative ways to improve it, especially at senior level. As the senior management contingent of the company is relatively small, it might be worthwhile to consider this on an individual basis.

4.4.4 Conclusions, recommendations and management considerations

The present study investigated the relationship between HWP and the success and maturity of CI initiative at local food manufacturer HFSA. The study was conducted across the three HFSA manufacturing facilities and consisted of determining the level of HWP at each of the three sites by means of a structured questionnaire to a sample of employees. A structured self-assessment was used to determine the level of CI maturity at each of the three sites.

The literature review conducted in Chapter 2 of this research study suggested that both OHW programs and CI drive similar improvements in organisational and employee performance measures. Some HWP, the result of successful OHW programs, were seen as critical to the success of CI initiatives. However, whether or not this relationship between HWP and the success and maturity of CI initiatives existed was unclear from the existing literature.

This study provided no evidence of a relationship between HWP and the success and maturity of CI initiatives at HFSA at this point in time. The study does not disprove that the development of HWP over time will not have a positive relationship on the success of CI initiatives, or visa-versa. This is a potential topic for future research. However, the results of the study raise some questions regarding the interest and investment in

developing HWP in the organisation. To what extent can the inherent characteristics of a workforce really be the driving force behind company-wide improvements? Are there any reason to believe that a causal link could exist between HWP and CI maturity? Or are other factors like management resources and funds committed to programmes like HGPS really the driving force behind the success of these initiatives.

The present study did not consider the impact of higher levels of either HWP or CI maturity of specific organisational performance indicators. Future studies into this topic could include this as a factor when considering the existence of a causal link between the two constructs included in this study.

This study into the relationship between HWP and CI maturity provided insight into the way that organisational and personnel development issues will support or influence company-wide CI programs like HGPS. Although no clear evidence was found of a significant relationship between the two constructs, the study did provide insight into the level of HWP in the company as a whole and the differences between the three sites. HFSA could use this information to design site-specific interventions aimed at improving employee health, involvement and WLB. Improving these indicators could assist in driving down the direct cost related to health-care and absenteeism, and improve productivity.

The present study showed that healthy lifestyle habits and WLB are negatively influenced by the respondents' level in the organisation or job-grade. This information is valuable in pointing the organisation towards where resources should be spent in improving these measures. Both these elements are proven to impact on organisational performance and this impact could be positive and be multiplied when considering employees in higher positions. Therefore, HFSA could do well in developing programs specifically aimed at improving the healthy lifestyle habits of its management through initiatives like healthy food options at the canteen and opportunities for employees to partake in physical exercise to boost overall health. More flexible work schedules and opportunities for management personnel to work from home are also good ways to

improve WLB. These interventions can ensure the maximum benefits are captured from higher levels of employee involvement and WLB in particular.

This study has shown that neither workplace health and wellness nor CI are exact sciences. Although no definitive relationship was found between HWP and CI maturity at HFSA at this point in time, the present study provided enough food for thought through the better understanding of these elements at the organisation. What exactly the relationship is between these two variables should continue to be the focus of future research, specifically into the change and development of these two elements over time.

Following this research, it is even clearer that because work occupies such an enormous place in employees' daily lives, building practices aimed at helping employees thrive are core to the pro-active approach expected of a world-class company that continuously seeks to improve the way it conducts business.

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ANNEXURE A: HWP QUESTIONNAIRE

August 2012

Dear Participant:

HEALTHY WORKPLACE PRACTICE SURVEY QUESTIONNAIRE

My name is Mihan Louw and I am a MBA student at the Potchefstroom Business School of the North West University. For my final year dissertation, I am examining the relationship between healthy workplace practices and the maturity of continuous improvement (CI) practices at Heinz Foods South Africa (HFSA). Because you are an employee of HFSA, I am inviting you to participate in this research study by completing the attached survey questionnaire.

As the Continuous Improvement Manager at HFSA, this research will assist me in gaining a better understanding of the role that employees play in CI initiatives (like HGPS).

The questionnaire will take approximately 15 minutes to complete. All information given by you will remain completely confidential and for that reason, please *do not* include your name. The results of the survey will be used as part of the research done for the dissertation. Once completed, the dissertation will be published into the public domain and be available from the North-West University library.

If you choose to participate in this study, please answer all questions as honestly as possible and return the completed questionnaires. Participation is strictly voluntary and you may refuse to participate at any time without reason or fear of retribution. Completion and return of the questionnaire will indicate your willingness to participate in this study. If you require additional information or have questions, please contact me at the number listed below.

Thank you for taking the time to assist me in my academic endeavours.

Sincerely,

Mihan Louw
Student Nr: 22546634
Cell: 076 474 3083 / Email: mihan.louw@za.hjheinz.com

Study Leader: Johan Jordaan
Potchefstroom Business School: North-West University
Tel: 018 299 1416 / Email: jordaan.johan@nwu.ac.za

ANNEXURE B: CI SELF-ASSESSMENT QUESTIONNAIRE

QUESTIONNAIRE

YOUR PERSONAL CODE

You are requested to construct a personal code by following the instructions given below. This code will ONLY be known to you, and thus presents no danger of harming your anonymity or the confidentiality of the information given herein. In the event of similar future data-gathering on health, involvement and work-life balance, you will be asked to construct a code in exactly the same way. This code will then enable the researcher to measure the development of these constructs over time. The code must be made up as follows:

		Example	Your Code
1	Give the first and last letter of the city you were born in	Cape Town = CN	
2	Give the first and last letter of your mother's maiden name (surname before she got married)	Mnisi = MI	
3	Give the first and last letter of your father's name	John = JN	

PART A: PERSONAL INFORMATION

1	Gender	1.1	Male	
	(Select only one option)	1.2	Female	
2	Ethnicity	2.1	Black	
	(Select only one option)	2.2	Coloured	
		2.3	Indian	
		2.4	White	
		2.5	Other	
3	Age			years
4	Length (cm) [ie: 1.83m = 183cm]			cm
5	Weight (kg)			kg
6	How often do you consume alcohol?	6.1	Daily	
	(Select only one option)	6.2	Weekly	
		6.3	Monthly	
		6.4	Rarely	
		6.5	Never	
7	How often do you exercise?	7.1	More than 3 times per week	
	(Select only one option)	7.2	At least once per week	
		7.3	More than 3 times per month	
		7.4	Rarely	
		7.5	Never	
8	I would consider my eating habits to be	8.1	Healthy all of the time	
	(Select only one option)	8.2	Healthy most of the time	
		8.3	Healthy some of the time	
		8.4	Unhealthy most of the time	
		8.5	Unhealthy all of the time	

9	Smoking habits *(Select only one option)*	9.1	More than 5 sigarettes per day	
		9.2	Daily	
		9.3	Weekly	
		9.4	Rarely	
		9.5	Never	

10	Factory/Office Location *(Select only one option)*	10.1	Paarl	
		10.2	Atlantis	
		10.3	Spartan	
		10.4	Wellington	
		10.5	Other	

11	Employment Status *(Select only one option)*	11.1	Permanent	
		11.2	Contract	

12	How long have you been employed by Heinz? *(If you are a contract employee, how long has it been since you first did contract work for Heinz?)*		years

13	Level of Employment *(Select only one option)*	13.1	Executive or Senior Management	
		13.2	Departmental Management	
		13.3	Middle Management	
		13.4	Production Supervisor/Team Leader/Assistant Factory Manager	
		13.5	Line Manager/Process Controller/Assistant Production Manager/Area Supervisor	
		13.6	Line or equipment operator	
		13.7	General Worker	

14	Highest Completed Level of Education *(Select only one option)*	14.1	None	
		14.2	Primary School	
		14.3	Grade 12	
		14.4	Post Matric Qualification (ie: Diploma)	
		14.5	University Degree (ie: BA, Bcomm, BEng)	
		14.6	Postgraduate Degree (Honours, Masters or Doctorate)	

PART B: HEALTH

For each of the statements below, SELECT (X) the number that best corresponds to your current level of health

		Excellent	Very Good	Good	Fair	Poor
1	In general, would you say your health is:	1	2	3	4	5

2		The following items are about activities you might do during a typical day. Does your health limit you in these activities? If so, how much?	Yes, limited a lot	Yes, limited a little	No, not limited at all
	a	Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports	1	2	3
	b	Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	1	2	3
	c	Lifting or carrying groceries	1	2	3
	d	Climbing several flights of stairs	1	2	3
	e	Climbing one flight of stairs	1	2	3
	f	Bending, kneeling, or stooping	1	2	3
	g	Walking more than a kilometer	1	2	3
	h	Walking several street blocks	1	2	3
	i	Walking one street block	1	2	3
	j	Bathing or dressing yourself	1	2	3

3		During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?	Yes	No
	a	Cut down on the amount of time you spent on work and other activities	1	2
	b	Accomplished less than you would have liked	1	2
	c	Were limited in the kind of work or other activities	1	2
	d	Had difficulty performing the work or other activities (for example, it took extra effort)	1	2

		None	Very mild	Moderate	Severe	Very Severe
4	How much bodily pain have you had during the past 4 weeks?	1	2	3	4	5

		Not at all	A little bit	Moderately	Quite a bit	Extremely
5	During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?	1	2	3	4	5

6		How TRUE or FALSE is each of the following statements for you?	Definitely True	Mostly true	Don't know	Mostly false	Definitely false
	a	I seem to get sick a little easier than other people	1	2	3	4	5
	b	I am as healthy as anybody I know	1	2	3	4	5
	c	I expect my health to get worse	1	2	3	4	5
	d	My health is excellent	1	2	3	4	5

	For each statement, SELECT (X) the the number that best describes how much you agree or disagree with each statement	Totally disagree	Somewhat disagree	Neutral	Somewhat Agree	Totally Agree
PART C: INVOLVEMENT						
1	I'll stay overtime to finish a job, even if I'm not paid for it	1	2	3	4	5
2	You can measure a person pretty well by how good a job he does	1	2	3	4	5
3	The major personal satisfaction in my life comes from my job	1	2	3	4	5
4	For me, mornings at work really fly by	1	2	3	4	5
5	I usually show up for work a little early, to get things ready	1	2	3	4	5
6	The most important things that happen to me involve my work	1	2	3	4	5
7	Sometimes I lie awake at night thinking ahead to the next day's work	1	2	3	4	5
8	I'm really perfectionistic about my work	1	2	3	4	5
9	I feel depressed when I fail at something connected with my work	1	2	3	4	5
10	I have other activities more important than my work	1	2	3	4	5
11	I live, eat and breathe my job	1	2	3	4	5
12	I would probably keep working even if I didn't need the money	1	2	3	4	5
13	Quite often I feel like staying home from work instead of coming in	1	2	3	4	5
14	To me, my work is only a small part of who I am	1	2	3	4	5
15	I am very much involved personally in my work	1	2	3	4	5
16	I avoid taking on extra duties and responsibilities in my work	1	2	3	4	5
17	I used to be more ambitious about my work than I am now	1	2	3	4	5
18	Most things in life are more important than work	1	2	3	4	5
19	I used to care more about my work, but now other things are more important to me	1	2	3	4	5
20	Sometimes I'd like to kick myself for the mistakes I make in my work	1	2	3	4	5

	For each statement, SELECT (X) the the number that best describes how much you agree or disagree with each statement	Totally disagree	Somewhat disagree	Neutral	Somewhat Agree	Totally Agree
PART D: WORK-LIFE BALANCE						
1	At the moment, because the job demands it, I usually work long hours	1	2	3	4	5
2	There isn't much time to socialise/relax with my partner/see family in the week	1	2	3	4	5
3	I have to take work home most evenings	1	2	3	4	5
4	I often work late or at weekends to deal with paperwork without interruptions	1	2	3	4	5
5	Relaxing and forgetting about work issues is hard to do	1	2	3	4	5
6	I worry about the effect of workstress on my health	1	2	3	4	5
7	My relationship with my partner is suffering because of the pressure or long hours of my work	1	2	3	4	5
8	My family are missing out on my input, either because I don't see enough of them/am too tired	1	2	3	4	5
9	Finding time for hobbies, leisure activities, or to maintain friendships and extended family relationships is difficult	1	2	3	4	5
10	I would like to reduce my working hours and stress levels, but feel I have no control over the current situation	1	2	3	4	5

ANNEXURE C: LANGUAGE EDITING LETTER

54 Trichardt Street

Welgemoed

Bellville

7530

1 November 2012

To Whom It May Concern

RE: LANGUAGE EDITING OF DISSERTATION

This serves to confirm that the attached dissertation by Johannes Michiel Adriaan Louw (student number: 22546634) for the degree Masters in Business Administration (MBA) was subjected to professional language editing.

Kind regards,

Marinda Kotzé

MA (Research Psychology) (University of Pretoria)

Research Consultant

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