The influence of power distance relationships on the success of lean manufacturing implementations.

By

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DECLARATION

I **Lourens de Beer**, student number **213460882**, hereby declare that the treatise for **Magister in Business Administration** is my own work and that it has not previously been submitted for assessment or completion of any postgraduate qualification to another University or for another qualification.

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Abstract

The research project measured the influence of lean culture elements as well as power distance elements on the success of lean manufacturing implementations.

The literature review revealed that lean transformations are not always successful and sustainable since organisation see these as quick win opportunities to improve short term profits. Lean, however, is a long term philosophy that entails not just quick changes but a fundamental change in the way that business is done.

The elements that were measured in the study were organisational awareness, employee engagement, managerial consistency, accountability, mutual respect and autocratic behaviour. The study revealed a strong relationship between these factors and the success of lean implementations.

The results indicated that there is a positive relationship between lean culture and the other lean elements. The study also indicated that autocratic behaviour has a positive relationship to lean implementation.

The study showed that tools that were developed in the past are valid across various industries and that power distance does play a role in lean implementations.

Preface

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CHAPTER 1

INTRODUCTION

1.1. TITLE

The influence of power distance relationships on the success of lean manufacturing implementations.

1.2. INTRODUCTION

1.2.1. Nature of the problem

Lean manufacturing implementations are usually undertaken by companies that are experiencing some form of operation challenge. The lean tools are implemented to improve operation efficiency or competitive advantage (Van der Merwe, 2011; Atkinson & Nicholls, 2013). The implementation is usually facilitated by business consultants that base their fees on projected or future savings that would be realised by the implementation. If the implementation does not succeed, the drain of valuable cash from an already ailing or failing business could be catastrophic.

This study's aim was to determine which type of the power distance relationship needs to be present in an organisation for the implementation to be successful. The power distance relationship can also be related to the level of autocratic leadership. The determination and measurement of these elements before an implementation starts will enable an organisation to determine if an implementation will fail or be successful. The determination of success could potentially save or realise the savings or improvements from the implementation or establish what culture needs to be cultivated before an initiative is launched and maintained successfully.

1.2.2. Importance of solving the problem

The problem needs to be addressed to enable a company to evaluate the future success of a lean initiative. If the company undertakes an internal study of leadership culture before the initiative is launched, it can take remedial action to correct deficiencies. The culture shift can then be re-evaluated and the

intervention launched if the cultural success factors are present at a sufficient level in the organisation. This will save valuable time and money on the implementation. These resources are in short supply in most companies in the world today. A number of authors noted that a company usually implement the lean manufacturing tools but do not get the culture shift right (Stone, 2012; Badurdeen et al., 2011; Hook & Stehn, 2008; Sturdevant, 2014).

1.2.3. Potential causes of the problem

The scholarly literature review unearthed a lot of how too guides. The overall scholarly literature base has very little on the leadership culture of organisations and the impact on lean implementation. This gap was identified by Stone (2012) in his Systematic review of the lean literature. The causes of the cultural ignorance were also noted by Van der Merwe (2011).

An additional reason for lean failure is the failure of organisations to understand that lean is as much a culture shift as a tool kit. The organisations then also choose to implement selected tools and not the complete philosophy (Sturdevant, 2014; Gilmore-Jones & Tilley, 2009). This results in organisational growth in those areas were the tools where implemented but the other areas stay as they were before the lean implementation. Lean is usually seen as an operational issue only and the rest of the organisation does not need to apply the principles resulting in frustration from the lean group (Hines, 2010).

A number of articles noted the negative aspects that are evident in non-successful implementations. Atkins and Nicholls (2013) noted the following cultural barriers: negative culture (pessimism, dwell in the past), lack of visionary leadership, lack of self-esteem, focusing on yesterday's problems. This study will not try and measure the negative aspects mentioned above. The study tried to determine the positive aspects that make lean changes more effective and successful.

1.2.4. The management question

The implementation of a lean imitative is a management issue since the management team needs to lead the change. As noted the leadership of the change is important (Aiqiang, 2010; Benson et al., 2009). The culture of an organisation is also defined as "that set of shared beliefs, understandings and basic assumption" (Bhasin, 2013). This definition of culture thus ultimately means that only the correct leadership can effect these changes. Bashin (2013) also notes that if culture is ignored the chance to effect real change will be lost and thus the organisation might become uncompetitive or less effective.

The difficulty for management is how to measure culture and how to change culture. The general management question is also which element should be measured, since a vast number of cultural elements have been identified in the past (Badurdeen et al., 2011; Benson et al., 2009; Van der Merwe, 2011).

The next question that needs to be answered is how do the elements of culture impact lean, and facilitate the creation of a lean culture. This question has been answered by Van der Merwe (2011), Bashin (2013) and by Hook and Stehn (2008). This study will lean heavily on their work and will try to use the tools developed by them and measure the success of lean changes in a number of organisations.

1.2.5. Previous studies

The previous studies that have been reviewed have consisted of journal articles, unpublished NMMU (Nelson Mandela Metropolitan University) MBA treatise and NMMU PhD thesis and periodical articles on the subject of lean culture.

The journal articles gave insight into the history of lean and how lean was developed as the Toyota Production System from the 1950s to the present. The history was gathered from Liker (2004), Badurdeen et al (2010), van der Merwe (2011) and Stone (2012). The literature showed that a clear understanding of how autocratic behaviour influences lean (Stone, 2012, p.121). There have

been a number of studies since the review by Stone. Two examples are Badurdeen et al (2010) and Bashin (2013). Both these studies have highlighted only limited number of cultural issues and were limited to single companies or limited scope during analysis.

A number of periodical articles were reviewed. These articles were used to illustrate the culture debate that is currently being held between the practitioners of lean change. The views expressed in these articles are those of lean change practitioners that are writing about their personal observations and experiences. The articles that fall in this category are those by Atkinson (2010), Hines (2010), Aiqiang (2010) and Atkinson & Nicholls (2013). These articles were published in periodicals on training and management.

The study also has a direct link to the use of consultants and as such the website of one of the consultant groups was also used extensively. The consulting firm was McKinsey & Company. A number of the articles used have the same basis as those listed before, with personal experience and views listed with limited research data published. These articles are listed as being sourced from the McKinsey websites.

A number of NMMU studentsqwork were also reviewed and yielded some of the tools that will be used in this study. The tools will be used since their validity has been verified and this study wants to add numbers to these studies to enlarge the available literature. The main work that was used is that of Van der Merwe (2011).

A number of books have been written on the subject of lean manufacturing and management culture. The relevance of these books will be reviewed during the literature review. The main topics of the books cover the Toyota view on lean manufacturing and the principles of lean (Liker, 2004; Liker & Convis, 2012).

1.2.6. Conceptual framework, research focus or research foci

From the literature that was studied, a number of independent variables were identified. The variables of awareness, engagement, consistency and accountability were identified by Van der Merwe (2011) in a study performed in the automotive industry. Hines (2010) also identified engagement as a key variable. The variable of respect was identified by Badurdeen et al (2011) as an important part of the lean culture to succeed.

This study's aim was to measure these variables using the cultural aspect questionnaire as developed by Van der Merwe (2011), as well as constructing additional questions to measure mutual respect and autocratic behaviour. The study will try to establish a link between these power distance behaviours and the other variables in the study.

The study can be drawn as in the diagram below.
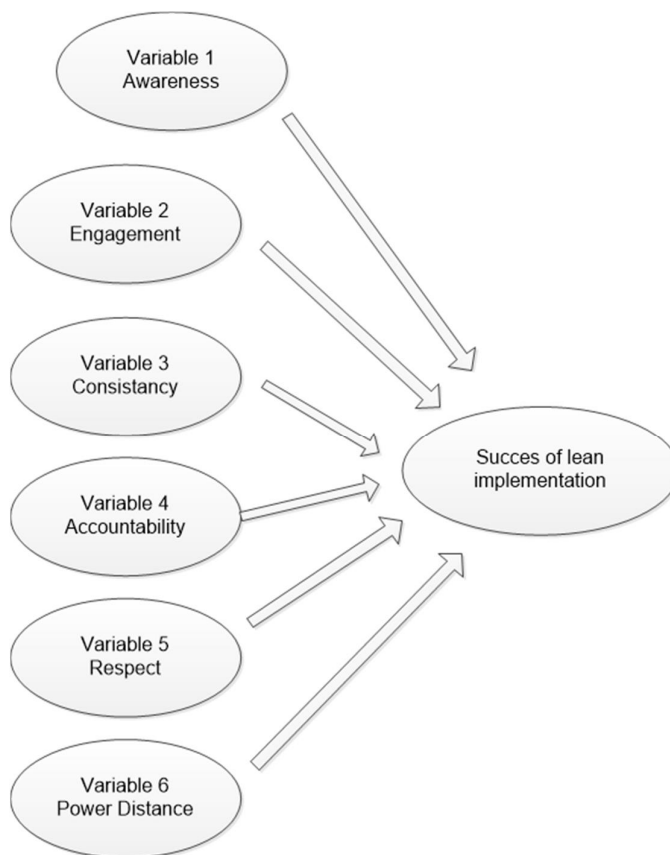
Figure 1.2. . Study Relationships

The cultural element (Section 1) was measured with questions trying to determine if the elements are present in an organisation - problem solving, root cause analysis, employee understanding of lean, elimination of waste and rapid response to customers and problems that have been identified (Van der Merwe, 2011). The awareness element (Section 2) aimed to measure the awareness created, the value stream identification and the visual systems employed (Van der Merwe, 2011). The engagement element (Section 3) tried to measure how effective the company was in getting its employees to be a part of the change by actively engaging employees, challenging their proposed solutions and seeking suggestions (Van der Merwe, 2011). The consistency element (Section 4) measured how consistent the lean message was delivered to all levels of the organisation, by all levels of management though layered leadership, institutionalised leadership and consistent decision making. The accountability element (Section 5) measured how accountable the organisation was in assigning actions to individuals and adherence to due dates. The questions that were used to determine the power distance relationships that related to respect and autocratic behaviour were in Section 6 and 7. The respect questions (Section 6) tried to measure how much respect the various levels of management has for the work force and the work force for management (Badurdeen et al., 2011). The autocratic leadership questions (Section 7) measured how autocratic the organisation behaves by measuring acceptance of team and supervisor solutions and actions by managers (Lopez & Ensari, 2014; Bhatti et al., 2012).

1.3.   RESEARCH OBJECTIVE

This study had both a literature review and an empirical frame work. The literature review part of the study is covered in part in the sections before.

The empirical study will be briefly outlined here. The primary objective of the study was to measure the presence of the pre-determined cultural aspects of lean in various organisations that have attempted lean change. The presence or the amount of cultural aspects present was then compared to the perceived success of the lean change. If there is positive correlation then it can be said

that the change was successful, the converse could also be said. If the cultural aspects are absent and the change was unsuccessful as well, then it could be concluded that negative culture has a negative impact on lean change.

This part of the study was done as an empirical study with a questionnaire that formed the basis of the data collection method. The participants were kept anonymous by the following means: the questionnaires were filled in without any names attached, no questions related to the companies surveyed were contained in any questionnaire, the questionnaire was e-mailed to individuals by the researcher only. Most of the participants received a link to the online survey via e-mail. The survey was hosted by Survey Monkey and only the normal classification questions were asked, such as gender, age, and management level.

1.4. RESEARCH PARADIGM

Research is conducted in two paradigms. These paradigms are positivism and interpretivism. The positivistic paradigm is also called the quantitative paradigm and relies on objective data, collected in a scientific way. The positivistic paradigm assumes that all knowledge is obtained by objective observation and that the researcher is independent (Collis & Hussey, 2014). The quantitative paradigm relies on large samples of data that is analysed using hypothesis testing and delivers precise, objective results. The positivistic paradigm produces results of high reliability but low validity (Collis & Hussey, 2014).

The interpretivistic paradigm is also referred to as the qualitative paradigm and is seen as subjective. The interpretivistic paradigm assumes that all knowledge is obtained by subjective observation and that the researcher is not independent of the research (Collis & Hussey, 2014). The qualitative paradigm normally uses small samples, develops theories and produces rich, subjective data. This paradigm produces findings of low reliability with high validity (Collis & Hussey, 2014).

This study was done in the quantitative paradigm since the researcher attempted to collect a large volume of quantitative data. The data was obtained

with a questionnaire. The questionnaire was completed by respondents on an independent basis and was returned without any influence of the researcher.

1.5.   SAMPLING DESIGN

The sample of this study was drawn from employees at a number of companies that have attempted lean manufacturing implementations. The companies are all in the manufacturing industry in South Africa. The companies are located in various provinces of South Africa. Some of the companies had consultant firms assisting them during their lean manufacturing implementations. The researcher tried to collect a sufficiently large sample to make valid statistical conclusions. A sample of 5 employees from each firm was selected on random basis from the company e-mail address lists and the questionnaires or questionnaire link was e-mailed to the selected company lists. The participants were thus be limited to those employees with access to e-mail and could exclude workers on the production floor.

The validity of the questionnaire was tested using the stats techniques taught in the MBA Research Methodology module. If sufficient numbers did not respond the questionnaire would have been evaluated by having two lecturers at the NMMU business school review the questionnaire and evaluate its validity.

1.6.   DATA COLLECTION

The data was collected using a questionnaire that was the construct of instruments obtained from literature, as well as the researchers own construct.

The questionnaire was distributed by e-mail or web link as described in the previous paragraph. The completed questionnaires was returned via e-mail or completed on an online tool. The anonymity of respondents was maintained as no names or other identifying data were required on the questionnaire. No identifying data was published in the research reports.

1.7.   MEASURING INSTRUMENT

The measuring instrument attempted to measure the following variables:

a.   Lean culture (dependent variable)
b.   Awareness (independent variable)
c.   Engagement (independent variable)
d.   Consistency (independent variable)
e.   Accountability (independent variable)
f.   Respect (independent variable)
g.   Power distance relationship / Autocratic leadership (independent variable)

The instrument was constructed by combining already existing instruments to measure the first five variables (Badurdeen et al., 2011; Van der Merwe, 2011). The instrument to evaluate the sixth variable was constructed by the researcher from the literature review (Sturdevant, 2014). The seventh variable was constructed by the researcher from the literature review of autocratic behaviour (Lopez & Ensari, 2014; Bhatti et al., 2012). The seven variables were measured as ordinal discreet variables on a Likert type scale of 1 to 5.

The instrument also included a biographical section that was used to do descriptive stats of the sample population. The data obtained from the questionnaire were collated on an excel sheet and stats analysis was performed on the data using MiniTab V15.

1.8.   CONCLUDING REMARKS

The chapter served as introduction and overview of the research objective. The problem of successful lean implementation was investigated with a survey of lean elements and autocratic behaviours. The results were analysed to determine if there are any relationship between these elements and their influence on lean manufacturing implementations. The next chapter will deal with literature that will enlighten the subjects of lean, culture and the origins of the instrument used for measurement.

CHAPTER 2

LITERATURE REVIEW

2.   LITERATURE REVIEW

The literature reviewed highlighted what is understood if we use the term "Lean Manufacturing" and the history of lean. The literature review also investigated the concept of company culture and how this could influences change or lean implementation. The specific part of the culture that was investigated was the power distance or autocratic nature of an organisation and its influence on lean implementation.

2.1.   History of manufacturing

Manufacturing started as soon as man started hunting. He needed a weapon and started making stone tools, knives and other items. The skill evolved into trades and by the mid-1700s there were a long list of crafts. The craftsman used specialised tools and created one off pieces for a specific client (Womack et al., 1990). The advent of machines, interchangeable parts and the improvements in materials lead to the industrial revolution and mass production. The next step was the development of production lines and faster production of goods (Womack et al., 1990). The mass production of automobiles also followed this trend and was built on production lines first introduced by Henry Ford in the early 1900s (Liker, 2004). The growth in the world auto industry and the participation of Japanese companies, especially Toyota, lead to lean manufacturing.

2.2.   Lean manufacturing

Lean manufacturing is a term that has been used from the early 1990s to define companies that try to emulate the Toyota Production System. The term was first used by Womack, Jones and Roos in their book *The Machine that Changed the World* (Womack & Jones, 2003). The term refers to the process of doing more with less and less. The Toyota Production System development started in the 1930s with a study of Ford's production facilities and was refined in the 1950s and implemented throughout Toyota by the mid-1970s (Liker, 2004). The

development and adaptation of the system has not stopped and is still being developed on a daily basis. The heart of the manufacturing philosophy is the respect for people and the resultant training, coaching and development that is associated with that philosophy. The 4P diagram reflects the four (4) philosophies on which TPS is build. At the heart is the development of people through continuous learning and coaching.
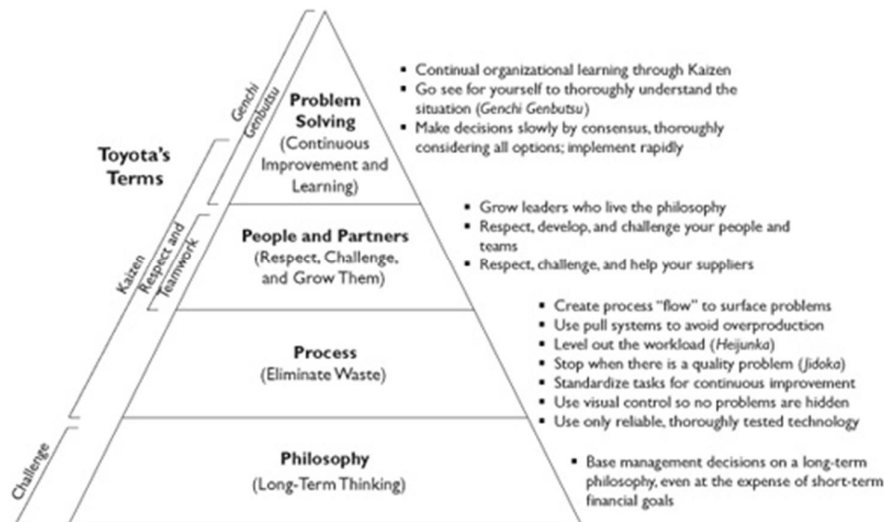
Figure 2.2. . The 4P s of the Toyota production system **(Liker, 2004)**

The cultural elements of the Toyota Production System are highlighted on the left of the pyramid. The introduction of lean however is not limited to only philosophy but also actions.

2.3. Lean introduction process and tools

The lean introduction process starts by doing a few basic steps in an organisation. These steps provide the base for further lean improvements. The steps are: understand your value add, understand your value stream, create flow of value, pull parts / production through the system, perfect the process (Womack & Jones, 2003). The first step is to challenge the organisation to understand what creates the value in their product. The second is to understand how that value is created within the value chain. If the value and value add is understood the flow of the value steps needs to be established. This means

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creating a smooth path for the product to follow. The next step is to create pull and only produce those parts required by the next process or customer when they are required. This leads to reduced lead times and less work in process.

The next contentious part of lean is the tools used to achieve the steps outlined above. The tools that are associated with lean are: flexible resources, cellular layout, pull production, Kanban, small-lots, quick setup, uniform production, quality at source, productive maintenance, continuous improvement, line-stop authority, supplier networks, standard work, autonomation, under capacity scheduling (Pieterse et al., 2015). The tools listed here are also present in the diagram of the Toyota Production System below. In the diagram a couple more of the tools are listed and divided into the pillars of the production system. The diagram also illustrates how the different elements interact to provide the framework for lean.

Figure 2.3. . The Toyota production system **(Liker, 2004)**

2.4.   Lean leadership

The term lean leadership refers to the skill required by a leader to truly transform his / her organisation. Lean leadership requires that the leader acts as the coach or sensei, asking the correct questions that lead the team to the

correct or best answer. Lean leaders do not provide the answer or solution (Liker, 2004; Liker & Hoseus, 2008). The lean leader challenges each level of the organisation to arrive at the best solution possible for the given problem.

2.5. Lean implementation and sustainability

A couple of researches have published work on why lean works and the steps to follow to implement (Atkinson, 2013; Atkinson & Nicholls, 2013). The process of implementation has already been discussed, but the reason for failure has not. A number of authors are of the opinion that lean transformation or implementation cannot be attempted as a piece meal fashion (Bashin & Burcher, 2006; Liker & Meier, 2006; Sturdevant, 2014). This approach is the one normally followed by organisations that follow the latest fashion fad or management buzz word. The individual tool technique also leads to the perceived failure of implementations since the implementation team will implement in a specific area. The team moves on without ensuring that the tools are understood or implemented correctly and is entrenched in the daily operations (Hines, 2010). The authors also highlight that if companies do not have the intention to fully implement lean, they should select the tools to use for short term gain and only implement those that suit them at that stage (Liker, 2004). This however will not lead to sustainability and will only provide short term gains.

The diagram below shows the path to follow if the aim of a %ean+intervention is for short term gain and the leadership does not have the appetite for the long journey to lean.
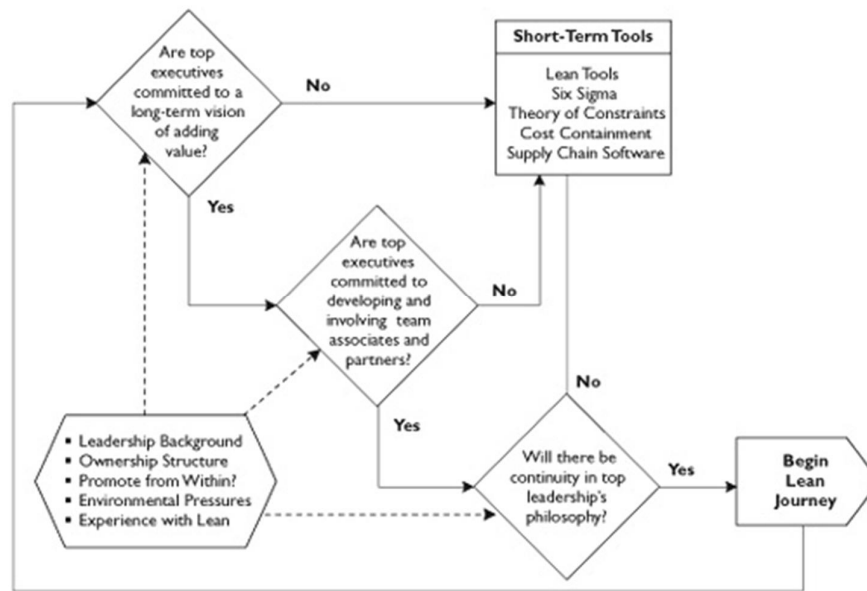
Figure 2.4. . Top leadership s %commitment to lean+journey (Liker, 2004)

In order to get a sustainable lean implementation a company requires leadership commitment and a long term commitment (Bashin & Burcher, 2006; Liker, 2004; Liker & Convis, 2012).

2.6.   Organisation culture

The subject of organisational culture has a long history and has been the subject of a number of articles, studies and books. The basic definition of organisation culture can be defined as:

"a system of shared assumptions or meaning held by members that distinguishes one organisation from others" (Werner et al., 2011).

The way that culture is described can also be explained in a diagram as shown below. The culture that we observe or see is described as the artefacts of the organisations culture. The part of the culture that supports the visible is described as the norms and values and is normally highlighted by what the organisation is saying to outsiders and new recruits. The base of the organisations culture, or the underlying assumptions, is the unwritten rules and basic assumptions of that organisation and can be linked to the environment in

which an organisation operates. (Liker & Hoseus, 2008; Schein, 1984; Werner et al., 2011)

What we see
What a newcomer, visitor or consultant would notice (e.g., dress, organization charts, physical layout, degree of formality, logos, mission statements)

What they say
What we would be told is the reason why things are the way they are and should be. Company philosophy, norms and justifications

What they deeply believe and act on
Unconscious, taken-for-granted beliefs about the organization and its work/purpose, about people, rewards and punishments

Artifacts and behavior

Norms and values

Underlying assumptions

Figure 2.5. . Three levels of culture **(Liker & Hoseus, 2008)**

The measurement of corporate culture is not always easy. Companies are usually situated in countries, located in a community and have different departments within that organisation (Liker & Hoseus, 2008). All these factors play a role in corporate culture and how companies within the same group operate in different locations.

Hofstede measured these differences and listed the elements of corporate culture as: power distance, uncertainty avoidance, individualism versus collectivism, masculinity versus femininity and eastern versus western (Werner et al., 2011). Power distance is an indicator of the hierarchy and autocratic structure versus more democratic, low structure, co-operative type of structure. Uncertainty avoidance relates to the amount of risk an organisation will take. Individualism focuses on the team work versus individual performance of an organisation. The masculine aspect tries to describe the organisations nature in terms of caring, nurturing and development (Werner et al., 2011; Liker & Hoseus, 2008). The eastern / western part refers to the work attitude of western type economies versus eastern economies. Western focuses on short term gains and individual growth. Eastern economies focus on long term growth and

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the growth of the company and do not chase individual status (Liker & Hoseus, 2008).

There is, however, also an indication that Hofstede's theory is not accepted as valid or applicable (Baskerville, 2003; Catalin, 2012). These and other authors argue that Hofstede based his arguments on a sample from a single organisation (IBM), does not take into consideration that culture can change, the model assumes that national and individual cultures are the same and the studies was based on data from the 60s and 70s. The counter argument is also evident with Hofstede's model being used in a large amount of works and referenced in equally large numbers of research works.

2.7. Power distance, autocratic leadership and mutual respect

As described above, power distance is a term used by Hofstede in his study on corporate and country culture, and how different areas of society accept the separation in power and personal involvement. The greater the power distance relationship the bigger the tendency towards telling leadership and not participation, since socio-economic separation between management and worker will be greater (Catalin, 2012).

Autocratic leaders are described as controlling, punitive, manipulative, sole decision makers and non-consultative. The autocratic leader is also the leader that gets things done but has low regard for his subordinate's motivation or wellbeing. These leaders get things done through power and fear (Lopez & Ensari, 2014).

These types of leaders do not consult with the team or group and as such leaves a great void once they leave the organisation since they did not impart any of their skills or knowledge to those that follow in their footsteps.

These types of leadership styles lead to teams that are non-autonomous and rely on managers / leaders to make the critical decisions and solve problems.

The next element that relates to power distance and autocratic leadership is mutual respect. The concept is that leaders and workers have a high-level of respect for each other. The respect is not just focus towards managers, but also from managers / leaders towards the workers (Badurdeen et al., 2011; Liker, 2004). This respect is displayed in the principle of Genchi genbutsu (visiting the shop floor to understand the problems) and other shop floor practises.

2.8. Lean culture

The diagram below reflects how the culture of lean is made up. The base of Challenge, Kaizen, Genchi genbutsu, respect and Teamwork are the principles of how the organisation learns and transfers the learning from %old+employees to new recruits, builds teams and individual managers. The base of the house also constitutes the elements that we refer to as lean culture. The success of a lean implementation will be determined by how well these elements are embedded in an organisation.
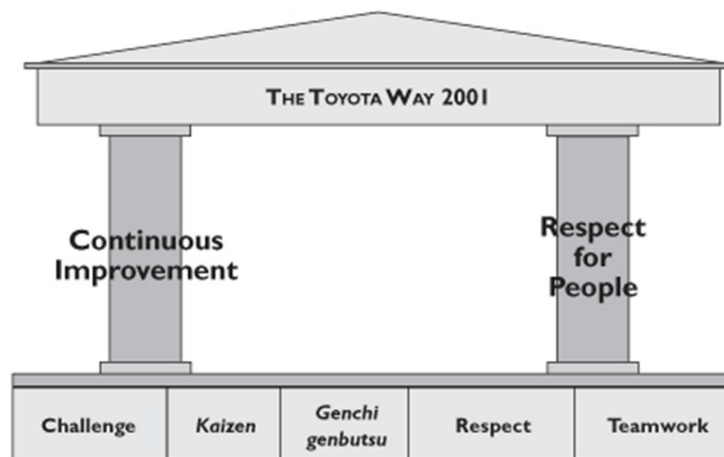
Figure 2.6. . The Toyota way **(Liker & Hoseus, 2008)**

The elements that are evident in the diagram are also the elements that this study tried to measure. The measuring instrument is discussed in the next chapter.

2.9.   Measuring instrument

The measuring instrument was constructed from a number of articles and thesis. The content of the instrument will be discussed in the following paragraphs.

The main part of the instrument was derived from work by Van der Merwe (2011). The main elements of the questionnaire that were taken from his work were lean culture, lean awareness, work force engagement, consistency and accountability. The elements described in the paragraphs that follow were also described by Liker (2004) and Liker & Hoseus (2008) in the Toyota Way series of Books about lean and how it is applied at Toyota. Hines (2010) also described the traits of lean culture.

Lean culture contains the elements of problem solving, root cause analysis, employee understanding of lean, elimination of waste and rapid response to customers and problems identified (Van der Merwe, 2011; Hines, 2010; Atkinson, 2013). These elements were the main drivers for measuring how effective lean or lean culture has been established in an organisation. These elements form the basis of the dependant variable to be measured.

The awareness element measures the situational awareness that the management team has created around the lean implementation (Van der Merwe, 2011). The elements of lean awareness that are measured centre around value stream identification and the visual systems employed within the organisation.

The elements of work force engagement that formed part of the questionnaire has the aim of measuring how management has succeeded in engaging employees (Van der Merwe, 2011; Hines, 2010; Atkinson, 2013). The content of the section deals with the engagement of employees at shop floor level, challenging proposed solutions to achieve better solutions and seeking suggestions. These traits are also explained by Liker (2004) in the Toyota Way.

The consistency element measures the consistency with which the lean message is delivered to all levels of the organisation. The consistency is measured by how institutionalised the leadership actions are taken and decisions are made. The consistency element measures how structured these elements are in the organisations daily routine (Van der Merwe, 2011; Atkinson, 2013).

Accountability was described by how effective the organisation is in tracking actions and assignments made to individuals and teams (Van der Merwe, 2011). The accountability element measures the effectiveness of the assignments and the tools employed to take corrective action if solution deadlines are not being met (Van der Merwe, 2011; Liker & Hoseus, 2008).

The elements above were used to measure the lean culture of the organisations.

In order to measure the power distance relationships respect and autocratic behaviour was measured.

Respect is one of the traits of a non-autocratic organisation. The respect section measured respect based on respect for the individual, respect for the team and respect for their mutual purpose (Badurdeen et al., 2011; Liker & Hoseus, 2008).

The autocratic section measured the autocratic behaviour of the management of a lean organisation. Non-Autocratic behaviour is characterised by management acceptance of an individual or teams contribution as well as the actions and attitudes of managers towards teams and individuals (Lopez & Ensari, 2014; Bhatti et al., 2012).

2.10. Synthesis

The review of the literature has shown that the success of lean implementation is not just reliant on the implementation of a couple of tools but requires the installation of a new culture. The tools that are visible in a lean organisation are the artefacts of lean and not the true culture of lean. To instil a true lean transformation has emerged as a lengthy process that requires an organisation and its leaders to study lean thoroughly and install the culture with the tools. This is a process that takes years of dedication and forceful focus on the goal. It is not something that changes with each new leader or CEO. This would also mean that lean is not a mindless copying of the tools but an understanding of the underlying investment in training, development and coaching. The tools also need to be adapted to suit the operating method of each organisation.

In contrast autocratic leadership, low mutual respect and cultures with high power distance relationships, relies on the decision making and will of an individual with no regard for the team or the respect required to make lean a success. This means that the focus shifts each time a new individual steps into the role of leader of an organisation. The team / work group also never develops the courage, discipline or confidence to solve their own problems or organise themselves.

The purpose of this research is to determine what influence these two, lean implementation successes and autocratic leadership, has on each other. The literature shows that the two compete with each other to make lean really successful. The literature would suggest that high autocratic organisations have lower lean implementation success.

The literature reviewed also showed that to date no study has been conducted on the effects of power distance and more specifically, autocratic behaviour has on the success of lean implementation.

The researcher is of the opinion that due to the nature of autocratic behaviour a significant influence should be uncovered by the research. The literature reviewed showed that lean cannot be implemented successfully or sustainably if the work group or floor worker is not directly involved with the process. The

nature of autocratic behaviour of the leader, however, does not allow this to happen since he / she loses control over the work force since they are now doing their own problem solving.

2.11. Concluding remarks

The literature review has shown and highlighted some of the origins of the various elements . lean manufacturing, lean culture and company culture. The literature review also details the various elements that an observer would expect to see in a true lean organisation. The next chapter will detail how the study will be conducted in the manufacturing industry in South Africa.

CHAPTER 3

PARADIGM, RESEARCH DESIGN AND METHODOLOGY

3. PARADIGM, RESEARCH DESIGN AND METHODOLOGY

The purpose of this chapter is to define in which paradigm the study was performed. The chapter also highlights the design of the study and questionnaire and defines how data will be collected.

3.1. Research objective

This study has both a literature review and an empirical frame work. The literature review part of the study is covered in chapters one and two.

The empirical study will be briefly outlined here. The primary objective of the study was to measure the presence of the pre-determined cultural aspects of lean in various organisations that have attempted lean change. The presence or the amount of cultural aspects present was then compared to the perceived success of the lean change. If there is positive correlation, then it can be said that the change was successful, the converse could also be said. If the cultural aspects are absent and the change was unsuccessful as well, then it could be concluded that negative culture has a negative impact on lean change.

This part of the study was done as an empirical study with a questionnaire that formed the basis of the data collection method. The participants was kept anonymous by the following means: the questionnaires were filled in without any names attached, no questions related to the companies surveyed were contained in any questionnaire, the questionnaire was e-mailed to individuals by the researcher only. Most of the participants received a link to the online survey via e-mail. The survey was hosted by Survey Monkey and only the normal classification questions were asked, i.e. gender, age, and management level.

The main hypothesis of the study was:

H_0^1:   Awareness has no influence on the success of lean implementations.

H_0^2:   Engagement has no influence on the success of lean implementations.

H_0^3:   Consistency has no influence on the success of lean implementations.

H_0^4:   Accountability has no influence on the success of lean implementations.

H_0^5:   Mutual Respect has no influence on the success of lean implementations.

H_0^6: Autocratic Behaviour has no influence on the success of lean implementations.

The counter hypothesis will be the opposite of the H_0 statements made above. If the hypothesis test has a value above 0.5 the H_0 was rejected in favour of the positive statement.

The secondary aim of the study was to use the already validated instrument developed by Dr van der Merwe (2011) in a study of lean culture and determine if the tool is valid in multiple environments.

3.2. Research paradigm

Research is conducted in two paradigms. These paradigms are positivism and interpretivism. The positivistic paradigm is also called the quantitative paradigm and relies on objective data, collected in a scientific way. The positivistic paradigm assumes that all knowledge is obtained by objective observation and that the researcher is independent (Collis & Hussey, 2014). The quantitative paradigm relies on large samples of data, that is analysed using hypothesis testing and deliver precise, objective results. The positivistic paradigm produces results of high reliability but low validity (Collis & Hussey, 2014).

The interpretivistic paradigm is also referred to as the qualitative paradigm and is seen as subjective. The interpretivistic paradigm assumes that all knowledge is obtained by subjective observation and that the researcher is not independent of the research (Collis & Hussey, 2014). The qualitative paradigm normally uses small samples, develops theories and produces rich, subjective data. This paradigm produces findings of low reliability with high validity (Collis & Hussey, 2014).

This study was in the quantitative paradigm since the researcher attempted to collect a large volume of quantitative data. The data was obtained with a questionnaire. The questionnaire was completed by respondents on an independent basis and was returned without influence of the researcher.

3.3.   Sampling design

The sample of the study was based on a convenience sample with participants drawn from employees at a number of companies that have attempted lean manufacturing implementations. The companies are all in the manufacturing industry in South Africa. The companies are located in various provinces of South Africa. Some of the companies had consultant firms assisting them during their lean manufacturing implementations. The researcher tried to collect a sufficiently large sample to make valid statistical conclusions. A sample of 5 employees from each firm was selected on random basis from the company e-mail address lists and the questionnaires or questionnaire link was e-mailed to the selected company lists. The participants were thus limited to those employees with access to e-mail and thus excluded workers on the production floor.

The validity of the questionnaire was tested using the stats techniques taught in the research methodology module. If sufficient numbers did not respond, the questionnaire would have been evaluated by having two lecturers at the NMMU business school review the questionnaire and evaluate its validity.

3.4.   Data collection

The data was collected using a questionnaire that was a construct of instruments obtained from literature, as well as the researchers own construct.

The questionnaire was distributed by e-mail containing a web link as described in the previous paragraph. The completed questionnaires were returned via an online tool. The anonymity of respondents was maintained as no names or

other identifying data was required in the questionnaire. No identifying data was published in the research reports.

3.5. Measuring instrument

The measuring instrument attempted to measure the following variables:

   a. Lean culture (dependant variable)
   b. Awareness (independent variable)
   c. Engagement (independent variable)
   d. Consistency (independent variable)
   e. Accountability (independent variable)
   f. Respect (independent variable)
   g. Autocratic leadership (independent variable)

The instrument was constructed by combining already existing instruments to measure the first five variables (Badurdeen et al., 2011; Van der Merwe, 2011). The instrument to evaluate the sixth and seventh variable was constructed by the researcher from the literature review (Sturdevant, 2014; Lopez & Ensari, 2014). The seven variables were measured as ordinal discreet variables on a Likert type scale of 1 to 5.

The cultural element (Section 1) was measured with questions trying to determine if problem solving (Question 1 and 6), root cause analysis (Question 2 and 7), employee understanding of lean (Question 3 and 8), elimination of waste (Question 4 and 9) and rapid response to customers and problems (Question 5 and 10) (Van der Merwe, 2011). The awareness element (Section 2) aimed to measure the awareness created (Question 1, 2 and 6), the value stream identification (Question 3, 7 and 8) and the visual systems employed (Question 4, 5 and 9) (Van der Merwe, 2011). The engagement element (Section 3) tried to measure how effective the company was in getting its employees to be a part of the change by actively engaging employees (Question 1, 2, and 6) challenging their proposed solutions (Question 3, 7 and 8) and seeking suggestions (Question 4, 5 and 9) (Van der Merwe, 2011). The

consistency element (Section 4) measured how consistent the lean message was delivered to all levels of the organisation, by all levels of management though layered leadership (Question 1, 2 and 6), institutionalised leadership (Question 3,7 and 8) and consistent decision making (Question 4,5 and 9) (Van der Merwe, 2011). The accountability element (Section 5) measured how accountable the organisation was in assigning actions to individuals (Question 1, 2 and 4) and adherence to due dates (Question 3, 5 and 6) (Van der Merwe, 2011). The questions employed to measure the power distance related to respect and autocratic behaviour. The respect questions (Section 6) tried to measure how much respect the various levels of management has for the work force and the work force for management (Question 1, 2 and 5) and the behaviours associated with respect (Question 3 and 4) (Badurdeen et al., 2011). The autocratic leadership questions (Section 7) measured how autocratic the organisation behaves by measuring acceptance of team (Question 1, 3, 6 and 7) and supervisor solutions (Question 2 and 4) and actions by managers (Question 5) (Lopez & Ensari, 2014; Bhatti et al., 2012).

The instrument also included a biographical section that was used to do descriptive stats of the sample population.

The data obtained from the questionnaire was collated on an excel sheet and stats analysis was performed on the data using Mini Tab V15.

3.6.   Ethics

The required ethics clearance was obtained for the study. Because the study did not target any vulnerable groups, full ethics clearance was not obtained. Only Form E with the required information and study method was submitted and approved. The signed Form E is attached as Appendix 3 to this treatise. The researcher also stayed within the agreed ethics clearance and did not send or request responses from any minors, students or other vulnerable groups. The responders were all from a working population, gainfully employed by organisations and at a managerial or supervisory level.

3.7. Questionnaire results

Only 16 questionnaires were returned from the 50+ requests that were send out. This number means that the study is not statistically valid, but the results will give some indication of the general perception of lean and lean culture in the manufacturing industry.

The reliability of the study is reflected in the Cronbach Alpha calculation. The values calculated for this study are contained in the table below.

Section	Cronbach Alpha
Lean Culture	0.9100
Awareness	0.9499
Engagement	0.9469
Consistency	0.9032
Accountability	0.9018
Mutual Respect	0.9175
Autocratic Behaviour	0.9193

Table 3.1. . Cronbach Alpha values

These results shows that the results obtained showed consistency and could be taken as reliable.

3.8. Population and demographics

The questionnaires received back from those that responded, showed the following demographics split by gender, age and management level. The data is represented in a graph and table showing the relative details.

3.8.1   Gender split
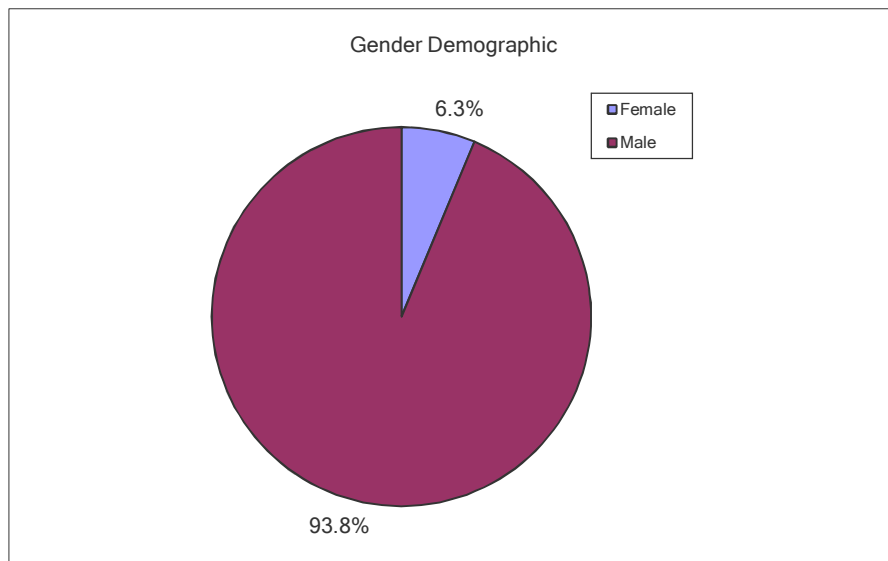
Figure 3.1. .   Gender demographics

Gender	Number of Respondents	Percentage
Female	1	6.3 %
Male	15	93.8 %

Table 3.2. .   Gender demographic detail

The gender split showed that only 1 female and 15 male respondents participated in the survey. This does not reflect the distribution of gender in the South African manufacturing industry. The numbers reflected by the official statistics show that almost 30% of all managers in manufacturing in South Africa are female (Statistics South Africa, 2015).

3.8.2. Age Split
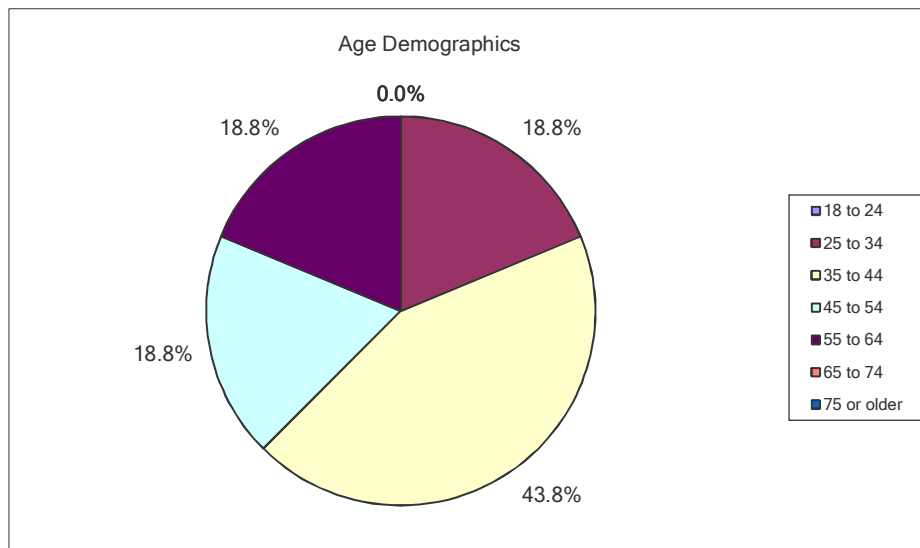
Figure 3.2. . Age demographic

Age range	Participation Count	Percentage
18 to 24	0	0 %
25 to 34	3	18.8 %
35 to 44	7	43.8 %
45 to 54	3	18.8 %
55 to 64	3	18.8 %
65 to 74	0	0 %
75 or older	0	0 %

Table 3.3. . Age demographic detail

The age split showed that no young members of the companies responded and that the distribution ranged from the ages of 25 to 64. No retirees participated in the survey. This distribution is typical of what is expected of the leadership profile of South Africa. Leaders tend to have some experience, thus the lack of 18 to 25 year olds, and work till retirement at 60 to 64.

3.8.3. Management level split
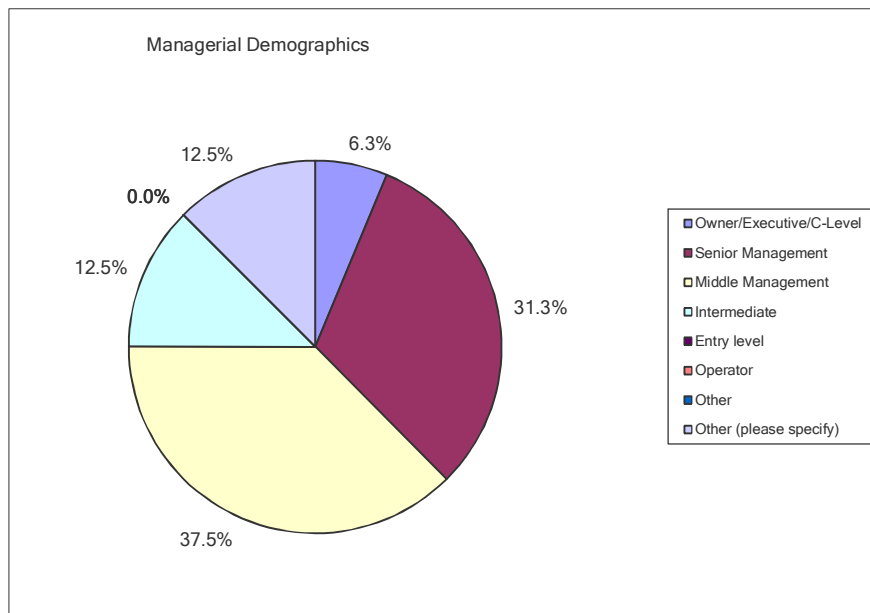
Figure 3.3. . Managerial demographics

Managerial Level	Number of Respondents	Percentage
Owner/Executive/C-Level	1	6.3 %
Senior Management	5	31.3 %
Middle Management	6	37.5 %
Intermediate	2	12.5%
Entry level	0	0
Operator	0	0
Other	2	12.5 %

Table 3.4. . Managerial demographics

The managerial demographics showed the management level of the organisations was targeted by the survey. The managerial level ranged from intermediate to fairly senior. The demographic also showed that no shop floor level employees participated in the study.

3.9. Concluding remarks

The chapter contains the basic statistics of the study with limited insight into the relationships between the different elements. The next chapter will explore the relationships between the various elements and detail if any relationship exists between the elements.

CHAPTER 4

RESULTS

4.   RESULTS

The study yielded the following results. The basic statistic of each question was reviewed in detail and the results are contained in the following paragraphs. The data is represented in a graph showing the average score per question and a basic table containing the basic statistics of each question.

The basic statistic measured the mean or mathematical average of responses to each question. The statistics also reflect the median or answer that appeared the most in each question. A value of 2.5 would thus mean that the 2 and 3 had the same amount of answers. The standard deviation is the amount that the answers varied from the mean or average answer. The smaller the value of the standard deviation, the more consistent the answers for that question will be. The hypothesis testing was done using the correlation matrix calculated by MiniTab V15.

4.1.   Lean culture
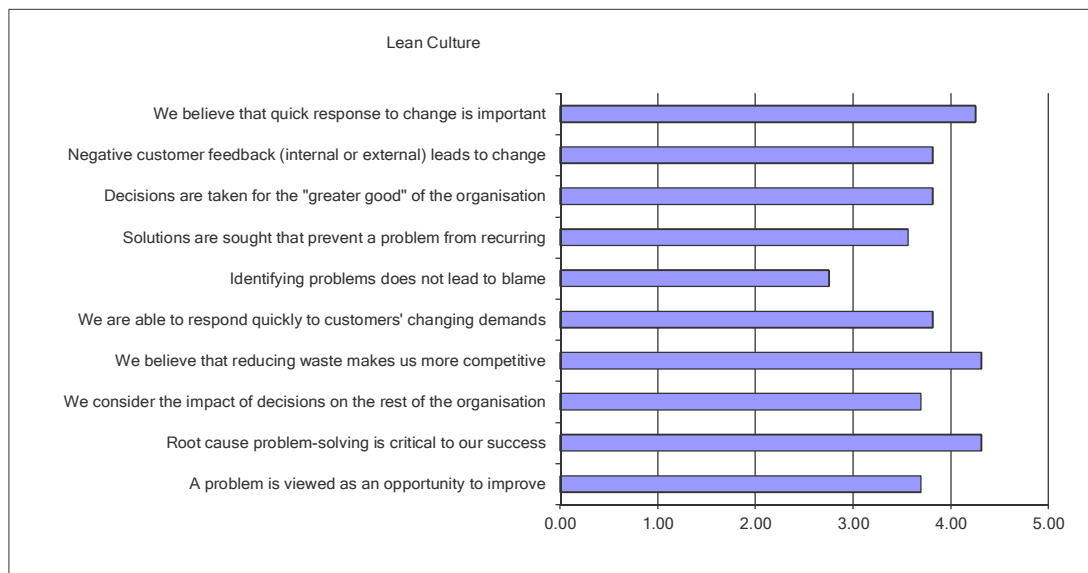
Figure 4.1. . Lean culture average score per question

Question	Median	Mean	Standard Deviation
Culture 1	4	3.69	1.04
Culture 6	2.5	2.75	0.97
Culture 2	4.5	4.31	0.85
Culture 7	4	3.56	0.93
Culture 3	4	3.69	1.04
Culture 8	4	3.81	0.88
Culture 4	4	4.31	0.58
Culture 9	4	3.81	0.73
Culture 5	4	3.81	1.18
Culture 10	4	4.25	0.83

Table 4.1. . Table of lean culture statistics

The results from this section of lean culture section of the questionnaire showed that Question 6: "Identifying problems does not lead to blame" scored the lowest rating with a median of only 2.5, or a rating of disagree / neutral. This would indicate that the organisations tend to try and find a person to blame for the mistakes being made. The next question with the second lowest rating is Question 7: "Solutions are sought that prevent a problem from recurring" with a median of 4 but average of 3.56 or a neutral rating. This means that companies do not resolve the root causes of problems or issues. The section overall score high with the general perception that the lean implementation was successful with 8 out of 10 questions having a median score 4 or agree.

The correlation matrix for this section showed that

	Culture 1	Culture 2	Culture 3	Culture 4	Culture 5	Culture 6	Culture 7	Culture 8	Culture 9	Culture 10
Culture 1		0.199	0.547	0.329	0.417	0.606	0.492	0.417	0.327	0.487
Culture 2	0.199		0.533	0.480	0.754	0.400	0.642	0.670	0.582	0.769
Culture 3	0.547	0.533		0.485	0.660	0.304	0.691	0.750	0.334	0.745
Culture 4	0.329	0.480	0.485		0.549	0.464	0.740	0.738	0.548	0.537
Culture 5	0.417	0.754	0.660	0.549		0.284	0.661	0.804	0.658	0.826
Culture 6	0.606	0.400	0.304	0.464	0.284		0.399	0.464	0.723	0.308
Culture 7	0.492	0.642	0.691	0.740	0.661	0.399		0.659	0.731	0.619
Culture 8	0.417	0.670	0.750	0.738	0.804	0.464	0.659		0.453	0.845
Culture 9	0.327	0.582	0.334	0.548	0.658	0.273	0.731	0.453		0.565
Culture 10	0.487	0.769	0.745	0.537	0.826	0.308	0.619	0.845	0.565	

r = 0.1 (weak relationship	r = 0.3 (medium relationship	r= 0.5 (strong relationship)

Table 4.2. . Correlation coefficients for lean culture

The correlation table shows that there is a strong relationship between the related questions of the questionnaire.

4.2. Organisational awareness
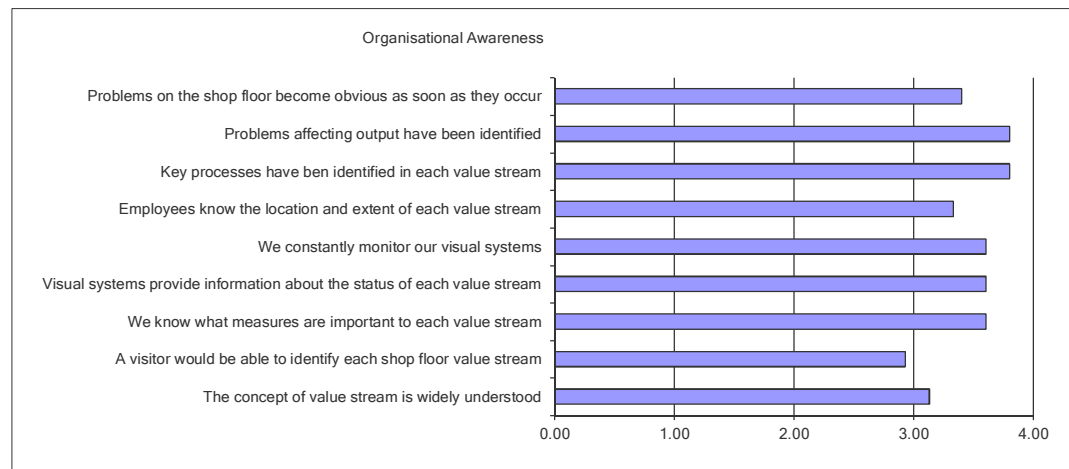
Figure 4.2. . Organisational awareness average score per question

Question	Median	Mean	Standard Deviation
Aware 1	3	3.13	0.96
Aware 2	3	2.93	0.93
Aware 6	3	3.33	1.14
Aware 3	4	3.60	0.95
Aware 7	4	3.80	1.05
Aware 8	4	3.80	0.91
Aware 4	4	3.60	1.08
Aware 5	4	3.60	1.08
Aware 9	4	3.40	0.88

Table 4.3. . Table of awareness statistics

The organisational awareness section score relatively high with most questions having a median of 4 or agree for 6 out of the 9 questions. The question that had the lowest median was Question 2: ‰A visitor will be able to identify each shop floor value stream+scoring a median of 3 but an average of 2.93 or neutral rating. This would indicate that the shop floor is not structured around the key processes that deliver the end product. The grouping of questions showed that related questions scored in the same median and average ranges with the awareness of value streams scoring the lowest.

The correlation matrix for the awareness section showed the following:

	Aware 1	Aware 2	Aware 3	Aware 4	Aware 5	Aware 6	Aware 7	Aware 8	Aware 9
Aware 1		0.685	0.498	0.502	0.502	0.573	0.560	0.567	0.650
Aware 2	0.685		0.498	0.504	0.570	0.590	0.604	0.537	0.686
Aware 3	0.498	0.498		0.750	0.750	0.740	0.924	0.909	0.589
Aware 4	0.502	0.504	0.750		0.886	0.922	0.812	0.596	0.658
Aware 5	0.502	0.570	0.750	0.886		0.813	0.812	0.663	0.728
Aware 6	0.573	0.590	0.740	0.922	0.813		0.786	0.581	0.735
Aware 7	0.560	0.604	0.924	0.812	0.812	0.789		0.870	0.667
Aware 8	0.567	0.537	0.909	0.589	0.663	0.581	0.870		0.684
Aware 9	0.650	0.686	0.589	0.658	0.728	0.735	0.667	0.684	

r = 0.1 (weak relationship	r = 0.3 (medium relationship	r= 0.5 (strong relationship)

Table 4.4. . Correlation coefficients for awareness

The correlation matrix showed that the related questions showed strong correlation with the lowest value being 0.573.

4.3. Employee Engagement

Figure 4.3. . Employee engagement average score per question

Question	Median	Mean	Standard Deviation
Engage 1	4	3.67	0.87
Engage 2	4	3.87	0.96
Engage 6	4	3.53	0.81
Engage 3	4	3.73	1.00
Engage 7	4	3.47	0.81
Engage 8	4	3.80	0.91
Engage 4	4	3.27	1.12
Engage 5	3	2.80	0.75
Engage 9	4	3.73	1.06

Table 4.5. . Table of engagement statistics

The engagement section revealed that Question 5: "Feedback is provided on all suggestions" scored the lowest with a median of 3 and average of 2.8 and thus a rating of neutral. The participants were of the opinion that their organisations engaged with their employees, since 8 out of the 9 questions received a rating of 4 or and thus an overall perception of agree. The majority of respondents is thus of the opinion that their people are engaged.

The correlation between the related questions is shown in the table below.

	Engage 1	Engage 2	Engage 3	Engage 4	Engage 5	Engage 6	Engage 7	Engage 8	Engage 9
Engage 1		0.588	0.666	0.637	0.307	0.730	0.698	0.675	0.770
Engage 2	0.588		0.801	0.591	0.335	0.611	0.773	0.736	0.752
Engage 3	0.666	0.801		0.777	0.464	0.841	0.901	0.676	0.750
Engage 4	0.637	0.591	0.777		0.460	0.653	0.820	0.705	0.786
Engage 5	0.307	0.335	0.464	0.460		0.509	0.597	0.333	0.436
Engage 6	0.730	0.611	0.841	0.653	0.509		0.849	0.601	0.789
Engage 7	0.698	0.773	0.901	0.820	0.597	0.849		0.674	0.846
Engage 8	0.675	0.736	0.676	0.705	0.333	0.601	0.674		0.842
Engage 9	0.770	0.752	0.750	0.786	0.436	0.789	0.846	0.842	

r = 0.1 (weak relationship	r = 0.3 (medium relationship	r= 0.5 (strong relationship)

Table 4.6. . Correlation coefficients for engagement

The values show that question 5 that scored the lowest in this section, also has a medium correlation with the related questions, with all the other questions having strong relationships.

4.4. Managerial consistency
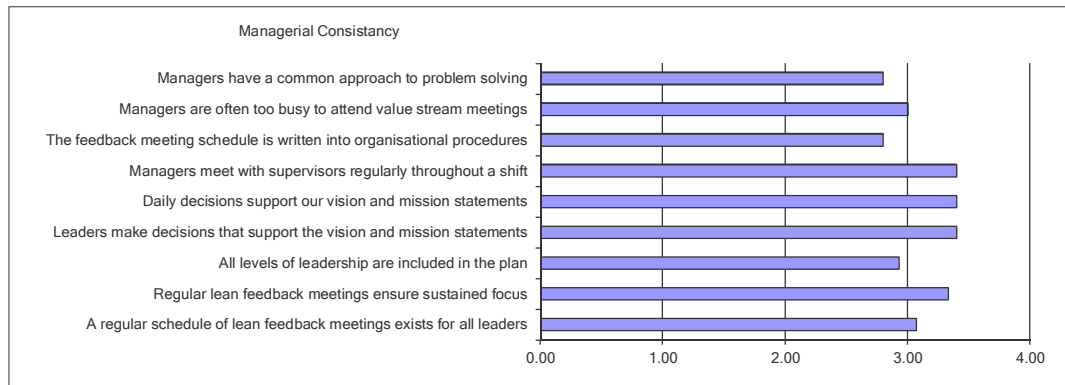
Figure 4.4. . Managerial consistency average score per question

Question	Median	Mean	Standard Deviation
Consist 1	3	3.07	1.12
Consist 2	4	3.33	1.14
Consist 6	4	3.40	1.14
Consist 3	3	2.93	1.12
Consist 7	3	2.80	1.05
Consist 8	3	3.00	1.15
Consist 4	4	3.40	0.88
Consist 5	4	3.40	0.80
Consist 9	2	2.80	1.05

Table 4.7. . Table of managerial consistency statistics

The managerial consistency section had a median score of 4 for 4 of the 9 questions, a median of 3 for 4 of the 9 questions and a median of 2 for 1 question. The question that had the lowest score was Question 9: %Managers have a common approach to problem solving+. This group of questions also contain a negative correlation meaning that there is a weak negative relationship between Question 8 and 9.

	Consist 1	Consist 2	Consist 3	Consist 4	Consist 5	Consist 6	Consist 7	Consist 8	Consist 9
Consist 1		0.819	0.743	0.648	0.564	0.446	0.806	0.360	0.409
Consist 2	0.819		0.801	0.868	0.734	0.668	0.674	0.458	0.618
Consist 3	0.743	0.801		0.702	0.623	0.696	0.726	0.103	0.670
Consist 4	0.648	0.868	0.702		0.815	0.637	0.522	0.460	0.667
Consist 5	0.564	0.734	0.623	0.815		0.700	0.574	0.433	0.574
Consist 6	0.446	0.668	0.696	0.637	0.700		0.625	0.303	0.346
Consist 7	0.806	0.674	0.726	0.522	0.574	0.625		0.387	0.390
Consist 8	0.360	0.458	0.103	0.460	0.433	0.303	0.687		-0.110
Consist 9	0.409	0.618	0.670	0.667	0.574	0.346	0.390	-0.110	

r = 0.1 (weak relationship	r = 0.3 (medium relationship	r= 0.5 (strong relationship)

Table 4.8. . Correlation coefficients for managerial consistency

The correlation matrix shows that the related questions in four cases had a strong correlation but in one case the correlation was weak (Question 8) and in another it was medium (Question 6). These correlations did not coincide with the average and median values. In the case of the weak correlation the average of question 8 was the highest of that group, and in the case of question 6, the medium correlation, the median value was the lowest in the group.

4.5.   Accountability

Figure 4.5. . Accountability average score per question

Question	Median	Mean	Standard Deviation
Account 1	4	3.87	1.15
Account 2	4	3.80	1.05
Account 4	4	3.73	1.06
Account 3	4	3.47	1.15
Account 5	4	3.53	1.09
Account 6	3	3.13	1.20

Table 4.9. . Table of accountability statistics

The accountability section again score relatively high with the median of 4 in 5 of the 6 questions. The lowest score was attracted by Question 6: %Action is taken when deadlines are missed+. This indicated the autocratic tendency of the organisations surveyed.

	Account 1	Account 2	Account 3	Account 4	Account 5	Account 6
Account 1		0.534	0.655	0.846	0.485	0.592
Account 2	0.534		0.800	0.552	0.739	0.392
Account 3	0.655	0.800		0.649	0.816	0.390
Account 4	0.846	0.552	0.649		0.585	0.653
Account 5	0.486	0.739	0.816	0.585		0.455
Account 6	0.592	0.392	0.390	0.653	0.455	

r = 0.1 (weak relationship	r = 0.3 (medium relationship	r= 0.5 (strong relationship)

Table 4.10 . Correlation coefficients for accountability

The correlation matrix shows that the questions in group 1 all have a strong correlation but that question 6 in the second group has a medium correlation. This is consistent with the median and mean values observed.

4.6.   Mutual respect
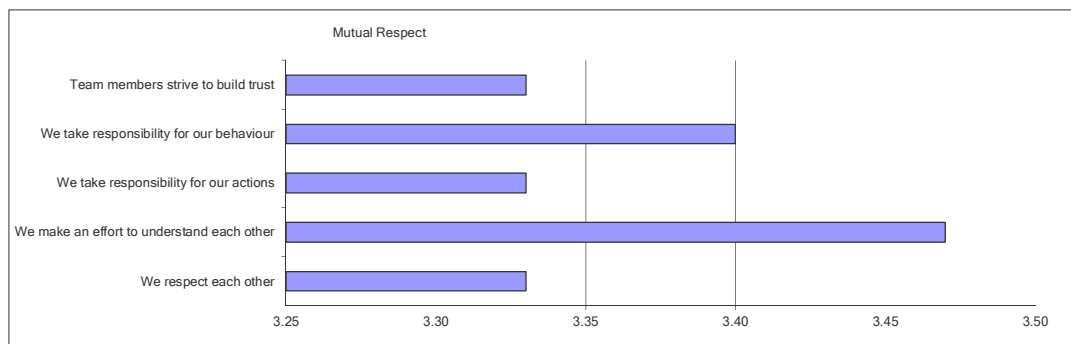
Figure 4.6. . Mutual respect average score per question

Question	Median	Mean	Standard Deviation
Respect 1	3	3.33	0.87
Respect 2	4	3.47	0.81
Respect 5	3	3.33	1.01
Respect 3	3	3.33	1.19
Respect 4	4	3.40	1.25

Table 4.11. . Table of mutual respect statistics

The mutual respect section was one of the sections that scored the lowest of all the questionnaire sections. Only 2 of the five questions scored a median value of 4 with the remaining three questions scoring a 3. The lowest scoring questions were question 1, 3 and 5. The three questions Question 1: %We respect each other+, Question 3: %We take responsibility for our actions+ and Question 5: %Team members strive to build trust+. This reveals that the organisations have not really managed to build the mutual respect required to make a lean implementation stick or become self-sustainable.

The correlation table for the mutual respect questions showed the following:

	Respect1	Respect 2	Respect 3	Respect 4	Respect 5
Respect 1		0.825	0.407	0.917	0.480
Respect 2	0.825		0.671	0.871	0.709
Respect 3	0.407	0.671		0.669	0.903
Respect 4	0.917	0.871	0.669		0.683
Respect 5	0.480	0.709	0.903	0.683	

r = 0.1 (weak relationship	r = 0.3 (medium relationship	r= 0.5 (strong relationship)

Table 4.12. . Correlation coefficients for mutual respect

The correlation with in the mutual respect group of questions is strong, although the correlation between Question 1 and 5 is the lowest at 0.480 this is very close to the level of 0.5 required for a strong relationship.

4.7.   Autocratic leadership
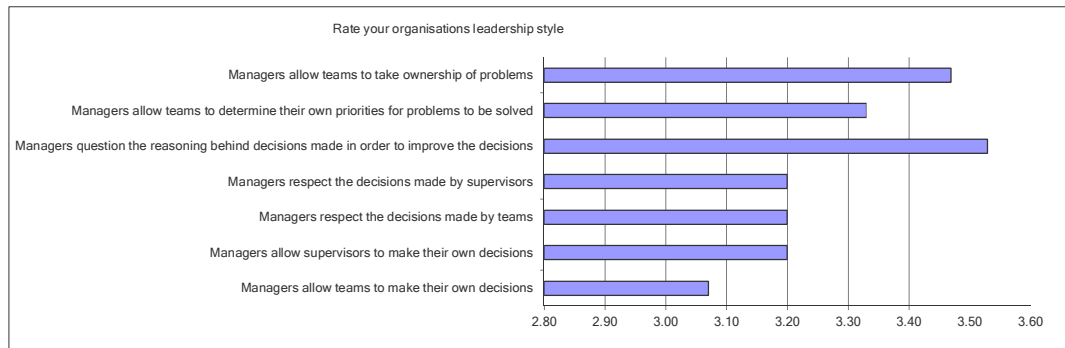
Figure 4.7. . Autocratic leadership average score per question

Question	Median	Mean	Standard Deviation
Autocratic 1	3	3.07	1.06
Autocratic 3	3	3.20	0.75
Autocratic 6	4	3.33	1.14
Autocratic 7	4	3.47	1.15
Autocratic 2	3	3.20	0.98
Autocratic 4	3	3.20	0.83
Autocratic 5	4	3.53	0.88

Table 4.13. . Table of autocratic leadership statistics

The last series of questions were designed to further highlight the autocratic nature of the organisations. The question that scored the lowest was question 1: %Managers allow teams to make their own decisions+ with a median of 3 but average of 3.07. The question was. A further 3 questions also score a median of 3 but their average was higher at 3.2. The remaining questions all scored a median value of 4.

	Autocratic 1	Autocratic 2	Autocratic 3	Autocratic 4	Autocratic 5	Autocratic 6	Autocratic 7
Autocratic 1		0.884	0.486	0.512	0.601	0.590	0.631
Autocratic 2	0.884		0.491	0.686	0.415	0.659	0.688
Autocratic 3	0.486	0.491		0.685	0.745	0.785	0.746
Autocratic 4	0.512	0.686	0.685		0.398	0.635	0.600
Autocratic 5	0.601	0.415	0.745	0.398		0.620	0.478
Autocratic 6	0.590	0.659	0.785	0.635	0.620		0.853
Autocratic 7	0.631	0.688	0.746	0.600	0.478	0.853	

r = 0.1 (weak relationship	r = 0.3 (medium relationship	r= 0.5 (strong relationship)

Table 4.14. . Correlation coefficients for autocratic leadership

The correlation table showed a strong relationship between most of the related questions with the exception being that of the relationship between question 4 and 5. This pair only showed a medium correlation.

4.8.   Overall influence of elements on lean implementation

The aim of the study was to determine if the elements identified by previous studies and the elements of this study has an influence on the success of lean implementations. As such the correlation between lean culture and the elements selected is represented in the table below:

	Culture 1	Culture 2	Culture 3	Culture 4	Culture 5	Culture 6	Culture 7	Culture 8	Culture 9	Culture 10
Aware 1	0.396	0.283	0.562	0.156	0.365	0.100	0.578	0.184	0.465	0.385
Aware 2	0.253	0.359	0.579	0.040	0.341	0.152	0.565	0.221	0.289	0.276
Aware 3	0.453	0.705	0.651	0.705	0.848	0.332	0.893	0.678	0.762	0.689
Aware 4	0.097	0.620	0.401	0.516	0.494	0.362	0.720	0.393	0.489	0.310

Aware 5	0.157	0.764	0.573	0.413	0.645	0.431	0.656	0.528	0.489	0.532
Aware 6	0.288	0.665	0.473	0.525	0.529	0.509	0.818	0.452	0.547	0.353
Aware 7	0.238	0.732	0.712	0.642	0.751	0.187	0.906	0.659	0.675	0.659
Aware 8	0.417	0.670	0.750	0.615	0.804	0.216	0.812	0.677	0.777	0.757
Aware 9	0.178	0.568	0.564	0.254	0.509	0.326	0.618	0.350	0.624	0.346
Engage 1	0.376	0.659	0.737	0.472	0.565	0.289	0.534	0.675	0.301	0.737
Engage 2	0.424	0.696	0.735	0.545	0.718	0.373	0.660	0.736	0.663	0.870
Engage 3	0.550	0.553	0.539	0.598	0.448	0.564	0.498	0.676	0.485	0.786
Engage 4	0.617	0.482	0.570	0.663	0.427	0.573	0.674	0.705	0.442	0.656
Engage 5	0.681	0.292	0.414	0.299	0.248	0.766	0.428	0.333	0.419	0.278
Engage 6	0.503	0.569	0.436	0.601	0.582	0.568	0.409	0.692	0.503	0.736
Engage 7	0.633	0.498	0.642	0.648	0.501	0.555	0.629	0.674	0.592	0.755
Engage 8	0.345	0.842	0.614	0.738	0.684	0.464	0.889	0.758	0.669	0.757
Engage 9	0.578	0.740	0.681	0.666	0.780	0.388	0.796	0.773	0.732	0.889
Consist 1	-0.151	0.677	0.570	0.265	0.495	-0.053	0.525	0.339	0.372	0.413
Consist 2	0.173	0.665	0.692	0.624	0.673	0.044	0.757	0.581	0.547	0.653
Consist 3	0.209	0.714	0.589	0.630	0.524	0.394	0.777	0.509	0.413	0.442
Consist 4	0.178	0.657	0.494	0.636	0.757	0.154	0.618	0.600	0.624	0.619
Consist 5	0.196	0.722	0.620	0.699	0.764	0.264	0.594	0.751	0.564	0.781
Consist 6	0.137	0.506	0.543	0.685	0.487	0.185	0.719	0.654	0.395	0.476
Consist 7	-0.013	0.508	0.593	0.321	0.386	0.115	0.573	0.309	0.394	0.276
Consist 8	-0.113	0.271	0.215	0.000	0.520	-0.392	0.181	0.191	0.340	0.347
Consist 9	0.550	0.358	0.593	0.642	0.490	0.476	0.573	0.449	0.394	0.429
Account 1	0.524	0.513	0.505	0.162	0.790	0.114	0.490	0.422	0.553	0.586
Account 2	0.675	0.433	0.593	0.535	0.595	0.260	0.640	0.519	0.581	0.735
Account 3	0.760	0.418	0.451	0.455	0.542	0.324	0.624	0.409	0.416	0.531
Account 4	0.517	0.519	0.681	0.246	0.678	0.175	0.664	0.497	0.455	0.588
Account 5	0.553	0.709	0.665	0.651	0.682	0.421	0.816	0.647	0.463	0.692
Account 6	0.587	0.614	0.498	0.310	0.562	0.706	0.633	0.451	0.614	0.506
Respect 1	0.526	0.509	0.476	0.557	0.565	0.665	0.588	0.675	0.263	0.461
Respect 2	0.552	0.569	0.565	0.509	0.772	0.555	0.629	0.765	0.349	0.656
Respect 3	0.603	0.567	0.399	0.312	0.549	0.358	0.545	0.492	0.439	0.738
Respect 4	0.646	0.647	0.544	0.535	0.661	0.649	0.711	0.655	0.438	0.626
Respect 5	0.647	0.360	0.409	0.369	0.432	0.497	0.505	0.508	0.323	0.634
Autocratic 1	0.701	0.348	0.545	0.175	0.267	0.577	0.490	0.359	0.301	0.512

Autocratic 2	0.614	0.494	0.570	0.114	0.535	0.492	0.455	0.419	0.380	0.605
Autocratic 3	0.716	0.647	0.663	0.448	0.700	0.443	0.689	0.647	0.498	0.685
Autocratic 4	0.487	0.675	0.670	0.134	0.629	0.398	0.536	0.405	0.448	0.519
Autocratic 5	0.606	0.430	0.397	0.548	0.345	0.517	0.688	0.464	0.458	0.398
Autocratic 6	0.864	0.459	0.583	0.427	0.721	0.575	0.573	0.581	0.547	0.635
Autocratic 7	0.844	0.486	0.667	0.455	0.455	0.685	0.456	0.624	0.587	0.740

r = 0.1 (weak relationship	r = 0.3 (medium relationship	r= 0.5 (strong relationship)

Table 4.15. . Correlation coefficients for lean culture

The table shows ~~that~~ mostly positive correlations between the influential elements and lean culture or implementation success. There is, however, a small element of weak negative correlation between some elements of culture and managerial consistency.

The correlation matrix can be summarised with the following average correlation values with lean culture:

Variable	Average Correlation Value	Cronbach Alpha
Awareness	0.50	0.9499
Engagement	0.58	0.9469
Consistency	0.46	0.9032
Accountability	0.53	0.9018
Mutual respect	0.54	0.9175
Autocratic behaviour	053	0.9193

Table 4.16. . Correlation and Cronbach Alpha values summary

The correlation values have the following impact on the hypothesis proposed earlier in the study:

r = 0.1 (weak relationship	r = 0.3 (medium relationship	r= 0.5 (strong relationship)
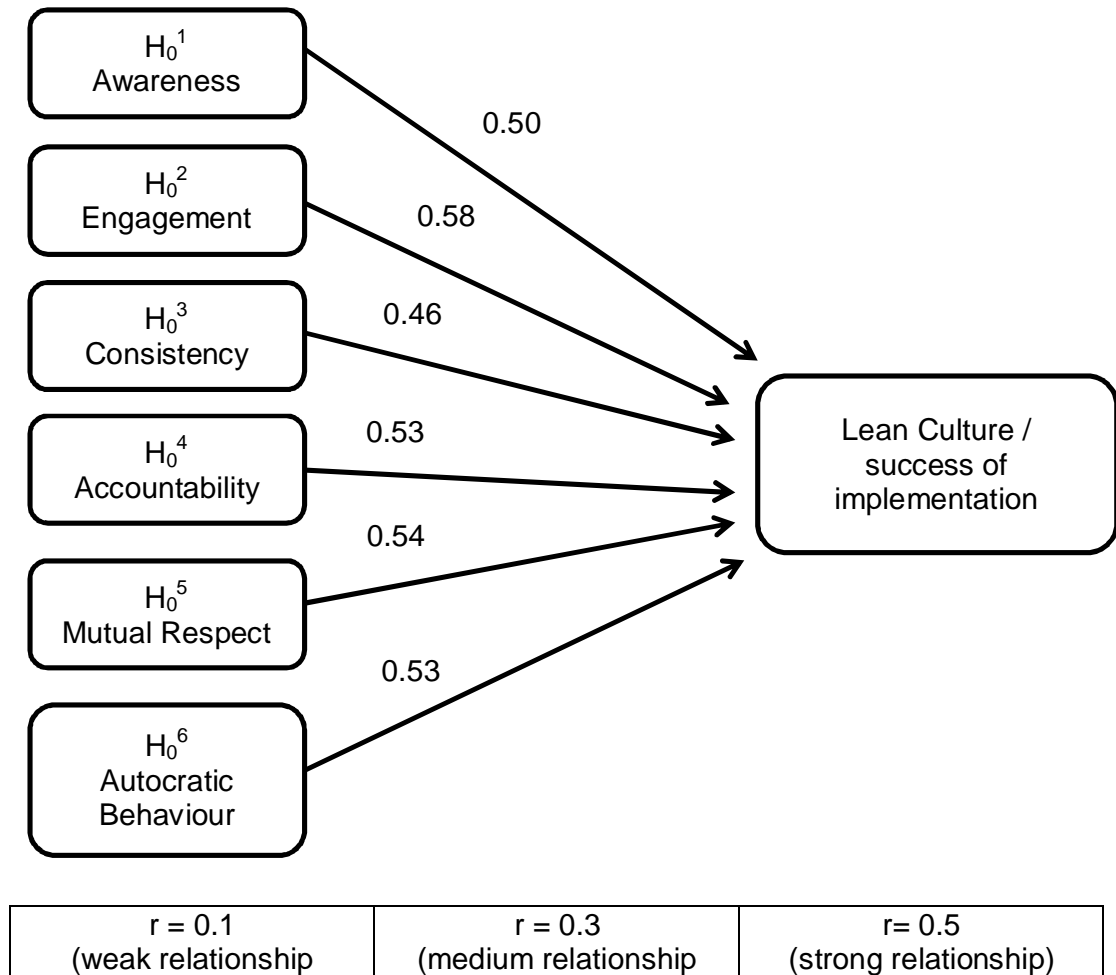
Figure 4.8. . Hypothesis relationship of variables

The hypothesis testing outcomes can be expressed as follows:

H_0^1:   Awareness has no influence on the success of lean implementations . rejected, since a strong (positive) relationship exists between awareness and lean culture and thus lean implementation success.

H_0^2:   Engagement has no influence on the success of lean implementations . rejected since a strong (positive) relationship exists between engagement and lean culture and thus lean implementation success.

H_0^3:   Consistency has no influence on the success of lean implementations . rejected since a strong (positive) relationship exists between consistency and lean culture and thus lean implementation success.

H_0^4:   Accountability has no influence on the success of lean implementations . rejected since a strong (positive) relationship exists between accountability and lean culture and thus lean implementation success.

H_0^5:   Mutual Respect has no influence on the success of lean implementations . rejected since a strong (positive) relationship exists between mutual respect and lean culture and thus lean implementation success.

H_0^6:   Autocratic Behaviour has no influence on the success of lean implementations . rejected since a strong (positive) relationship exists between autocratic behaviour and lean culture and thus lean implementation success.

4.9.   Concluding remarks

The chapter detailed the relationships between the various elements and drew some conclusion from the results. The discussion of the results and the relevance to the literature will be detailed in the next chapter.

CHAPTER 5

INTERPRETATION, CONCLUSION AND RECOMMENDATIONS

5. INTERPRETATION, CONCLUSION AND RECOMMENDATIONS

The study aimed at establishing a relationship between the power distance relationships and the success of lean manufacturing implementation initiatives.

The parallel has already been drawn that the evidence of lean culture will indicate the success of lean implementation, since success cannot be achieved without sustainable organisation culture shift towards lean culture (Liker & Meier, 2006).

This chapter draws the final conclusions, determines if the research has shown any trends and proposes future research.

The first question that needs to be answered is, does the research show the relationship between the success of lean implementation, power distance relationships and the other elements required for successful lean implementation.

5.1. Interpretation of results

The empirical results detail in Chapter 4 will be discussed in detail in the following paragraphs with an analysis of each of the elements.

5.1.1. Organisational Awareness

The organisation awareness questions showed a strong positive relationship to lean culture and thus the success of implementations with an average correlation value of 0.50. The strong relationship has led to the rejection of the null hypothesis (H_0^1) that organisational awareness had no influence on lean implementations. The relationship has, however, shown that, although a strong correlation exists, there are weaker elements within the awareness of the organisations surveyed. The weakness lies in the way in which value streams are identified and laid out on the factory floor.

5.1.2. Employee engagement

The employee engagement section of questions again showed a strong positive relationship to lean implementation with an average value of 0.58. The value resulted in the null hypothesis (H_0^2) also being reject in favour of a hypothesis that supports a relationship between engagement and lean success. This section showed the highest correlation with lean culture of all the elements studied. The responses in this section, however, highlighted that managers need to give feedback to employees on suggestions made and their progress to implementation.

5.1.3. Managerial consistency

The managerial consistency section showed the lowest correlation value of all the influencing factors investigated. The value of 0.46 represents a medium to strong positive correlation between the two variables. The correlation value, although low was enough to reject the null hypothesis (H_0^3) in favour of a positive relationship between consistency and lean culture. The consistency section was also the only section with negative correlation values. Although the negative correlations were weak, they show that small actions like a manager not showing up for a meeting or reviews or seeking to blame instead of seeking root causes, can hurt lean implementations.

5.1.4. Accountability

The accountability question and correlation analysis had a strong positive relationship with lean culture with a value of 0.53 and again led to the rejection of the null hypothesis (H_0^4). The section also showed that, although organisation behave with accountability, there seems to be occasions when targets or due dates are missed when things might go slightly off track.

5.1.5. Mutual respect

The mutual respect section again showed a strong positive correlation with a value of 0.54 and the rejection of the null hypothesis (H_0^5). This part of the questionnaire was one of the sections that the researcher expected a negative relationship but showed a positive relationship. It would appear that the organisations are still building this fragile part of the lean transformation process.

5.1.6. Autocratic behaviour

The autocratic behaviour questions again showed a strong positive relationship to lean implementations with a value of 0.53 that again led to the rejection of the null hypothesis (H_0^6). The autocratic section was, as with the mutual respect section, one were the researcher expected a negative correlation value. The responses received would appear to point out that organisations still battled with allowing teams to make their own decisions.

The above discussion has showed that all the elements making up lean culture have been shown to have a positive relationship with lean culture and thus lean implementation.

5.2. Results and literature

This section of the results analysis will discuss the literature and the results of this study.

The lean culture elements that were measured indicated that most organisations showed some of the elements that would be associated with a lean culture. The ability to respond quickly to customer demands or problems was rated by all to be the one of the most important traits of the respective organisations. This bodes well for the level of lean culture that was instilled in the organisations to identify problems and correct them as soon as possible. This correlates to what the literature stated as being a key trait of lean culture

(Van der Merwe, 2011; Atkinson, 2013; Liker, 2004). In order for organisation to keep on improving along their lean journey, they need the ability to identify problem quickly and efficiently. The one negative from the results was the low score that was given to the question relating to problem identification not leading to blame. This speaks to the length of the journey the organisations have taken down the lean road. Although they are identifying problems, the blame culture has not totally being banned from the organisation. In order to keep the transformation on the right path this culture needs to be eliminated (Liker & Convis, 2012). The Toyota example would serve many Western companies well in this regard. When Toyota faced a large number of recalls, management blamed themselves for failing the brand and their employees (Liker & Convis, 2012). The Toyota management team never blamed an individual for the product failures but investigated the causes and developed fixes.

The awareness, engagement, managerial consistency and accountability all indicated that incorporated these traits of lean within their respective organisations. This would be consistent with what would have been expected from the literature (Van der Merwe, 2011; Liker, 2004; Bhasin, 2013). The negative part of these elements, however, is the fact that questions relating to feedback on suggestions, visual identification of value streams, consistent problem solving approaches and actions taken if deadlines are missed, scored low in the responses. These items again indicate that although the organisations have started their journeys, they have not fully grasped the extent of change required to make a lean implementation self-sustaining and lasting (Liker, 2004; Sturdevant, 2014).

The elements of the study that relate to the power distance and its influence on lean scored marginally above the acceptable level. These elements served as the indicators of the autocratic character of the organisations. In a truly democratic or equal organisation the author would have expected a much higher level of acceptance for these elements (Bhatti et al., 2012; Liker, 2004). The literature indicated that autocratic behaviour is detrimental to lean and its long term success. Although the study indicated that there was some improvement in the autocratic behaviours of the organisations surveyed, the

author is not convinced that these changes have reached a level that would result in sustainable change.

5.3.   Conclusion

The results have shown that the elements have a positive relationship with the success of implementation, the organisations must guard against the implementation trap of typical lean initiatives. They have employed and deployed some tools, but must achieve the final true lean culture shifts and ensure that the culture does not return to the previous pre-lean state.

The study has also shown that the instrument developed by Dr van der Merwe (2011) is valuable in measuring lean culture even in diverse organisations. The reliability and correlation values obtained support this conclusion.

The study has shown that autocratic behaviour does have a role to play in the success of lean transformations even though the autocratic behaviour was expected to be negative and has actually been shown to be positive. This behaviour was highlighted by the study, but there is evidence that this role could be measured better if a larger sample is obtained. It could be that organisations expect to be directed at the start of transformation but the skill would then be to wean the organisation from a direction giving style to one that takes its own decisions and takes its own direction depending on the problems at hand.

5.4.   Shortcomings and recommendations

The study's shortcomings can be addressed by the following suggestions. These suggestions could also be used in future studies.

The study was spread over a number of organisations and tried to measure if lean was really implemented effectively in those organisations. It would be worthwhile to try and replicate the study with more respondents to be able to do valid statistical analysis of the hypothesis.

Although the sample was taken over an estimated 8 organisations it would be advantageous to try and get an even larger sample or organisations involved in a study of this nature.

The study could also be made more representative if the questionnaire is taken to the shop floor or operators by using printed copies.

6. Bibliography

Aiqiang, L., 2010. Turning the Corner. *Industrial Management*, (May / June), pp.27-30.

Anglia Ruskin University, 2010. *Guide to the Harvard Style of Referencing*. Guide. Cambridge: Anglia Ruskin University Library.

Atkinson, P.E., 2013. Implementation of lean culture change and continuous improvement. *Operations Management*, 3, pp.16-21.

Atkinson, P. & Nicholls, L., 2013. Demystifying ±ean Culture Change and continuous improvement. *Management Services*, (Autumn), pp.10-15.

Badurdeen, F., Wijekoon, K. & Marksberry, P., 2011. An analytical hierarchy process-based tool to evaluate value systems for lean transformations. *Journal of Manufacturing Technology Management*, 22(1), pp.46-65.

Bashin, S. & Burcher, P., 2006. Lean viewed as a philosophy. *Journal of Manufacturing Technology Management*, 17(1), pp.56-72.

Baskerville, R.F., 2003. Hofstede never studied culture. *Accounting, Organizations and Society*, 28, pp.1-14.

Benson, E., Calleja, T., Gapger, D., Gast, A., Roggenhofer, S., Slagt, P., Theunissen, R. & Vlemmix, R., 2009. *Learning to lead through the line*. [Report] McKinsey Available at: http://operations-extranet.mckinsey.com [Accessed 12 July 2014].

Bhasin, S., 2013. Impact of corporate culture on the adoption of the Lean principles. *International Journal of Lean Six Sigma*, 4(2), pp.118-40.

Bhatti, N., Maitlo, G.M., Shaikh, N., Hashmi, M.A. & Shaikh, F.M., 2012. The Impact of Autocratic and Democratic Leadership Style on Job Satisfaction. *International Business Research*, 5(2), pp.192-201.

Catalin, P., 2012. A Critical approach to Hofstede s Model on Cultural Dimensions. *"Ovidius" University Annals, Economic Sciences Series*, XII(1), pp.644-49.

Collis, J. & Hussey, R., 2014. *Bussiness Research – A practical guide for undergraduate and postgraduate students*. 3rd ed. London: Palgrove Macmillan.

Gilmore-Jones, P. & Tilley, J., 2009. *Lean and Six Sigma 2 – The tools are not enough*. [Online] McKinsey Available at: http://operations-extranet.mckinsey.com [Accessed 12 June 2014].

Hines, P., 2010. How to create and sustain a lean culture. *Training Journal*, (July), pp.58-62.

Hook, M. & Stehn, L., 2008. Lean principles in industrialized housing production: the need for cultural change. *Lean Construction Journal*, pp.20-33.

Liker, J.K., 2004. *The Toyota Way*. McGraw-Hill.

Liker, J.K. & Convis, G.L., 2012. *The Toyota Way to Lean Leadership*. McGraw-Hill.

Liker, J.K. & Hoseus, M., 2008. *Toyota Culture: The Heart and Soul of the Toyota Way*. New York: McGraw-Hill.

Liker, J.K. & Meier, D., 2006. *The Toyota Way Fieldbook*. 1st ed. New York: McGraw-Hill.

Lopez, E.S. & Ensari, N., 2014. The effects of Leadership style, Organizational outcome, and Gender on attributional bias toward Leaders. *Journal of Leadership Studies*, 8(2), pp.19-37.

Pieterse, K. ed., 2015. *Implementing Lean in South African Industry*. Port Elizabeth: Trilean Publishing.

Schein, E.H., 1984. Coming to a new Awareness of Organizational Culture. *Sloan Management Review*, 25(2), pp.3-16.

Statistics South Africa, 2015. *Quarterly Labour Force Survey, Quarter 3:2015, P0211*. Statistical Release. Pretoria: Statistics South Africa.

Stone, K.B., 2012. Four decades of lean: a systematic literature review. *International Journal of Lean Six Sigma*, 3(2), pp.112-32.

Sturdevant, D., 2014. *(Still) learning from Toyota*. [Online] McKinsey & Company Available at: http://operations-extranet.mckinsey.com [Accessed 16 June 2014].

Van der Merwe, K.R., 2011. *The development of a Lean Culture causal framework to support the effective implementation of Lean in Automotive Component Manufacturers in South Africa*. PhD Thesis. Port Elizabeth: NMMU.

Werner, A. ed., 2011. *Organisational Behaviour: A contemporary South Arican perspective*. 3rd ed. Pretoria: Van Schaik Publishers.

Womack, J.P. & Jones, D.T., 2003. *Lean Thinking: Banish Waste and Create Wealth in your Organisation*. 2nd ed. London: Simon & Schuster.

Womack, J.P., Jones, D.T. & Roos, D., 1990. *The Machine that Changed the World*. London: Maxwell Macmillan.

APPENDIX 1: Cover Letter

Dear Respondent

I am studying towards my MBA (Masters in Business Administration) degree at the Nelson Mandela Metropolitan University Business School. I am conducting research on how autocratic leadership influences lean manufacturing implementations in the manufacturing industry in South Africa. I believe that my study will make an important contribution to understand lean manufacturing implementations in South Africa.

You are part of our selected sample of respondents whose views we seek on the above-mentioned matter. We would therefore appreciate it if you could answer a few questions. It should not take more than fifteen minutes of your time and we want to thank you in advance for your co-operation.

Please note also that your participation in this study is entirely voluntary and that you have the right to withdraw from the study at any stage. Your responses will also be completely anonymous and is no way to link responses to you.

Please follow the link below to complete the survey:

https://www.surveymonkey.com/r/TKL56M2

Thank you very much.

Lourens de Beer

Contact details:

To verify the authenticity of the study, please contact Prof. J.J. Pieterse at (041) 504 3774 and jpieterse@nmmu.ac.za.

APPENDIX 2: INSTRUMENT

QUESTIONAIRE

Section A – Biographical information

1. Gender

Female	Male

2. Age

18 to 25	25 to 34	35 to 44	45 to 54	55 to 64	65 to 74	Over 75

3. Level

Owner / Executive / C - Level	Senior Management	Middle management	Intermediate
Entry Level	Operator	Other;	

Source: (Van der Merwe, 2011) and own construct

Section B – Questionnaire

	1. This section relates to your organisations culture or, more simply, "the way we do things around here". Please indicate to what extent you agree with each of the statements below by circling the appropriate number.	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1.1	A problem is viewed as an opportunity to improve	1	2	3	4	5
1.2	Root cause problem-solving is critical to our success	1	2	3	4	5
1.3	We consider the impact of decisions on the rest of the organisation	1	2	3	4	5
1,4	We believe that reducing waste makes us more competitive	1	2	3	4	5
1.5	We are able to respond quickly to customers' changing demands	1	2	3	4	5
1.6	Identifying problems does **not** lead to blame	1	2	3	4	5
1.7	Solutions are sought that prevent a problem from recurring	1	2	3	4	5
1.8	Decisions are taken for the "greater good" of the organisation	1	2	3	4	5
1.9	Negative customer feedback (internal or external) leads to change	1	2	3	4	5
1.10	We believe that quick response to change is important	1	2	3	4	5

Source: (Van der Merwe, 2011)

	2. This section relates to the levels of awareness on the shop floor. Please indicate to what extent you agree with each of the statements below by circling the appropriate number.	Strongly disagree	Disagree	Neutral	Agree	Strongly agree

2.1	The concept of a value stream is widely understood	1	2	3	4	5
2.2	A visitor would be able to identify each shop floor value stream	1	2	3	4	5
2.3	We know what measures are important to each value stream	1	2	3	4	5
2.4	Visual systems provide information about the status of each value stream	1	2	3	4	5
2.5	We constantly monitor our visual systems	1	2	3	4	5
2.6	Employees know the location and extent of each value stream	1	2	3	4	5
2.7	Key processes have been identified in each value stream	1	2	3	4	5
2.8	Problems affecting output have been identified	1	2	3	4	5
2.9	Problems on the shop floor become obvious as soon as they occur	1	2	3	4	5

Source: (Van der Merwe, 2011)

3.	This section aims to explore the degree to which employees are engaged and challenged by management. Please indicate to what extent you agree with each of the statements below by circling the appropriate number.	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
3.1	Leaders participate in shop floor improvement efforts	1	2	3	4	5
3.2	Team members feedback is valued by supervisors and managers	1	2	3	4	5
3.3	Team members are challenged to provide the best solutions	1	2	3	4	5
3.4	A formal procedure exists for obtaining suggestions	1	2	3	4	5
3.5	Feedback is provided on all suggestions	1	2	3	4	5
3.6	Leaders discuss work problems and often offer guidance	1	2	3	4	5
3.7	Team members are encouraged to discover improvement opportunities	1	2	3	4	5
3.8	Experience and guidance has led to improved problem-solving	1	2	3	4	5
3.9	Good suggestions are implemented	1	2	3	4	5

Source: (Van der Merwe, 2011)

4.	This section relates to the consistency of managerial actions. Please indicate to what extent you agree with each of the statements below by circling the appropriate number.	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
4.1	A regular schedule of lean feedback meetings exists for all leaders	1	2	3	4	5
4.2	Regular lean feedback meetings ensure sustained focus	1	2	3	4	5
4.3	All levels of leadership are included in the plan	1	2	3	4	5
4.4	Leaders make decisions that support the vision and mission objectives	1	2	3	4	5
4.5	Daily decisions support our vision and mission statements	1	2	3	4	5
4.6	Managers meet with supervisors regularly throughout a shift	1	2	3	4	5
4.7	The feedback meeting schedule is written into organisational procedures	1	2	3	4	5
4.8	Managers are often too busy to attend scheduled value stream meetings	1	2	3	4	5
4.9	Managers have a common approach to problem solving	1	2	3	4	5

Source: (Van der Merwe, 2011)

5.	This section aims to explore the prevailing levels of accountability and associated systems. Please indicate to what extent you agree with each of the statements below by circling the appropriate number.	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
5.1	Corrective actions are assigned to individuals	1	2	3	4	5
5.2	Team members know what is expected of their team	1	2	3	4	5
5.3	Due dates are assigned to corrective actions at all levels	1	2	3	4	5
5.4	Procedures exist for assigning corrective actions to individuals within teams	1	2	3	4	5
5.5	Managers and supervisors follow up on corrective actions	1	2	3	4	5
5.6	Action is taken when deadlines are missed	1	2	3	4	5

Source: (Van der Merwe, 2011)

6.	This section aims to explore the prevailing levels of mutual respect and associated systems. Please indicate to what extent you agree with each of the statements below by circling the appropriate number.	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
5.1	We respect each other	1	2	3	4	5
5.2	We make an effort to understand each other	1	2	3	4	5
5.3	We take responsibility for our actions	1	2	3	4	5
5.4	We take responsibility for our behavior	1	2	3	4	5
5.5	Team members strive to build trust	1	2	3	4	5

Source: (Badurdeen et al., 2011) and own construct

7.	This section aims to explore the autocratic leadership styles exhibited by the leaders of the organisation. Please indicate to what extent you agree with each of the statements below by circling the appropriate number.	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
7.1	Managers allow teams to make their own decisions	1	2	3	4	5
7.2	Managers allow supervisors to make their own decisions	1	2	3	4	5
7.3	Managers respect the decisions made by teams	1	2	3	4	5
7.4	Managers respect the decisions made by supervisors	1	2	3	4	5
7.5	Managers question the reasoning behind decisions made in order to improve the decisions	1	2	3	4	5
7.6	Managers allow teams to determine their own priorities for problems to be solved	1	2	3	4	5
7.7	Managers allow teams to take ownership of problems	1	2	3	4	5

Source: (Lopez & Ensari, 2014) and own construct

APPENDIX 3: ETHICS CLEARANCE

**Nelson Mandela
Metropolitan
University**

for tomorrow

ETHICS CLEARANCE FOR TREATISES/DISSERTATIONS/THESES

Please type or complete in black ink

FACULTY: Business and Economic Science

SCHOOL/DEPARTMENT: Business School

I, (surname and initials of supervisor) Pieterse, JJ

the supervisor for (surname and initials of candidate) de Beer, L

_____ (student number) 213460882

a candidate for the degree of Masters of Business Administration

with a treatise/dissertation/thesis entitled (full title of treatise/dissertation/thesis):

The influence of the power distance relationship on the success of lean manufacturing implimentations.

considered the following ethics criteria *(please tick the appropriate block):*

	YES	NO
1. Is there any risk of harm, embarrassment of offence, however slight or temporary, to the participant, third parties or to the communities at large?		X
2. Is the study based on a research population defined as 'vulnerable' in terms of age, physical characteristics and/or disease status?		X
2.1 Are subjects/participants/respondents of your study:		X
(a) Children under the age of 18?		X
(b) NMMU staff?		X
(c) NMMU students?		X
(d) The elderly/persons over the age of 60?		X
(e) A sample from an institution (e.g. hospital/school)?		X
(f) Handicapped (e.g. mentally or physically)?		x

6

3. Does the data that will be collected require consent of an institutional authority for this study? (An institutional authority refers to an organisation that is established by government to protect vulnerable people)		x	
3.1 Are you intending to access participant data from an existing, stored repository (e.g. school, institutional or university records)?		x	
4. Will the participant's privacy, anonymity or confidentiality be compromised?		x	
4.1 Are you administering a questionnaire/survey that:			
(a) Collects sensitive/identifiable data from participants?			x
(b) Does not guarantee the anonymity of the participant?			x
(c) Does not guarantee the confidentiality of the participant and the data?			x
(d) Will offer an incentive to respondents to participate, i.e. a lucky draw or any other prize?			x
(e) Will create doubt whether sample control measures are in place?			x
(f) Will be distributed electronically via email (and requesting an email response)? Note: • If your questionnaire **DOES NOT** request respondents' identification, is distributed electronically and you request respondents to return it *manually* (print out and deliver/mail); **AND** respondent anonymity can be guaranteed, your answer will be NO. • If your questionnaire **DOES NOT** request respondents' identification, is *distributed via an email link and works through a web response system (e.g. the university survey system); **AND** respondent anonymity can be guaranteed, your answer will be NO.*			x

*Please note that if **ANY** of the questions above have been answered in the affirmative **(YES)** the student will need to complete the full ethics clearance form (REC-H application) and submit it with the relevant documentation to the Faculty RECH (Ethics) representative.*

and hereby certify that the student has given his/her research ethical consideration and full ethics approval is not required.

_____
SUPERVISOR(S)

___5 June 2015___
DATE

_____
HEAD OF DEPARTMENT

___10/9/2015___
DATE

_____
STUDENT(S)

_1 August 2015__
DATE

Please ensure that the research methodology section from the proposal is attached to this form.

Please note that by following this Proforma ethics route, the study will NOT be allocated an ethics clearance number.

APPENDIX 4: SIMULARITY INDEX

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