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The Influence of Lean on employee attitude and behavior at work

Master thesis

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INTRODUCTION

Relevance of the topic. The topic of study is the influence of Lean on the employee thinking and behavior at work. Since the beginning of 1980, the Lean impacts on production businesses which were implemented that had been started. Actually if Lean implementation done successfully then the company can improve the quality of job, reduce the defect rate, cutting costs, advance the product design and supply chain (Herbert De Vries & H. M. Van der Poll 2018). On the hand, the Lean implementation process might be vary based on the organization structure and culture and the way of implementation needs to be align with organization values and culture (Herbert De Vries & H. M. Van der Poll 2018). Therefore it is very important to understand what employee think about Lean before transformation, during the process and after implementation and how they react in any of these stages. Having this knowledge would be a help and accelerate the transformation process.

Current state of scientific research. Toyota Motors Company became famous in the beginning of 1970s, when the first oil crises just happened, based on the low consumption of oil and good speed recovering in compare with competitors (Lander and Liker, 2007). One of the main features of Toyota production was just in time production system (Liker, 2007).

At the beginning of 1990s, Toyota introduces the Lean methodology in manufacturing (Womack, Jones, and Roos, 1997). Lean has been defined by (Womak and Jonas, 1997), as a way to achieve and execute more with fewer manpower and effort and less machinery and equipment as well as smaller area and make customers happier and satisfy through providing the right things that they look for it.

These days Lean become one of the main competitive advantages of the companies and many companies apply it in their system to get the benefits (Godinho Filho and Barco, 2015). Although Lean concept was developed in an automotive industry but there is lots of examples to show the implementation of Lean methodology in other industries such as clothes (Sukwadi, Wee, and Yang, 2013) and healthcare (Costa and Godinho Filho, 2016).

As mentioned the Lean is applicable in different industries, because Lean is a philosophy, and in the past years different techniques and methods of management like just in time, quality management, job rotation has been studied and implemented in different organizations (Coles,

Lanfranchi, Skalli, & Treble, 2007). It is also considerable that according some studies Lean can have positive impact on the organizations, however based on some other researches, Lean can have negative influence on the organization or the effect can be mix of negative and positives (Gregor Bouville & David Alis, 2014). Two reasons can could explain the results. The first reason is that most of the studies focus is only on one or maximum two companies and the companies are basically located in the same area and that makes the impact of local variables stronger than Lean method. The second reason is in most of studies the researcher measure and ask about the impact of Lean, however they didn't define Lean precisely and tagged every single method of Lean as Lean which is not completed study (Gregor Bouville & David Alis, 2014).

On the other hand nowadays the employee retention is a very challenging subject and issue for the organizations. At the time that an employee reaching to specific level of knowledge and experience about the job, the managers of companies try to keep the employee and make them happy and satisfy (Lumley, Coetzee, Tladinyane & Ferreira, 2011). The organizations try to create a situation in order to keep the current employees and also recruiting new talents (Lumley, Coetzee, Tladinyane & Ferreira, 2011).

Employee attitude might become a reason for satisfaction or dissatisfaction of an employee toward the job and effect the level of commitment accordingly. The result of satisfaction or dissatisfaction may effect the employee behavior and cause some negative behaviours such as counterproductive actions or attendance maintenance (Lumley, Coetzee, Tladinyane & Ferreira, 2011).

Problem statement. Applying Lean methodology in an organization is considered as a very big change in the company, however the benefits are bigger than the risks and that's why day by day there is an increase in the number of companies which implement Lean.

On the other hand if employees have positive attitude about Lean methodology and support the implementation, then the changes process will be accelerated.

It is very important for the managers to know whether Lean implementation has influence on employee behavior or not. In addition the managers can be prepared if they know how big is the impact of the influence.

In summary having knowledge about the relation between Lean and employee behavior and attitude is very essential and in can lead the implementation of Lean to the success or it may cause failure for the implementation.

The scientific problem is to check whether Lean has any relationship and impact with employee attitude and behavior or not. In case that influence of Lean on the employee attitude and behaviour is proved, determining the level of impact would be calculated and reported in the conclusion of the study. It is very important to measure and investigate on the possible attitude and behaviour of the employees who work in a Lean organization and realized that influence is positive or negative.

Aim of study. The main aim is to understand the effect of Lean on employee behavior and attitude. This study tries to develop a model that explain the relation between Lean methodology and different employee Behavior and thinking criteria.

Object of study. In this study the object is exploring and determining the influence of Lean on the employee attitude and behaviors and developing a research model through a quantitative data collection in Germanika Company in Lithuania, which is manufacturing organization, and analysing the data via SPSS program.

Research questions. Considering the knowledge and previous researches and data availability, the main question of this research and study are:

- How implementation of Lean can affect the employee behavior at work?
- How implementation of Lean can affect the employee attitude at work?

And in addition to the main questions of the study there are sub questions which determine the implementation of Lean on each type of employee behavior and attitude.

Research methodology. The study would be done in an organization which Lean is already implemented there and the employees who have more than one year experience in the company would be interviewed, through a quantitative research method.

Novelty of research. Basically Lean is a variable which has effects on the performance of the organization through different techniques. The performance is being measured by numbers and figures mostly while thinking and behavior is a kind of insight which are measured differently. The main innovation criteria in this research is making relationship between a factor which mostly has effect on performance and the way of thinking and behavioural subject.

Limitation of the research. The research needs to be done in an organization which Lean is already implemented which usually are not a small companies. The limitation is getting through those companies and collecting data from the employees who worked there for at least a year.

The other limitation of the study can be the difference between the samples in culture (if the employees are coming from different nations), gender, age, working experience, which may affect their thinking and behavior at work.

Structure of the thesis. The study is categorized in three main sections and subcategories as follow:

1. Literature review, that is divided in the different sub categories, like Lean, employee behavior at work, employee thinking at work, the relation between Lean and thinking and behavior
2. Empirical research which explains the model, sample size, sampling, questionnaire and research methodology.
3. Analysis and conclusion that presents the finding of the study through the statistical analysis.

1. LITERATURE REVIEW

1.1. Review of literature on employee behavior

It is clear that in making and keeping long term relationship with customers from service companies the employees have the biggest role and the relationship is very depend on the employees because they are the main contact person and in touch with the customers (Gouthier, and Rhein, 2011). The success key for the organizations are the employees of the company and the employees who pride their job and stay in the companies for the long-term they will be able to serve customers better since they have more knowledge and experience in the organization and on the other hand short stay in the organization from the employees or changing the employees may cause loss in turnover and income (Gouthier, and Rhein, 2011). A majority of organization performance depends on employee behavior (Van der Flier and Koopman, 2004).

As positive behavior of the employees can affect the business the negative and deviant behaviour of employees may harm the organization (Yao, Fan, Guo and Li. 2014). The employees may harm the business through four different approaches of deviant behaviour as follow (Yao, Fan, Guo and Li. 2014):

- Behaviour related to production: the employees may come to work late, they may withdraw from the production line, not putting all efforts and dedication to work and etc.
- Behaviour related to political: the employees may spread rumours inside and outside the company, they may do sabotage at work, they may have discrimination at work
- Offensive behaviour: different type of harassment like sexual harassment at work can be an example of offensive behaviour, attacking others verbally or physically that may even cause injury.
- Behaviour related to property: the employees may make decision unethically or slowing down the work cycle intentionally.

1.1.1. Organization effect on employee behavior

The employee performance is very depends on three main elements in the organization (Henk van der Flier and Paul Koopman, 2004):

1. The company culture, the culture of the company is a noticeable factor which can influence on employee behavior a lot, for example employee behavior at a high tech company is different with ones who work in a traditional or governmental organization.
2. The organization chart and system, the hierarchy and company structure is also effecting the employee behavior, as an example the employees of flat hierarchy company behave differently with the ones who work in a company that has different layers of management.
3. The management style, the practices that share by management can shape employee behaviors at work

1.1.2. The influence factors on employee behavior

There are forces from the organization which have impact on employee behavior, however they are not the only items. In addition to the environmental factors which are mostly coming from the organization there is four variables which have direct effect on employee individual behavior and thinking (McShane and Von Glinow. 2005). These variables represented by MARS abbreviation.

1. Motivation, the motivation is about the internal forces which are inside the person and push him or her to a direction in order to take voluntary actions or in some cases stopping something to be happened. The motivation gives people a direction and a route toward the goal.
2. Ability, Ability is about the earned capabilities which is came from training, in addition to the natural ability that an employee has in order to proceed and complete a task. Natural abilities are the talents that people born with them which help them to perform faster or learn quicker. Learned capabilities refers to the physical or mental skills and knowledge

3. Role perception, is referring to the scope of understanding about the jobs and duties that are assigned to the employee
4. Situational factors, are the factors which is out of employee control which may cause limitation or accelerate the task to be done.

1.1.3. Individual behavior types

It is difficult to find people who act exactly same in a company, however (McShane and Von Glinow, 2005) in Organization Behavior categorized the employee individual behaviors in five different types as follow:

- Task performance behavior, this type refers to the people who focus on their goal and also company objectives and utilize their best proficiency with a proactive approach to complete the task
- Organizational Citizenship behavior, the people in this category make their bests in order to help others in social and psychological way and different forms in order to cooperate with organization
- Counterproductive work, this is a voluntary type of individual behavior which has potential to harm the organization intentionally or unintentionally and directly or indirectly
- Joining and staying with the organization, this group of individual employee behavior refers to the people who stay with the company after joining and look at the organization as a long term place to stay
- Maintaining work attendance, it includes the people who come to work whenever they are able to come and try to keep their absenteeism rate as low as possible. This type of behavior people may even avoid the working schedule if it is not fit for them.

1.2. Literature review on employee attitude

There is a lot of studies about the attitude and there is different ways to describe what attitude is (Eagly & Chaiken, 1993). However in general attitude is considered as an evaluative response about an object (Bohner & Wänke, 2002). In summary attitude is the reason that some people approve an idea while some other might be contrary to the same idea and attitude is the reason of people reaction to an action, while some people positive about an action some others might be negative and in fact the attitude is the people reaction explanation (Eagly & Chaiken, 1993). The attitude is the connection between what people get as the message and the way of their respond to that event (Bohner & Wänke, 2002).

Referring back to the organization, there is debate between Human Resource experts that “Happy Employees” are the productive employees or not (Lise M. Saari and Timothy A. Judge, 2004). The happiness can make employees productive or not, however the attitude of employees make this clear. In fact the employees have different attitudes about what is around them like their organization, their career path, their co-workers, their office decoration and generally their job. An attitude is the state that is in people mind. The attitude about any of the mentioned items can be negative or can be positive (Lise M. Saari and Timothy A. Judge, 2004).

It is very important for the companies to get data about their employee attitude toward the variables since it shows the weaknesses or strengths of organization programs or even the physical equipment and condition (Gatewood, Perloff, R, & Perloff, E. 2000).

The other item that may affect employee attitude is the culture of the countries. The globalization is developing these days and workers from another country work in the other country and these days we see multicultural organizations and dealing with different culture in an organization became an issue for the HR managers (Heaney, House, Israel & Mero, 1995). Based on a famous study (Hofstede, 1985) which has been done in 67 countries on employee attitude, it is cleared that employee attitude are systematically different and can be categorized into four different dimensions as follow:

- Individualist and collectivism, the people who prefer to work alone and the employees who have teamwork spirit and preference
- Uncertainly avoidance and the risk takers, the ones who would like to stay in the safe area and the ones who are looking for the challenges

- Power distance and the ones who try to get close to the source of power in the organization
- Masculinity and femininity

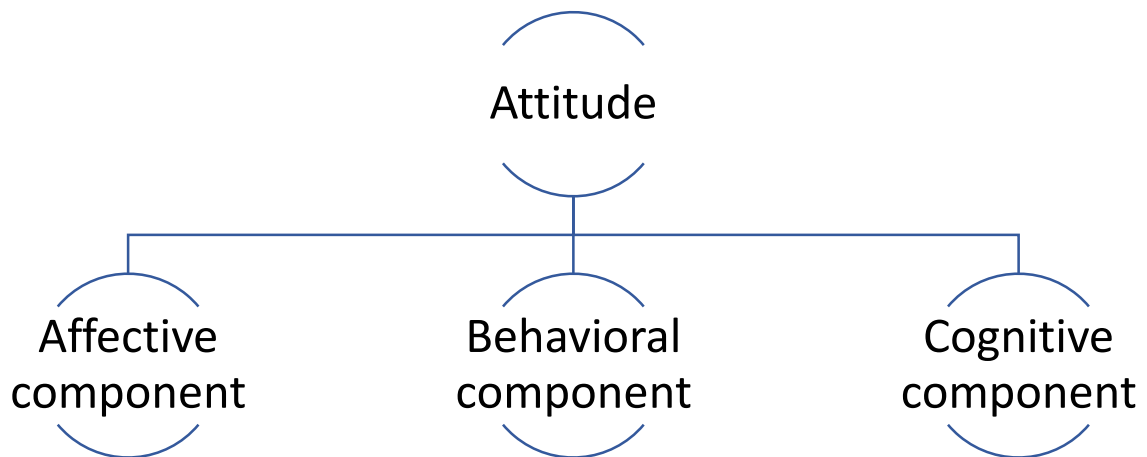
The Hofstede model is very useful to find the differences in the culture of the people in the cross cultural environment.

One of the very important item that effect employee attitude is the work situation. The nature of the job like the payment, the leadership style, development opportunity, co-workers are the most important items that make nature of the job (Judge & Church, 2000). In other study the motivations factors were listed and the respondent rank them according to their attractiveness and it was cleared that each factor may have different weight and importance for employees, the factors were, having a complete appreciation of the job done, attractive work, feeling belonged to the job, nice condition of work, competitive salary, getting support on the personal issues, loyalty from the organization to employees, growth and development in the company, security of the job (Rafikul Islam and Ahmad Zaki Hj. Ismail. 2008).

1.2.1. Tripartite attitude model

Generally attitudes are positive or negative, it is favourable or unfavourable, however the attitude has three main components, one is affective component which is about the person feeling toward and object the second one is behavioural component and the last one is the cognitive component that is for the belief and knowledge of the person (Eagly & Chaiken, 1993).

Figure 1 Attitude components



Source: Eagl & Chaiken, 1993

1.2.2. Employee attitude measurement

For the organizations who cares about the improvement and development, it is an essence to find out about the employee attitude. There is different method of measuring employee attitude like interviewing, focus group discussion and distributing questionnaire and each company proceed in one of the ways or mix of them (Lise M. Saari and Timothy A. Judge, 2004). The two popular employee attitude surveys are (Lise M. Saari and Timothy A. Judge, 2004):

- The Job Descriptive Index (JDI; Smith, Kendall, & Hulin, 1969), this survey (JDI) evaluate five different aspects of the job such as salary, promotion, job itself, colleagues and supervision.
- The Minnesota Satisfaction Questionnaire (MSQ; Weiss, Dawis, England, & Lofquist, 1967), this survey is more compatible and has different version of short term and long term.

Beside different way of surveys, it is important to analyse the survey result and use them in the actions. Research and analysis of the employee attitude is much related to the psychology

science (Edwards, 2001). Some of the main consideration in analysis the employee attitude surveys are (Lise M. Saari and Timothy A. Judge, 2004):

- The use of norms, some of the rates which are given by the employees might be systematically different or similar regardless the company that they work or their nature of the job. For instance the rate of the wages are typically very low as they tend to receive more. Thus the companies using norms as a descriptive statistic that is coming from different organization, however the size of the companies needs to be comparable and considered.
- The comparison, the result of the survey not only should be compared with other companies like the norm which is explained but also needs to be compared with the previous period of time data with special care.
- Global consideration, the organizations which operate in more than one country, it is important to have a comparison of the data. However the appropriate way of comparison is comparing the data not between two countries but comparing data of one country with the norm of all countries, although the capability of the country and its culture may affect the survey result.
- Linking employee attitude to the business figures and measures, the extracted data from the employees survey attitude, needs to be linked with business outcome in order to find out the effect of employee attitude on the business. The link can be made between the branches of the company, within a country or even globally. In some studies, it is indicated that employee attitude has a direct relation with financial factors such as market share (Colihan & Saari, 2000; Harter, Schmidt, & Hayes, 2002).

1.3. Literature review on Lean

In order to define Lean and make a clear understanding of the situation, the following historical evolution timeline has been developed (Rachna Shah and Peter T. Ward, 2007).

- 1927 and before, Henry Ford developed his production thought as Ford Production System FPS in “Today and tomorrow” in 1927
- In Japan between 1945 - 1978

- 1937, Toyoda (today is Toyota) Motor Company was formatted in Japan. Toyoda cousins Kiichiro and Eiji with Taiichi Ohno, developed Toyoda Production System based on FPS. In fact the main advantage of TPS versus FPS was in Just In Time production.
- 1978, Ohno published the TPS in Japan and credited FPS as the main inspiration of developing TPS. The main goal of TPS was cost reduction which can be obtained through quantity and quality control and also respecting the humanity. The main emphasis was on producing the needed quantity on the required quantity.
- In North America between 1973 – 1988
 - 1973, due to oil crisis in north America and based on publications of book and academic articles, the interest about new Japanese manufacturing methods and practices was increased
 - 1984, a joint venture established between General Motors and Toyota Motors in California named NUMMI
 - Mid of 1980s, the Ohno's Toyota Production System is translated in English and published massively
- Academic progress 1988 – 2000
 - 1988, Krafcik named "Lean" to explain the Toyota Production System
 - 1990, Womac, Jones and Roos have published The machine that changed the world. The book named "Lean Production" to the way of Toyota Production System and describe the different aspect of the method, however the book doesn't offer any specific definition for the Lean.
 - Mid 1990s, many articles published related to the just in time, total quality management and investigate the relation between other organization variables and implementation of Lean.
 - 1994, Womak and Jones have published "Lean Thinking" book and expand Lean from a manufacturing model to the entire organization
- Since 2000
 - Many articles and book published in regard of Lean, however there is debate about the clear definition of Lean.
 - 2006, Toyota Motor Company become number one car producer in North America

As explained above, Lean production has been launched in Toyota Production System for the first time, however the TPS was introduced in North America when Toyota Motors and General Motors formatted their joint venture NUMMI.

1.3.1. Lean definition

Lean can be described and studied from two main perspectives. The first perspective is about Lean philosophy and concentrate on the management guidelines and principles (Womack and Jones, 1997; Spear and Bowen, 1999). The second view point is about the practical point of view and describe Lean from its own techniques and practices at works (Shah and Ward, 2003). The mentioned viewpoints doesn't explain any disagreement or argue.

The following definitions are being used for Lean and its components:

- Toyota Production System (TPS) and Lean production, the main idea in TPS is producing the product that you need, making on time and based on the required quantity. The aim is to eliminate the unnecessary products which are finished or in the inventory. The three secondary goals in TPS are, reducing the cost (waste elimination), quantity and quality control and respecting the humanity. These objectives can be achieved through Just In Time (JTI), Autonomation (Automation with human touch), flexible manpower and investing on workers (Suzuki, 2017).
- The Lean production, it is basically utilize half of investment, half of space in the factory, half of work forces and half of time to develop a new product. It needs to keep half of the produced product in the inventory, which caused lower defect ratio and produce more variety of products (Womack et al., 1997). Lean production is a system that produce goods or provide services with the minimum buffering cost (Hopp and Spearman, 2004)
- The main goal of lean production system in the companies is to achieve the highest possible efficiency with a high performance at the lowest possible input (Womack and Jones 1997). Lean production is defined as methodology, guideline and methods which make the time between order and product delivery shorter than usual by removing the waste without touching the product value (Vienazindiene and Ciarniene 2013). Perhaps

the simplest definition for Lean is waste free production (Taj and Morosan 2011; Rahman et al. 2013; Yahya, Mohammad, Omar, Ramly, Atan 2019). Since the Lean is about waste so we need to understand the waste meaning, waste is defined as every single thing which had cost but has no added value (Chaudhar and Raut 2017). Moreover the waste can be defined as any kind of activities which is not necessary and also make no value for customers (Worley and Doolen 2015).

1.3.2. Lean benefits for the businesses

As mentioned the businesses can get a lot of benefits from the Lean concept such as reducing the time in operation and production, making the process shorten, lower installation time and amount of raw material and products in the warehouse and at the end customers satisfaction (Worley and Doolen 2015). In addition to the mentioned benefits, understanding in the process, saving financially, less redoing and reducing the lead time are other type of benefits from Lean for the businesses (Melton 2005).

These days the competition is very tough among manufacturing companies and having a clear production strategy is very important and crucial to ensure the efficiency and competitiveness (Bruce, Daly, Towers 2004). The Lean production is considered as a solution for the manufacturing companies as the main production strategy nowadays (Demeter and Losonci 2013). The implementation of Lean is a suitable way to maximize the production ability and competitiveness of the companies (Kariuki and Mburu 2013).

1.3.3. Lean methods, 5S

5S is one of Lean manufacturing methods that try to have continuous improvement in the working area in order to have cleaner, more organized and standardized working area. The name of 5S is coming from 5 Japanese words which represents 5 different activities. The Japanese words are Seiri, Seiton, Seiso, Seiketsu and Shitsuke and in translation they

are called Sort, Set in Order, Shining, Standardize and Sustain (R. S. Agrahari, P.A. Dangle, K.V.Chandratre 2015).

- Sort is about removing all unnecessary items and keep the needed ones only. In work it means to make a list of all available items and then check the usage frequency of each item, next is determining the list of items which are not used and then eliminating them by donation, recycling or even selling them in order to keep only the necessary ones.
- Set in order planned the needed quantity and the location of items in order to have a smooth operation. Actually according to the frequently usage list the needed item will be placed in a more accessible location and in fact the operation will be more simplified.
- Shine means the inspection and cleaning needs to be done together. It has three main activities such as:
 - Shining the area and items physically and visually which will help the operation to see what is missing and what action needs to be taken.
 - It helps to understand and realized what possible type of violation has been happened.
 - It gives a better understanding of the problem and shortages in the inventory.
- Standardize is explaining how the display needs to look like and how to control it. This is basically about making everything more recognizable. If all stickers and labels are placed in the right position then it will be much smoother for the employees to work in a group and find items rapidly.
- Sustain shows how to keep the situation as it is planned to be with training the staff and also keeping the employees involved. Everything has to be agreed upon between the employees and then it needs to be kept through the routine checks.

1.3.4. Lean methods, Kaizen

Kaizen is a way of thinking which a Japanese style of quality management is. It became an interesting subject for western countries and companies in 80 decades, because on

that time the Japanese organization were very successful (Karkoszka, T, & Honorowicz, J. 2009).

In Japan, two categories of jobs for implementation are considered as follow (T. Asada, J.C. Bailes, K. Suzuki, 2000):

- Keeping and maintaining the current jobs which is related to the current level of technology and man power and standards.
- Improving the current level of activities and procedure. Kaizen is playing the main role to improve the quality of current job levels and process.

Kaizen implementation in the organizations has different steps and process as follow (T. Asada, J.C. Bailes, K. Suzuki, 2000):

- Understanding about the parts which needs to be improved
- Having an analyse and selection on the key issues
- Making the reason of improvement clear and vivid for everyone
- Formatting the improvement team and structure
- Execution of the improvement project
- Having a close check on the results and outcomes in order to compare and analyse it
- Making a guideline and standard and try to maintain the situation

1.3.5. Lean methods, ASAICHI

The ASAICHI is another Lean tool and methods which aim to improve the quality of work continuously and sort out the issues at the level of operation in daily basis (V.G. Cannas, M. Pero, R. Pozzi, T. Rossi, 2018). According to the ASAICHI before starting the daily jobs and activities and early in the morning, there should be a meeting between workers and the supervisor in order to solve the issues and plan for the daily activities. The meeting also can be done between the departments. The report of past days jobs, current task and also future plans can be shared during the daily meetings. The aim for this meetings is to share the progress of the projects information and also getting other departments involved in the procedures (V.G. Cannas, M. Pero, R. Pozzi, T. Rossi, 2018). One of the

benefits of the meetings is that every managers would have a clear understanding of what is happening and get ready to face with the possible problems and also taking action in order to avoid the future risks such as placing order to avoid facing with product shortage. In addition the managers will realized about the required resources and capacity through ASAICHI and then try to match their department capabilities with the upcoming expectations (V.G. Cannas, M. Pero, R. Pozzi, T. Rossi, 2018).

1.3.6. Lean methods, TPM

Total Productive Maintainance which is call TPM is another type of LEAN tool. There is different definition and studies about TPM which is considered as a LEAN method especially among manufacturing organization as follow:

- TPM is basically designed to apply the following things on the operation level (Suzuki, 2017)
 - Maximizing the total effectiveness of the operation team
 - Developing a very wide preventive maintenance (PM) system in order to cover the team
 - Getting all function engaged in planning, usage and maintenance of the system
 - Getting engage all the employees from the top level managers to the simple workers
 - Advertising and promoting the PM system in the entire organization
- TPM is a process that is being used in the organizations in order to improve the final product quality through introducing the maintenance system which would cause less stop times in the operation, lower wastes (Eti et al, 2004).
- TPM is a philosophy of management which is mix of Total Quality Management and all the preventive activates in order to get management, engineering and maintenance and operation team involved through a culture in order to make sure that employees of the company protect the machineries and

equipment and the machineries work in the right way (Arslankaya and Atay, 2015).

1.4. Influence of Lean on employee behavior and attitude

There is several researches have been done about the influence of Lean on employee behavior and thinking. There is a research about employee behavior and organization strategy (Gagnon, 2004), which is found out that employees of the organization react better and more positively if they know about the changes and strategies of the company in advance and they will be more committed to the strategy and future activities. Another study focus on empowering the Lean and its impact on the employee (Poppendieck, 2011, Tress and Espinoza, 2012) found out the employee attitude toward Lean implementation.

Based on another study Lean influence employee thinking and behavior positively if the operation and implementation has been done successfully and the employees commitment toward the company will be increased (Angelis et al. 2011). It is also identified that Lean working methods and practices and communication has relationship with worker belief and commitment and in addition gender can act as a moderator in this link (Losonci, Demeter and Jenei 2011).

In a research tried to determine how to grow an organization culture and behavior in order to accelerate Lean implementation process (Hasle et al.'s 2012), although the research doesn't propose any developing plan but it is mentioned that the organization culture needs to be embedded with change factor. In addition (Tress and Espinoza, 2012) developed a model which identified different 36 attitude from the Lean experts.

1.5. Conclusions

According to the literature review, the study has following conclusions:

1. Employee behavior and attitude can be changed based on different factors.
2. Lean implementation require employee participation and involvement in the process, otherwise it will be failed.
3. Employees mostly have positive approach toward the changes, if they would aware about the organizations strategies in advance
4. Its recommended to develop a plan in order to train employees about the Lean which is surrounded by change, in order to manage their behavior and attitude toward Lean implementation

2. RESEARCH METHODOLOGY

2.1. Research questions, model and hypothesis

The following questions are designed for this study based on the availability of data and the literature review:

- RQ1: How big is the impact of Lean on the employee behavior?
- RQ2: How big is the impact of Lean on the employee affective attitude?
- RQ3: How big is the impact of Lean on the employee cognitive attitude?

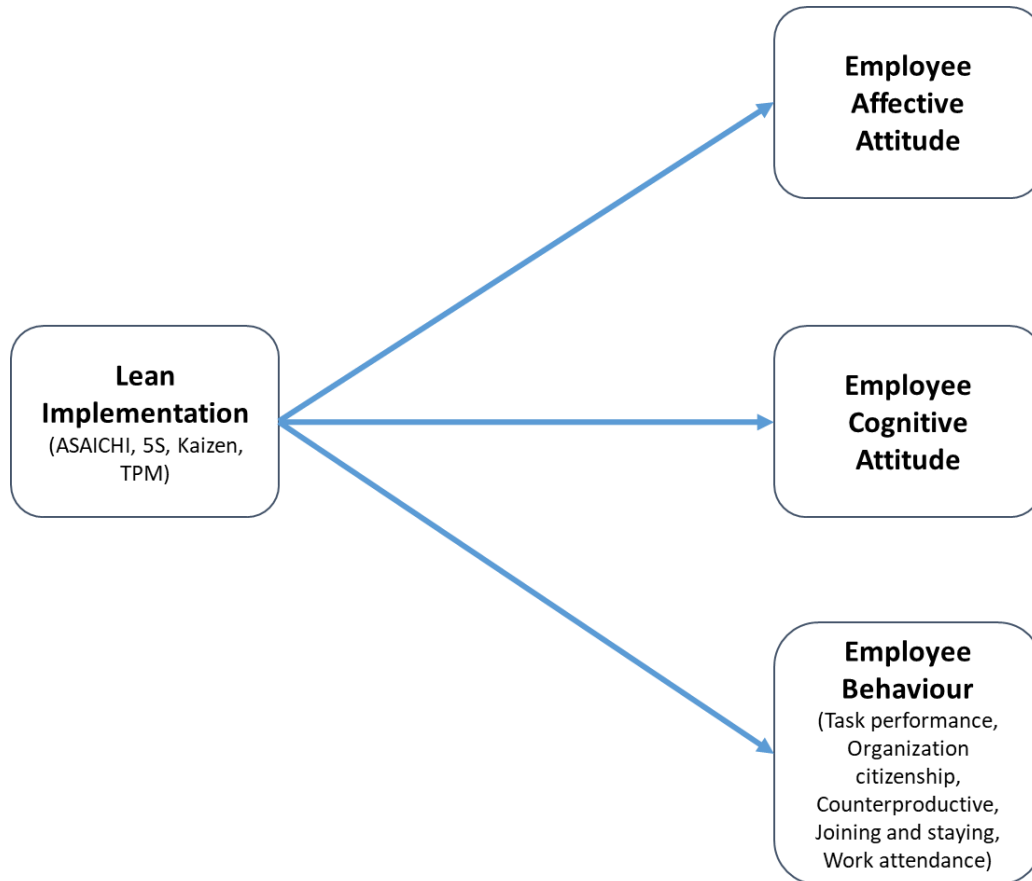
As described in the literature review the Lean concept has a wide definition and consist different type of tools and methods. The Lean can be implemented in different layers of the organization such as administration and work force as a technique or it can be implemented in the high strategic level of the organization as the methodology. The main questions of this study is about the impact and influence of Lean methods on the employee attitude in both ways of cognitive and affective and the aim is to find out what employee perception and thought about the organization. In addition the behaviour of employee would be measured to see the expected reaction and behaviour from the employees who work in Lean organization.

The main consideration in the study is that employees may use different type of Lean methods within the organization depends on their level and job functions, however the important factor is that they use one the Lean methods at least.

As described in the literature review in this research we would measure the impact of Lean on the employee attitude and employee behavior. Therefore in this study and the research model is designed based on three main variables. The Lean is considered as the independent variable in this study, however the Lean concept is very wide and general and in order to have more precise study different techniques and methods of the Lean will be considered. The other side of the model is about the dependents variables which are employee attitude and employee behavior. In order to understand and measure the changes in the employee attitude and employee behavior different type of deliverables needs to be measured. The affective and cognitive components of the attitude will be measured (Eagly & Chaiken, 1993), and to understand the behavior variable the five proposed components of employee behavior will be

measured (Organizational Behavior, McShane and Von Glinow. 2005). Therefore the research model is presented and explained in the Figure 2 as follow:

Figure 2. The research model



Source: Author

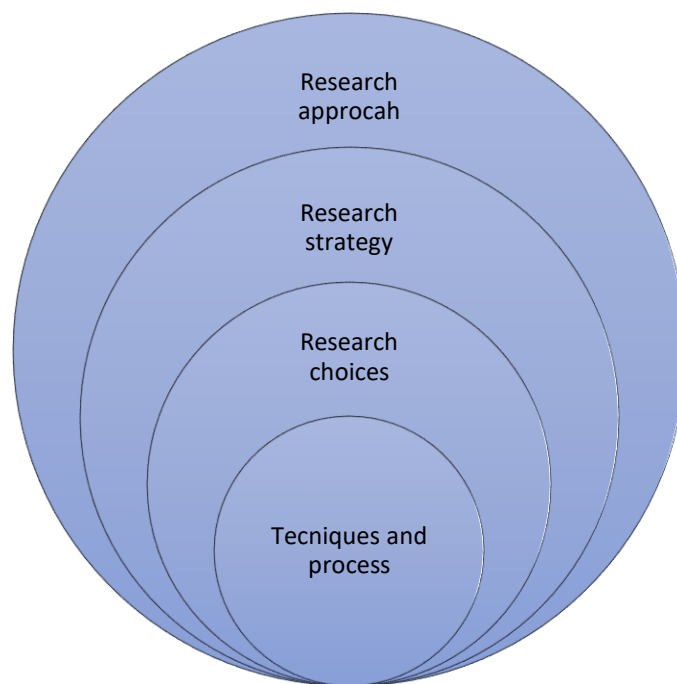
Considering the model of the study there is four variables to measure and the study hypothesis are listed as follow:

- Hypothesis 1. The implementation of Lean (in the organization) positively impacts the employee affective attitude
- Hypothesis2. The implementation of Lean (in the organization) positively impacts the employee cognitive attitude
- Hypothesis 3. The implementation of Lean (in the organization) positively impacts the employee behaviour

2.2.Methodological choices

In order to develop the framework of this study the following Onion model is being used which is presented in Figure 3. According to the model the starting point of the study was research approach and after that the research strategy has been created, then later on the researches choices are developed and finally the techniques and process have been defined in order to proceed the study.

Figure 3. Research Onion model



Source: (Saunders, Lewis & Thornhill, 2009)

2.2.1. Research approach

In this study the main approach is the deductive approach, which is starting from the theory and hypothesis and then data collection and data analysis and the main focus is on the theory (Saunders, Lewis & Thornhill, 2009) while in the inductive approach is opposite and the main concentration is about the social reality and start with observation and end up with theory (Saunders, Lewis & Thornhill, 2009).

In this study the main purpose is to investigate the impact of Lean as an action toward employee of company which has implemented Lean attitude and behaviour. The reason of choosing deductive approach is that the base of framework and study can be made with the existing theories.

2.2.2. Research strategy

The current research is focusing on the on analysing the impact and relation between the implementation of Lean and employee attitude and behavior. It is very important to understand the different components of attitude and also having a good knowledge about possible organizational reaction against an action.

The research will be done in one of SBA sister companies which is called Germanika company. According to the information the company is using different type of Lean methods such as Kaizen, 5S, SMED, SD, ASAICHI, TPM, PDCA and all staff of the company are actively engaged with Lean. In summary factory staff deal with 5S, Kaizen and TPM mostly while the office employees are in touch with ASAICHI mostly. The company has intention to know and understand their employee more and they do care about employee attitudes and try to manage the possible reactions. They are flexible and open minded for the cooperation and provide more scope of access to their information.

2.2.3. Research choice

The research use quantitative data to find out the impact of Lean implementation with employee attitude and behaviour. The samples will be 104 from all the employees who will be selected randomly and they will be asked through a questionnaire about the method of Lean that they use in their routine jobs as well as the impact on their behavior and their attitude toward the Lean. In order to reduce the non-response rate and collecting wrong

data, the name of the respondents will be anonymous and the Lean manager and HR administration will support to collect the questionnaires.

2.2.4. Data collection technique

Secondary data. In this research we used the data which was gathered for different purposes as the secondary data. Some of the secondary gathered from academic journals and official websites while some others will be gathered from company information such as employee reports like date of hiring and working schedule.

Primary data. In order to collect the primary data in this study the questionnaire will be used. The questionnaire has three main categories, the first category is about the level of Lean implementation and the methods which is in used with the respondent on daily based job and the second section of the questionnaire will be about employees attitude toward Lean and the third part of questionnaire will be about the organizational behaviour that employee may have toward Lean implementation.

2.3. Questionnaire and data analysis

Basically and beside the Lean variable, there will be two more variables to collect, such as attitude and behavior. The opinion variable presents how the employee feels and think about something and behavioural variable is about the information which reveal what the employee did in the past as reaction against the same situation or what employee will do in the future as the reaction (Saunders, Lewis & Thornhill, 2009).

In the first part of questionnaire the respondents will be asked for the level of usage of implemented Lean method in their daily job and the in order to get the interval data the five Likert scale will be used. The scales start from never and end to always. This part of questionnaire has four questions and each Lean variable will be measured differently.

In the second part of the questionnaire the respondents will be asked about their attitude at work. This part of questionnaire is designed based on 11 items to measure the affective and cognitive components of attitude (Dunham, Grube, Gardner, Cummings, and Pierce, 1989) and to measure the data five Likert scale will be utilized and the respondents needs to choose the appropriate answer between strongly disagree to strongly agree.

In the last part of the questionnaire the respondents will be asked about their organizational behaviour toward the Lean implementation. The respondents answer the questions with using five Likert scale from strongly disagree to strongly agree.

As mentioned before, in this research first of all the frequency of implemented Lean and the utilized technique will be measured and after that the employee attitude and behavior will be determined and next step is calculating the influence of Lean on the attitude and behaviour by using SPSS program and through the regression analyze. Also to understand the construct validity, the factor analyze will be utilized and to have certainly about the reliability of the data Cronbach alfa would be utilized and the reliability of the scales would be measured separately.

3. ANALYSIS OF THE EMPIRICAL DATA

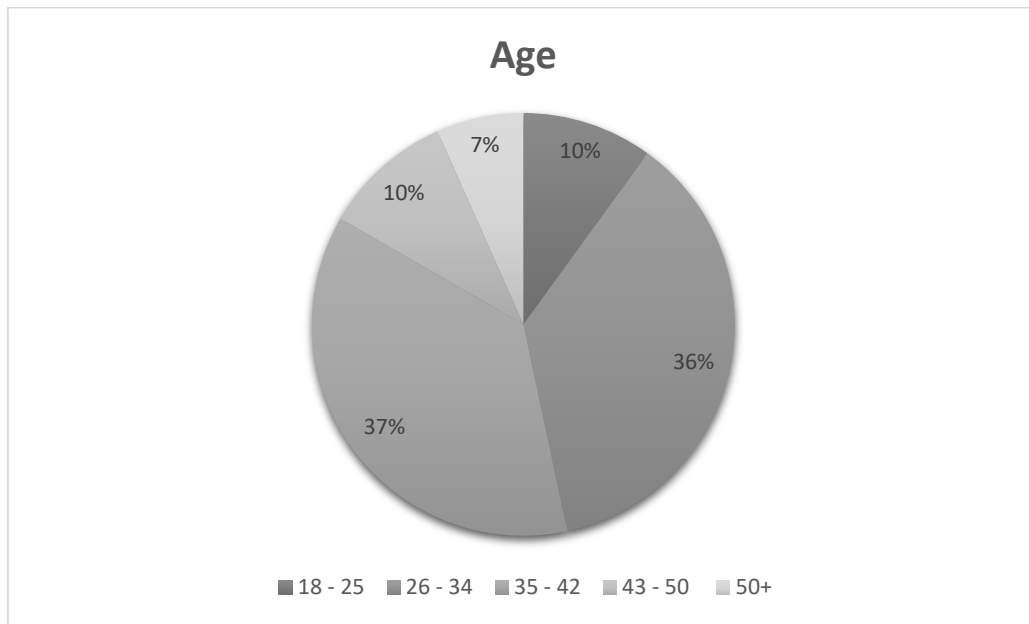
3.1.Descriptive analysis of the research respondents

In regards with the target sample, it needs to be mentioned that in total 104 filled questionnaire which was distributed electronically have been collected. The questionnaire has been distributed among the employees who work at least six months in the company and having proper knowledge and experience of the procedure and Lean methods. Basically two categories of the respondents participated in the survey, one category was the workers of the factory that deal with production and relevant issues and the other category of respondents were the office employees who were in charge of administrations jobs mostly. Each employee could have different knowledge and usage of a specific type of Lean methods and the usage of particular Lean method might be vary according to the function of the employee and the position of the employee.

Age: all the respondents were elder than 18 years old and it is clearly because our samples were employees and not the regular people so it could be expected that there won't be younger than 18 year old in our sample. In the following chart the age of respondents has been categorized and they have been divided in five different categories. The firs category was the respondents between 18 to 25 years old and as it is shown there is only 10% of the respondents are in this category, the next part is the people between 26 years old to 34 years old which is include 36% of the whole respondents, the next category which is the biggest category with a slight difference with the previous category is the employees between 35 to 42 years old and 37% of the samples are in this category, the next category which contains 10% of the employees is for the people between 43 to 50 years old and the last and smallest category is for the respondents who are elder than 50 years old which is 7% of the sample.

It is noticeable the majority of the sample study is between 26 years old to 42 years old and this range of respondents is about 73% of the population in this study.

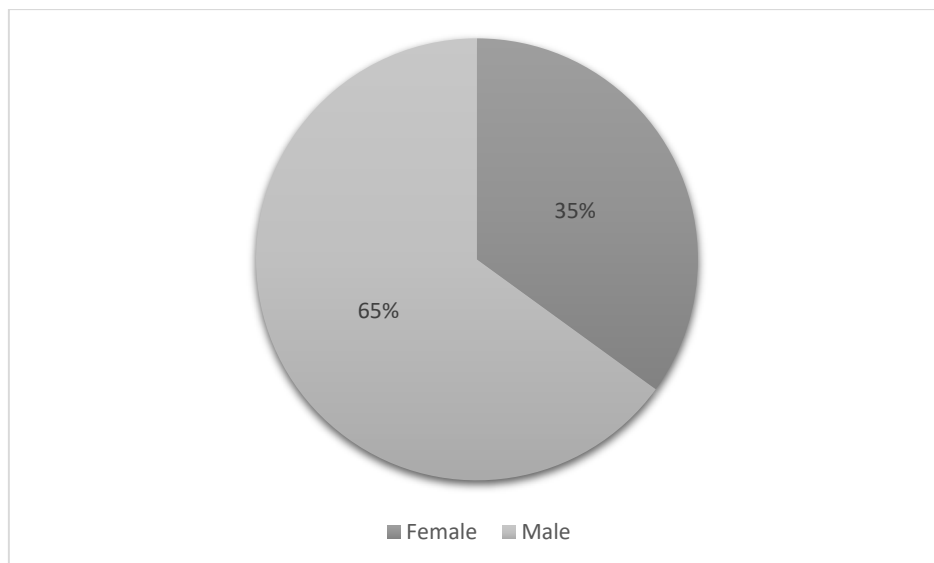
Figure 4. Frequency of age in the study sample



Source: Author

Gender. Among total respondents which were 104 employees 68 people were male and the rest which is 36 were female. The possible explanation for this distribution is that majority of the factory workers who is considerable category in this study were male and it is effected the Gender distribution. In another word 65% of the respondents were male and 35% of them were female. The data is presented in the following figure 5.

Figure 5. Frequency of gender in the study sample



Source: Author

3.2. Descriptive analysis of the research result about the frequency usage of Lean method, employee attitude and employee behaviour deliverable

As it was mentioned the employees of the company working with at least one of Lean methods depends on their function or position. In the following table the frequency usage of each Lean method has been presented. The respondents answered to the question that how often they use any of the Lean method from Kaizen, 5S, TPM and ASAICHI and they have selected the proper answer in a five scale Likert from 1 to 5 and never to always.

Table 1. Frequency of Lean usage in the study sample

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
How often do you use ASAICHI in your workplace?	104	1	5	4.31	1.034
How often do you use 5S in your workplace?	104	1	5	4.22	.892
How often do you use Kaizen in your workplace?	104	1	5	4.17	.915
How often do you use TPM in your workplace?	104	1	5	3.25	1.236

Source: SPSS Output Data

As presented in the table the most popular method is ASAICHI among other Lean methods with 4.31 mean which shows more respondents had tendency to choose always among other scales answer, however the gap between ASAICHI and 5S and also Kaizen is not much and the average usage of 5S is 4.22 and the Kaizen method average usage is 4.17 out of five. The last popular Lean method is TPM which got 3.25 out of five as the average answer. To find out the reason and see why TPM has less usage, the TPM definition has to be checked, TPM method is basically designed for the manufactory area and because of that the office administrations are not involved in TPM.

The standard deviation for ASAICHI is 1.034 and for 5S is 0.892 and for Kaizen is 0.915 and for TPM is 1.236. The average of the standard deviation is 1.01 which is very close to 1 and it shows that the frequency of the data is close to the mean.

Next, the respondents answer to five questions related to their affective attitude. In order to answer the questions the employees could choose between strongly disagree to strongly agree in a five scale Likert format.

In order to have the descriptive analysis on this part, the data of two statements which were negative statements (I don't like Lean and Lean is annoying) were reversed in order to have all the answers in the same direction.

Table 2. Frequency of affective attitude in the study sample

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
I look forward to the Lean implementation at work	104	1	5	4.17	1.200
Implementation of Lean motivates me	104	1	5	4.10	1.000
Implementation of Lean is desirable	104	1	5	3.96	1.198
I DONT LIKE LEAN	103	1	5	4.17	.919
LEAN IS ANNOYING	103	1	5	4.12	.921

Source: SPSS Output Data

According to the table the respondents were agreed and strongly agreed with the implementation of Lean in their organization. The respondents averagely rated 4.17 to the statement “I look forward to the Lean implementation at work” and also they rated 4.10 to the statement about their motivation. The other statement was “Implementation of Lean is desirable” and the employees rated this statement lower than others however 3.96 out of 5 present that average the respondents agreed with the statement. The other two statements were negative toward Lean, thus as explained the data was reversed and the average answers of 4.17 and 4.12 for the statements of “I don't like Lean” and “Implementation of Lean is annoying” shows that the respondents were disagree and totally disagree with these statements.

The average standard deviation for the five statements of the affective attitude was 1.04 which shows how the data is cantered and close to the mean.

The next part of study was related to the cognitive attitude and the respondents were asked to answer six questions by choosing the proper option from the options in the five Likert scale from strongly disagree to strongly agree.

Table 3. Frequency of cognitive attitude in the study sample

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
The organization gets benefit from the implementation of Lean	103	1	5	4.20	1.023
Most of my colleagues get benefit from the implementation of Lean	104	1	5	4.11	.944
Implementation of Lean helps me to perform better	104	1	5	3.98	1.123
Most of my colleagues think that I support the implementation of Lean	104	1	5	3.90	1.128
The implementation of Lean will improve the unsatisfactory situation in the organization	104	1	5	3.88	1.172
Personally I get benefit from the implementation of Lean	104	1	5	3.76	1.186

Source: SPSS Output Data

According to the presented table and the calculated mean 4.20 for the first statement, the respondents believed that organization gets benefits from the implementation of Lean and also they agree that their colleagues get benefit from the implementation of Lean as its shown in their mean answers which is 4.11. The respondents average answer to the third, fourth and fifth statements were slightly lower than 4 which means they are not fully agree that Lean help them to perform better or their colleagues believe that they support Lean or Lean would improve the unsatisfactory situation in the company, the average answer for these three statements are 3.98, 3.90 and 3.88. The last statement “Personally I get benefit from the implementation of Lean” average answer is 3.76 which is lower than being agree with this statement.

Talking about the standard deviation, it needs to be mentioned that the average standard deviation is 1.08 which is close to one and indicates the distribution level of the responses among respondents.

In the last part of gathered data from employees their behaviour has been measured and questioned. The five Likert scale from strongly disagree to strongly agree has been used in order to collect respondents idea against five different statements.

Table 4. Frequency of cognitive attitude in the study sample

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
I focus on my goals and company objectives and complete my tasks with best proficiency	103	1	5	4.17	.841
I do my best to help and support others in different ways in order to cooperate with the organization	103	1	5	4.12	.889
I have the potentiality to harm the business intentionally or unintentionally in direct or indirect way	103	1	5	3.20	1.430
I am looking at the organization as a place that I can stay for a long period	103	1	5	4.06	.998
I come to work whenever I am able to come and try to be absent as little as possible	103	1	5	3.75	1.274

Source: SPSS Output Data

As indicates in the table the respondents averagely rated 4 and slightly more to the statements of “I focus on my goals and company objectives and complete my tasks with best proficiency” and “I do my best to help and support others in different ways in order to cooperate with the organization” and “I am looking at the organization as a place that I can stay for a long period”, the responses average are 4.17, 4.12 and 4.06 which represent the level of task performance behaviour, organizational citizenship behaviour and joining and staying behaviour of the employees. The average response to the counterproductive statement which is 3.20, shows the level of counterproductively behaviour. The last statement was about maintaining the attendance behavior and respondents averagely answer it by 3.75.

In order to have an analysis on the standard deviation, it needs to present that the calculated standard deviation was 1.06 which indicates that the data was distributed closely to the mean point.

3.3. Testing of research hypothesis

To analyse the hypothesis the SPSS program has been used. The data sheet filled with the respondents' data and later on the variable sheet has been updated. The first step was checking the reliability of the scales. In this research to measure the variables, for Lean four questions, for affective variable five questions, for cognitive variable six questions and for behaviour variable five questions have been asked. Therefore to analyse the reliability we checked each categories separately and came up with four different analysis.

First of all the reliability of independent variable, Lean, has been calculated. The first four questions of the questionnaire were about Lean. The result of Cronbach's Alpha was 0.862 which is more than 0.65 and confirm the reliability of the data in this regard. The table 5 shows the result.

Table 5. Reliability of scale analysis for Lean variable

Reliability Statistics	
Cronbach's Alpha	N of Items
.862	4

Source: SPSS Output Data

After that and in order to check the reliability of the affective attitude the questions from number five to number nine has been checked. There was two questions with different direction (question number six and question number eight), therefore the data was reversed and transformed. Finally the scale analysis has been done and the Cronbach's Alpha calculated as 0.767 which shows the data is reliable in this section.

Table 6. Reliability of scale analysis for affective attitude variable

Reliability Statistics	
Cronbach's Alpha	N of Items
.767	5

Source: SPSS Output Data

Next step was checking the reliability of the cognitive variable which was contain six questions from question number ten to question number fifteen. As presented in the table 7, the Cronbach's Alpha is calculated as 0.824 which is very good and the data in this section is also considered as the reliable data.

Table 7. Reliability of scale analysis for cognitive attitude variable

Reliability Statistics	
Cronbach's Alpha	N of Items
.824	6

Source: SPSS Output Data

The last part of analysing the reliability of the data is to check the reliability of employee behaviour analysis. The related questions for this part is from question 16 to question 20 and contains five questions. The Cronbach's Alpha for this section is which is good enough to say that data is reliable.

Table 8. Reliability of scale analysis for behaviour variable

Reliability Statistics	
Cronbach's Alpha	N of Items
.741	5

Source: SPSS Output Data

After checking the reliability of the data, the validity of data was analysed through factor analysis in order to find out how valid is our data. All questions were analysed and according to the following table number 9, the validity of our data is proved with 0.841 KMO rate.

Table 9. Reliability of scale analysis for cognitive attitude variable

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.841
Bartlett's Test of Sphericity	Approx. Chi-Square	1226.641
	df	190
	Sig.	<.001

Source: SPSS Output Data

After making sure about the validity and reliability of the data, analysing on the hypothesis started. According to the model there is four variables in the study. Lean is considered as the independent variable and employee cognitive attitude, employee affective attitude and employee behavior are the dependent variable. Since there is only one predictor in the study, the single regression analysis has been used. However before analysing the data some relevant data has been computed and the mean of them considered as the new variable. In another word all Lean methods have been computed and considered as LeanMet variable in the calculation. The relevant data from question five to nine have been computed and became as affective variable as well as questions from ten to fifteen which merged and became cognitive variable and the last computation was for the behavioural questions which was between question numbers sixteen to question number twenty.

Hypothesis 1. The implementation of Lean (in the organization) positively impacts the employee affective attitude.

According to the table 10, the Anova table shows that the F result is 12.195 and the p-value is less than 0.001 which is statistically significant and it present that there is linear regression between variables. Referring to the model summary table it shows that $R^2=0.107$. The R-squared range is between 0 and 1 and it is considered acceptable when it is more than 20%. In our case the regression explain 10.7% of the variance in the data which is small. In another

word the Lean can explain 10.7% of the changes in affective attitude of the employees. Therefore the model is weak to be confirmed and the hypothesis cannot be accepted.

Table 10. Hypothesis 1 Linear regression analysis

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.321	1	6.321	12.195	<.001 ^b
	Residual	52.869	102	.518		
	Total	59.190	103			

a. Dependent Variable: Affective

b. Predictors: (Constant), LeanMet

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.327 ^a	.107	.098	.71995	1.826

a. Predictors: (Constant), LeanMet

b. Dependent Variable: Affective

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2.958	.335		8.830	<.001		
	LeanMet	.287	.082	.327	3.492	<.001	1.000	1.000

a. Dependent Variable: Affective

Source: SPSS Output Data

Hypothesis2. The implementation of Lean (in the organization) positively impacts the employee cognitive attitude.

As per following table and by looking at the Anova table we realized that the F value is 89.333 which is statistically significant since the p-value is less than 0.001 and it means there is regression between the Lean and cognitive attitude. Through looking at the model summary table we find out that R-Square value is 0.467 which means Lean can explain 46.7% of the employee cognitive attitude and this explanation considered as acceptable one since the value is more than 20%. In the coefficients table and by looking at t test value which is 9.452 and

statistically significant. In the same table and through standardized coefficient beta we can say that the impact of Lean on cognitive attitude is 0.683.

Considering the mentioned analysis, the hypothesis 2 is accepted and the Lean has impact on the cognitive attitude of the employees. Regression equation: $Y=1.466+0.628X$

Table 11. Hypothesis 2 Linear regression analysis

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	30.340	1	30.340	89.333	<.001 ^b
	Residual	34.643	102	.340		
	Total	64.983	103			

a. Dependent Variable: Cognitive

b. Predictors: (Constant), LeanMet

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.683 ^a	.467	.462	.58278	1.887

a. Predictors: (Constant), LeanMet

b. Dependent Variable: Cognitive

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.466	.271		5.408	<.001		
	LeanMet	.628	.066	.683	9.452	<.001	1.000	1.000

a. Dependent Variable: Cognitive

Source: SPSS Output Data

Hypothesis 3. The implementation of Lean (in the organization) positively impacts the employee behaviour.

Referring to the following tables and checking Anova table, the $F=73.307$ and significant which shows there is regression. According to the model summary $R^2=0.421$ which means 42.1% of the employee behaviour can be explained by Lean which is more than 20% and acceptable.

Referring to the coefficient table the $t=8.562$ and significant and through looking at the standardized coefficient beta the impact of Lean on the employee behavior is 0.649.

Having said that, the hypothesis has been accepted and Lean has impact on the employee behaviour in the organization. Regression equation: $Y=1.541+0.581X$

Table 12. Hypothesis 3 Linear regression analysis

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	25.962	1	25.962	73.307	<.001 ^b
	Residual	35.769	101	.354		
	Total	61.730	102			

a. Dependent Variable: Behaviour

b. Predictors: (Constant), LeanMet

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.649 ^a	.421	.415	.59510	1.408

a. Predictors: (Constant), LeanMet

b. Dependent Variable: Behaviour

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.541	.277		5.567	<.001		
	LeanMet	.581	.068	.649	8.562	<.001	1.000	1.000

a. Dependent Variable: Behaviour

Source: SPSS Output Data

4. CONCLUSION OF THE STUDY AND RECOMMENDATION FOR THE FUTURE RESEARCHES

Conclusions of the study:

- Referring to the analysis of the data, the research model couldn't be approved completely since the impact of Lean on the affective attitude of the employees was not significant. However it has been approved and it is cleared that Lean has impact on the employee cognitive attitude and employee behaviour.
- In addition to the other Lean advantages and benefits for the organization like waste management and eliminating the extra processes and also adding value for customers, Lean would impact employee employee cognitive attitude and employee behaviour positively.

Limitation of the study. It needs to be considered that the research has been implemented in the COVID-19 pandemic situation which forces to collect the data digitally due to the restrictions which was applied.

Recommendation for the future researches:

- Employee attitude and employee behaviour are the trendy topics for any kind of industries. It has been highlighted from the past and it will be attractive for the future, because the employees of the company are the key point of the company. Therefore having a study about employees as variable is much recommended. In this study the impact of Lean has been analysed and the recommendation is to use different predictors like different type of management like Agile and check the influence of other independent variables on employees' attitude and behavior.
- Attitude and behaviour can be effected by different factors. It is recommended to add a cultural moderator variable like religion or social class and then analysis the impact of Lean on the employee attitude and behaviour.
- Since the employee attitude and behaviour can get impact from different factors like compensation, reward, bonuses, training and etc. It is recommended to expand the model and add more predictors and evaluate the impact of other independent variables as well as Lean on the employee attitude and behaviour.

- It is also recommended to analysis the same model in different industries and environments. As mentioned Lean has different techniques and methods and may use differently in different organization. It is recommended to check the same model in a service provider organization which may use different Lean methods.
- The other recommendation for the future studies is using different method of collecting data like face to face interview to collect the quantitative information and having focus group discussion in order to find out more insight about the employee attitude which in this study was not possible due to the COVID-19 pandemic issue.
- In this research the investigation was about Lean impact on employee attitude and behaviour, however the companies have different components like equipment, stakeholders, customers and suppliers. Determining the impact of Lean on the other organization component could be an attractive study subject for the potential researchers.
- Another recommendation for the future studies can be the comparison of the financial returns and aspects before and after implementation of Lean techniques and assess the success of implementation.
- The companies who implemented Lean like Germanika that already needs to focus and work on changing the employee affective attitude about Lean in order to get their intentional and unintentional support on the progress and try to change the mind of people who believe that Lean is annoying or don't like Lean. The employees needs to understand the benefits of Lean for themselves and how Lean accelerate their routine jobs. This can be achieved through operating different workshops or sharing the outcome report and etc.

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SUMMARY IN ENGLISH

The Influence of Lean on employee attitude and behavior at work

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Master thesis

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61 pages, 22 tables, 5 figures, 55 references.

In this research the main aim is to analyse and investigate about the impact of Lean as a dependent variable on the employee affective attitude, employee cognitive attitude and employee behaviour at work.

The main parts of this study are, the literature review on the subjects and variables, the methodological part and analysing the collected data and the last part is a report of finding and recommendation for the future studies.

Lean has been introduced by Toyota and became popular after decades and these days it has been implemented in the different industries and layers of organizations and aim to do more with less cost. On the other side the employees have a key role in the organization and the success implementation of Lean depends on the employee engagement and support. Employees of the organization have different attitude and act differently in the companies.

Referring to the analysis of the data, the research model couldn't be approved completely since the impact of Lean on the affective attitude of the employees was not significant. However it has been approved and it is cleared that Lean has impact on the employee cognitive attitude and employee behaviour.

SUMMARY IN LITHUANIAN

Lean įtaka darbuotojų mąstymui ir elgsenai

Benyamin Darami

Baigiamasis magistro darbas

Pasaulio verslo ir ekonomikos programa

VILNIUS UNIVERSITY

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61 puslapis, 22 lentelės, 5 paveikslai, 55 literatūros sąrašas.

Šiame tyrime pagrindinis tikslas yra išanalizuoti ir ištirti „Lean“ kaip priklausomo kintamojo poveikį darbuotojo afektinei nuostatai, darbuotojų kognityvinei nuostatai ir darbuotojų elgesiui darbe.

Pagrindinės šio tyrimo dalys yra: literatūros apžvalga apie dalykus ir kintamuosius, metodinė dalis ir surinktų duomenų analizė, o paskutinė dalis yra išvadų ataskaita ir rekomendacijos būsimiems tyrimams.

„Lean“ pristatė „Toyota“ ir ji išpopuliarėjo po dešimtmečių, o šiomis dienomis ji buvo įdiegta įvairiose pramonės šakose ir organizacijų sluoksniuose ir siekia daugiau nuveikti su mažesnėmis sąnaudomis. Kita vertus, darbuotojai turi pagrindinį vaidmenį organizacijoje, o „Lean“ sėkmė priklauso nuo darbuotojų įsitraukimo ir palaikymo. Organizacijos darbuotojai turi skirtingą požiūrį ir skirtingai veikia įmonėse.

Remiantis duomenų analize, tyrimo modelio nepavyko patvirtinti iki galo, nes „Lean“ poveikis darbuotojų afektiniam požiūriui nebuvo reikšmingas. Tačiau tai buvo patvirtinta ir aišku, kad „Lean“ turi įtakos darbuotojų pažintinei nuostatai ir darbuotojų elgesiui.

Appendixes

SURVEY QUESTIONNAIRE

Table 13. Survey questionnaire

5 Likert scale about frequency usage of Lean method	Never	Occasionally	Sometimes	Often	Always
How often do you use ASAICHI in your workplace?	1	2	3	4	5
How often do you use 5S in your workplace?	1	2	3	4	5
How often do you use Kaizen in your workplace?	1	2	3	4	5
How often do you use TPM in your workplace?	1	2	3	4	5
5 Likert scale about employee attitude	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
I look forward to the Lean implementation at work	1	2	3	4	5
I don't like Lean	1	2	3	4	5
I would say my planning ability is:	1	2	3	4	5
Implementation of Lean is annoying	1	2	3	4	5
Implementation of Lean is desirable	1	2	3	4	5
The organization gets benefit from the implementation of Lean	1	2	3	4	5
Most of my colleagues get benefit from the implementation of Lean	1	2	3	4	5
Implementation of Lean helps me to perform better	1	2	3	4	5
Most of my colleagues think that I support the implementation of Lean	1	2	3	4	5
The implementation of Lean will improve the unsatisfactory situation in the organization	1	2	3	4	5
Personally I get benefit from the implementation of Lean	1	2	3	4	5
5 Likert scale about employee behaviour	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
I focus on my goals and company objectives and complete my tasks with best proficiency	1	2	3	4	5
I do my best to help and support others in different ways in order to cooperate with the organization	1	2	3	4	5
I have the potentiality to harm the business intentionally or unintentionally in direct or indirect way	1	2	3	4	5
I am looking at the organization as a place that I can stay for a long period	1	2	3	4	5
I come to work whenever I am able to come and try to be absent as little as possible	1	2	3	4	5

SPSS Output data

Table 14. The scale reliability analysis of Lean

Case Processing Summary

		N	%
Cases	Valid	104	100.0
	Excluded ^a	0	.0
	Total	104	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.862	4

Source: Taken from SPSS output

Table 15. The scale reliability analysis of employee affective attitude

Case Processing Summary

		N	%
Cases	Valid	103	99.0
	Excluded ^a	1	1.0
	Total	104	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.767	5

Source: Taken from SPSS output

Table 16. The scale reliability analysis of employee cognitive attitude

Case Processing Summary

		N	%
Cases	Valid	103	99.0
	Excluded ^a	1	1.0
	Total	104	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.824	6

Source: Taken from SPSS output

Table 17. The scale reliability analysis of employee behaviour

Case Processing Summary

		N	%
Cases	Valid	103	99.0
	Excluded ^a	1	1.0
	Total	104	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

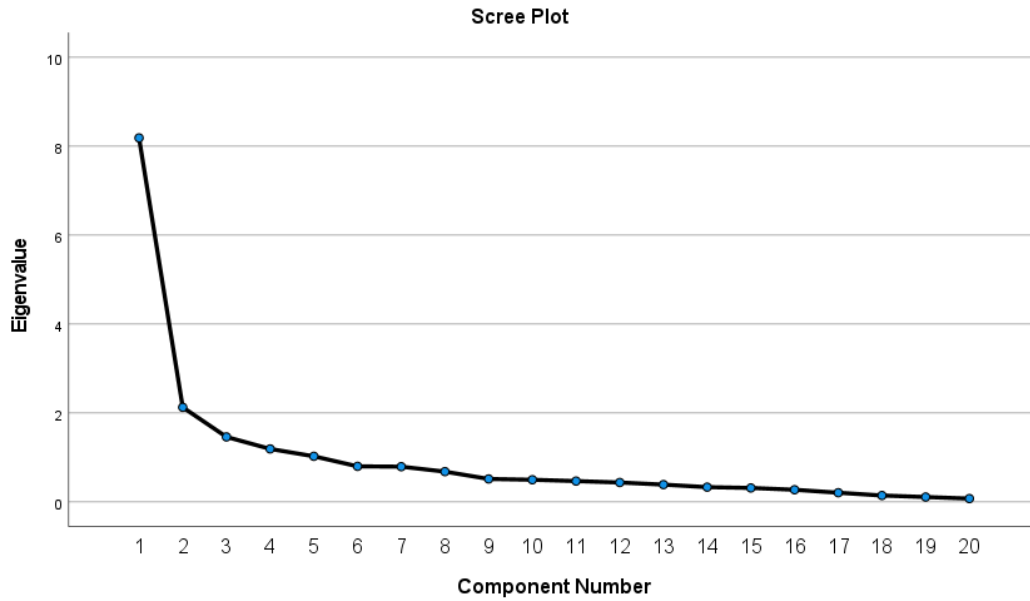
Cronbach's Alpha	N of Items
.741	5

Source: Taken from SPSS output

Table 18. The validity analysis of the data

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.841
Bartlett's Test of Sphericity	Approx. Chi-Square	1226.641
	df	190
	Sig.	<.001



Source: Taken from SPSS output

Table 19. The correlation

Correlations

		LeanMet	Affective	Cognitive	Behaviour
LeanMet	Pearson Correlation	1	.327**	.683**	.649**
	Sig. (2-tailed)		<.001	<.001	<.001
	N	104	104	104	103
Affective	Pearson Correlation	.327**	1	.455**	.434**
	Sig. (2-tailed)	<.001		<.001	<.001
	N	104	104	104	103
Cognitive	Pearson Correlation	.683**	.455**	1	.629**
	Sig. (2-tailed)	<.001	<.001		<.001
	N	104	104	104	103
Behaviour	Pearson Correlation	.649**	.434**	.629**	1
	Sig. (2-tailed)	<.001	<.001	<.001	
	N	103	103	103	103

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Taken from SPSS output

Table 20. Linear regression analysis of the impact of Lean on employee affective attitude

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	LeanMet ^b	.	Enter

a. Dependent Variable: Affective

b. All requested variables entered.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.327 ^a	.107	.098	.71995	1.826

a. Predictors: (Constant), LeanMet

b. Dependent Variable: Affective

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.321	1	6.321	12.195	<.001 ^b
	Residual	52.869	102	.518		
	Total	59.190	103			

a. Dependent Variable: Affective

b. Predictors: (Constant), LeanMet

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2.958	.335		8.830	<.001		
	LeanMet	.287	.082	.327	3.492	<.001	1.000	1.000

a. Dependent Variable: Affective

Collinearity Diagnostics^a

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	LeanMet
1	1	1.978	1.000	.01	.01
	2	.022	9.383	.99	.99

a. Dependent Variable: Affective

Casewise Diagnostics^a

Case Number	Std. Residual	Affective	Predicted Value	Residual
18	-3.022	2.00	4.1757	-2.17575
24	-3.478	1.60	4.1041	-2.50410

a. Dependent Variable: Affective

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.2443	4.3907	4.1011	.24772	104
Residual	-2.50410	1.26909	.00000	.71645	104
Std. Predicted Value	-3.459	1.169	.000	1.000	104
Std. Residual	-3.478	1.763	.000	.995	104

a. Dependent Variable: Affective

Source: Taken from SPSS output

Table 21. Linear regression analysis of the impact of Lean on employee cognitive attitude

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	LeanMet ^b	.	Enter

a. Dependent Variable: Cognitive

b. All requested variables entered.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.683 ^a	.467	.462	.58278	1.887

a. Predictors: (Constant), LeanMet

b. Dependent Variable: Cognitive

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	30.340	1	30.340	89.333	<.001 ^b
	Residual	34.643	102	.340		
	Total	64.983	103			

a. Dependent Variable: Cognitive

b. Predictors: (Constant), LeanMet

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.466	.271		5.408	<.001		
	LeanMet	.628	.066	.683	9.452	<.001	1.000	1.000

a. Dependent Variable: Cognitive

Collinearity Diagnostics^a

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	LeanMet
1	1	1.978	1.000	.01	.01
	2	.022	9.383	.99	.99

a. Dependent Variable: Cognitive

Casewise Diagnostics^a

Case Number	Std. Residual	Cognitive	Predicted Value	Residual
59	-3.191	1.33	3.1931	-1.85979

a. Dependent Variable: Cognitive

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.0943	4.6059	3.9715	.54274	104
Residual	-1.85979	1.44447	.00000	.57995	104
Std. Predicted Value	-3.459	1.169	.000	1.000	104
Std. Residual	-3.191	2.479	.000	.995	104

a. Dependent Variable: Cognitive

Source: Taken from SPSS output

Table 22. Linear regression analysis of the impact of Lean on employee behaviour

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	LeanMet ^b	.	Enter

a. Dependent Variable: Behaviour

b. All requested variables entered.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.649 ^a	.421	.415	.59510	1.408

a. Predictors: (Constant), LeanMet

b. Dependent Variable: Behaviour

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	25.962	1	25.962	73.307	<.001 ^b
	Residual	35.769	101	.354		
	Total	61.730	102			

a. Dependent Variable: Behaviour

b. Predictors: (Constant), LeanMet

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.541	.277		5.567	<.001		
	LeanMet	.581	.068	.649	8.562	<.001	1.000	1.000

a. Dependent Variable: Behaviour

Collinearity Diagnostics^a

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	LeanMet
1	1	1.977	1.000	.01	.01
	2	.023	9.337	.99	.99

a. Dependent Variable: Behaviour

Casewise Diagnostics^a

Case Number	Std. Residual	Behaviour	Predicted Value	Residual
2	3.767	4.80	2.5583	2.24168

a. Dependent Variable: Behaviour

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.1225	4.4468	3.8583	.50450	103
Residual	-1.12250	2.24168	.00000	.59218	103
Std. Predicted Value	-3.441	1.167	.000	1.000	103
Std. Residual	-1.886	3.767	.000	.995	103

a. Dependent Variable: Behaviour

Source: Taken from SPSS output