

### SIGNIFICANCE OF INTEGRATING LEAN PRINCIPLES IN RISK MANAGEMENT PLANNING PROCESS

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Article Received on 04/04/2018

Article Revised on 25/04/2018

Article Accepted on 15/05/2018

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#### ABSTRACT

Poor risk management planning will lead the project to failure. Through project planning, there is an assurance that the product that is being delivered is the worthwhile project as desired by the customer. Many companies are currently integrating lean principles in an effort to boost their operations and outcomes. Recent studies have shown that the principles of “Lean” are not only effective in the manufacturing and systems engineering processes but also in improving customer

satisfaction. Through lean production, improvement in efficiency is attained and thus satisfactory projects are attained. There are several problems that necessitate change in an organization. Some of these problems comprise of poor planning, lack of qualified personnel, poor facilities, poor time management, ineffective customer communication and engagement. In conclusion, the advancement of lean principles has the capability of eliminating risks in production process and thus creating value to customers.

**KEYWORDS:** Lean principles, Risk management, Integration, Conceptual Framework.

#### Effects of poor risk management planning

Risk management planning is an effective tool in the course of creating and managing a project. The lack of preparation or rather proper planning for expected risks, guarantees that a project will turn out a failure. Every project aims to create and attain the desired value for a client (Todorović et al. 2015, p. 774). However, when the primary motive of production which is achieving value for products created is not attained, the entire project fails and a

business tumbles. Poor risk management planning has severe consequences for the development of a project. Most of the projects that have failed in the past it is due to spending inadequate time during the planning period. One major effect of poor planning is slowed completion of tasks. The significance of proper planning is that it aids in providing timelines and ensuring that tasks are conducted within the stipulated deadlines (Joslin & Müller 2015, p. 1390).

On the contrary, poor planning delays task completion due to lack of timeline set up. Also, poor planning leads up to poor estimates. Incorporating technologies that ascertain that all the resources are efficient for the entire production is a means for proper risk management planning. It is due to poor estimates the final product or products fail to attain the desirable qualities. It is imperative that a project is accorded sufficient budget and deadline before commencing on working on a product. (Agus & Shukri 2012). When planning is not done in time, most instances find project teams forced to start off a project without enough resources and duration. This fault might not be realized at first but it is later realized when the project is already ongoing and thus it becomes challenging to find enough resources to complete a project. Through the integration of lean framework, an organization stands the benefit of achieving quality performance since it helps in reducing defects and reworks in projects (Baluch, Abdullah, and Mohtar 2012). Customer needs can only be understood if they are given adequate time to their needs and ensure that they have efficiently defined their need for a particular project. When enough time is not given to the customer during planning, then it is likely that the client will not be cooperative in case the project encounters challenges in the process of production. Emblemståg (2014, p. 188) identified that when a project team fails to define the key features of a project during the initial planning period, it is very likely that differences will be experienced among the key players.

Most projects depict complexity as they continue to grow bigger in the production process. There are chances that even sponsor might not have the actual picture of the things that need to be incorporated into the project to turn out a success. The sponsor or sponsors might have visions which might either be good or more viable (Kerzner & Kerzner, 2017). Lack of business support from the stakeholders is the most likely thing when there are competing ideas and disagreements if the project was not well defined initially. On the other hand, proper project planning can save a project from numerous risks and thus guarantee the success of a project. Through project planning, there is an assurance that the product that is

being delivered is the worthwhile project as desired by the customer (Pettersen, 2009). Also, it is through proper planning that leadership and direction can be seen in projects. Furthermore, adequate planning shows that there are a clear focus and objectives in a particular project and the team members will always be motivated in every milestone they face. It is through proper planning of a project that the stakeholders will take part in the production process from the start to the end (Joslin & Müller 2015, p. 1391).

### **Reasons for the increasing customer dissatisfaction**

Many companies are currently integrating lean principles in an effort to boost their operations and outcomes. Recent studies have shown that the principles of “Lean” are not only effective in the manufacturing and systems engineering processes but also in improving customer satisfaction. Through the integration of lean principles into company operations, there are great possibilities of minimizing poor risk management planning. Aziz & Hafez (2013) asserted that customer value is driven by product and the attributes of the processes involved. In an attempt to bring out a vivid explanation, the author explained that nearly all designers make trade-offs amongst the attributes of a product for the purposes of satisfying a variety of requirements, thus coming up with a recipe that has balanced attributes and degrees that satisfy certain customers. However, 60% of customers are not satisfied with products they receive after completion of a product. Evidence from the study conducted showed that a significant percentage of customers were not satisfied with the kinds of services that are issued in organization (Agus & Shukri 2012). Poor risk management planning during the production and manufacturing processes is a major cause of increased customer dissatisfaction. 45% of customers complain of projects that fail to get completed in time. Untimely completion of projects among the leading causes of the increased rates of customer dissatisfaction. Many customers expect to receive their products at the time that has been stipulated during the planning period. When product delivery period is in contravention with the reports and feedbacks that they had received by the company representatives, customers loose trust in the company and thus become dissatisfied.

Through lean management, wasteful activities are eliminated in the production process and as a result efficiency and profitability is attained. Many customers are interested in the value that a product has. Therefore, by integrating lean and avoiding risks such as failure in identifying the level of value that a customer wants, there is great possibility that customers will be satisfied. Value is added through amendments in size, shape or function of a material.

Therefore, risks which can affect this features out to be eliminated in the course of coming up with a product. Some of the risks which can lead to lower product value comprise of lack of enough equipment and materials, lack of enough time to complete a project and unqualified employees among many others. Ang and Buttle (2006) explicitly stated that proper application of lean principles in the production can lead to effective production and elimination of the stated risks. Conclusively, the primary cause of customer dissatisfaction is lack of proper risk management strategies during the risk planning duration.

### **The risk of poor communication and untimely completion of projects**

There is a very close relationship between lean production and communication. In many organizations, poor communication stands out as a big challenge. Proper communication channels forms the basis of a successful project while poor communication is a great risk in any kind of project. Poor communication is a risk that ought to be avoided from the beginning to the end of a project. Failure to properly plan on how to evade poor communication, it is very likely that the production process will fail. Project managers should ensure that the mechanisms chosen for communication are effective. Firms risk \$135 million in every \$1 billion that is spent in a project. Research shows that \$75 million of the used \$135 is risked as a result of ineffective communication (Tinga, 2013). Lack of standardized project communications practices is a major cause of poor communication. Comprehensive communication plans should not be considered effective if there are no follow up strategies enacted from when a project is initiated to completion. Standardized project communication practices entails follow up practices such as the use of a compatible software that has the ability of storing all information in a single location. Furthermore, the chosen communication channel should have the capability of guiding the project team on the predetermined communication processes (Agus & Shukri 2012).

On the other hand, failing to complete projects in time is a risk that needs to be managed. There are numerous consequences that come as a result of not completing projects in time. Some of the causes of projects not being completed in time is poor risk management planning, company systems and the operation model, efficiency of the workmanship, the effectiveness of communication used, quantity of wastage produced, challenges encountered by employees such as lack of quality equipment and the managerial approach engaged in a project among others. Also, design errors are a major cause of project delay and eventually cost overrun. Proper representation of the customer's needs and values requires good

technical input in the course of project execution. Designs that have errors often require that the work to be redone since the production process encountered wrong applications of techniques while following the initial blueprint. Also, design errors could lead to delays because project estimations are conducted basing on the designs that have been produced. Therefore, having errors in the produced designs such as omissions will require more time to fill in the project the omitted details. Additional work and revision of scope has been identified as a major cause of delay in many projects (Agus & Shukri 2012). Within the research, an internal assessment of the company showed that some of the employees were given the responsibility of tasks that they were not qualified in handling. Also, some employees often complain that they do not have sufficient and appropriate equipment to handle the production process and due to this, they end up delaying in completing the projects in time. Through elimination of wastes and unqualified employees, lean production can greatly improve on timely completion of tasks.

### **Reasons for delivery of unsatisfactory projects**

Through lean production, improvement in efficiency is attained and thus satisfactory projects are attained. Other things that are attained through lean production and manufacturing comprise of wastage reduction and productivity increase. Through management of waste and increase in products, it is more likely that a company will satisfy their customers. Therefore, unsatisfactory projects can be caused due to a lot of waste being produced and low productivity. A study conducted by Agus & Shukri (2012) confirmed the hypothesis that there is a strong relationship between lean production and the product quality performance and also the business performance. According to their structural equation modelling (SEM), they found out that the “reduced setup time” was the main significant factor in the association between lean production and satisfactory projects. This means that a primary cause of unsatisfactory projects is time wastage; an issue that can be solved with integration of lean principles in the production process (Agus & Shukri 2012).

Also, according to employees working in production companies, lack of machines is a major cause of unsatisfactory projects as lack of machines leads to slow completion of tasks and lowers quality of products produced by a company (Aziz & Hafez 2013). Therefore, lacking enough machines is a critical risk that needs to be eliminated prior starting to work on a project. Also, within the study conducted, it was found out that a large percent of employees nearly 70% supported the claims regarding unsatisfactory projects that were made by the

customers. Also, most of the employees directed their complaints to the management for the misfortunes that were being encountered in the organization (Holt & Laury, 2002). Employees in production companies often complain that poor facilitation by the organization is part of the challenges that led to the dissatisfaction of products among customers. The workers asserted that the reason for unsatisfactory projects was due to bureaucracy since it made the company inflexible. A significant number of customers claimed that department managers were incompetent and thus they could not oversee the ongoing projects competently (Aziz & Hafez 2013). A risk that ought to be managed with having incompetent management is employees receiving directions that are not consistent with the execution of tasks. Also, incompetent management can lead to inadequate supervision process, this leads to underperformance by some employees and eventually production of unsatisfactory products. Furthermore, the study showed that the quality of production and customer service was compromised because the personnel in charge were not qualified.

### **Risks of tasking unqualified employees**

It is imperative that the right type of employees are sought to tackle a project. Engaging unqualified employees to handle a project is a risk that has severe consequences to an organization. Risk mitigation strategies and management principles such as the use of lean management is the most appropriate mechanism of ensuring that the correct kind of employees are used for a project and the right kind of quality is attained (Campbell, 2010). Through risk mitigation strategies, organizations can be prevented from unforeseen challenges that could hinder the progress of a project. In case of unqualified management, the subsequent risk is reduction in profit making. It is the aim of every business to increase productivity performance and profitability (Tinga, 2013). Therefore, receiving losses will endanger the performance of an organization and even threaten it to shut down. Through the incorporation of lean principles in the organization, the model will guide the management team on the appropriate management practices. Also, it is very risky to task unqualified employees since research has found that most of the employees who have little training are not happy. There is a relationship between how employees understand to perform a task and motivation. It has been found within studies that trained employees are highly motivated to carry out their duties. Low morale among employees has been found to be a major cause of employee turnover and thus it can be asserted that employing unqualified employees leads to employee turnover. Subsequently, employee turnover is also risky to an organization as the cost of hiring new employees is high and affects the organization's budget (Campbell, 2010).

**Risks of insufficient and inappropriate equipment in the production process**

Insufficient and inappropriate equipment is very dangerous to a project of any kind. Insufficient and inappropriate equipment during a project lowers the quality of product or service delivered and contributes to defects in the final outcome of a project. Furthermore, other risks associated with insufficient and inappropriate equipment during the production process is dissatisfaction among customers, delays in project completion and inconsistent delivery of products. Most of the products which are affected due to lack of enough and appropriate equipment incur this challenge due to improper planning or the use of ineffective models in the course of planning and budgeting for a project. The construction industry is the one that is more prone to this risk. Majorly, the challenge might be brought up due to growing economies and thus limited capital and delays in imported products (Tinga, 2013). As a result, it is necessary that during the planning period, organizations incorporate models that will ensure that value flow from the supplier is stable. The lean framework highlights aspects that are the primary reasons for production stalemate. In vertical integration, it is proposed that when there is occurrence of insufficient and inappropriate equipment, the internal organization ought to be assessed. Lack of assessing the internal departments within an organization might lead to increase in worse conditions in project administration and final output. The incorporation lean principle in an organization ascertains that the risk management process in an organization is continuous. Also, lean framework enables staff in an organization to deal with different types of emergencies that might call for urgent interventions for effective project outcomes.

**Importance of assessing and managing risks during production**

Improper management of risks can have adverse effects to a project or even the entire organization. Apart from production, failure of risk management can affect sales and brand reputation of a manufacturer. It is important that manufacturers and production companies develop resiliency in production and supply chains that will address the crucial vulnerabilities proactively. Also, they ought to balance risk and costs so that they may prevent risks from occurring or recover from risk related hazards within the shortest time possible. Avoiding and recovering from risks can only be attained if organizations incorporate risk management processes in their planning and execution. Organizations ought to develop a risk management program that fits into the exceptionally unique culture and risks. Since change will continue to be constant and can occur without signaling, there is need of coming up with an effective risk management model (Tinga, 2013).

According to a study conducted by Deloitte<sup>1</sup> and Manufacturers Alliance for Productivity and Innovation (MAPI), they found out that most of the manufacturing companies' internal audit and risk managers incur challenges in growing their capabilities. As a result, it is imperative that a more analytical, agile and clinical perception of risk is sought to effectively deal with the difficulty and occurrence of risks in business operations. A recommendation from the Deloitte<sup>1</sup>'s study is that risk assessment and management model show evolve at a pace that is high or matches the organization's operations for the organization to stand competitive in the future. Also, through risk management, organizations are able to win the trust and confidence of its stakeholders and shareholders as they will understand that they have a management with the capability of addressing the challenges that might arise in business. Also, proper management of risks makes a business gain competitive advantage in the industry. Some of the reasons necessitating assessment and risk management comprise of competitiveness drivers, complexities of supply chain and growing manufacturing and production gap. (Agus & Shukri 2012).

Another reason for carrying out risk management is due to uncertain economic times that companies are currently facing. In the past, companies operated smoothly through the use of forecasts. However, the recent past has seen unpredictable moments within the business industry. Through risk management, companies are able to define their objectives for the future.

### **The roles of stakeholders in production and the responsible stakeholders for faulty**

Tinga (2013) defines stakeholders as any individual who has an interest in a business. The term stakeholders entail the people who contribute to the growth and success of a business. Also, it can mean an individual who benefits from a business. Different stakeholders have different roles in a business. Furthermore, their roles too differ since there are stakeholders who are involved in a company on a full time basis while there are others who are not involved in the affairs of a company at all. Employees form a significant part among stakeholders as they are involved in the affairs of a business on a full time basis. In manufacturing and production, employees work directly on the products that are produced by a company. Stakeholders are tasked with funding a company while the customers are the major reason as to why a company exists. The community in which a company runs provides employees to a company. The faults that are encountered in a company or any kind of



organization is due to faults made by certain stakeholders. The stakeholders who are a major reason for faults in a project are the employees and the management team in an organization.

### **Significance of integrating lean principles in the production processes**

Integration of lean framework in a company's operation can help identify major problems that result into poor risk management in project planning. Many organizations face challenges in their business operations due to poor project planning, lack of qualified personnel for task execution, poor facilities, improper time management and ineffective communication within the organization and with customers (Fraser, 2014). However, lean management is the most suitable solution to these kinds of challenges. Through lean principles, management teams in organizations get information which can be used as corrective measures. Furthermore, lean framework prioritizes innovation since it is through innovation that a company can develop new techniques of carrying out operations that aids in solving problems especially in production industry. The integration of risk mitigation strategies with effective project coordination results in a seamless workflow in the organization (Shah & Ward, 2007). The management principles and innovation compliments the improved systems to streamline activities at the workplace, which improves productivity and customer service. A seamless execution of projects translates to timely delivery and improved quality of output. As a result, a company will be able to manage reduce complaints from their customers, thus improving the level of customer satisfaction (Tinga, 2013). Lean thinking can be integrated into maintenance activities in an organization through the application of its principles and practices. Maintenance processes entails both planned and unplanned activities that are carried out to preserve a physical asset in a manner that is acceptable when it comes to the industry's operating conditions (Tinga, 2013). Organizations within the contemporary industry should engage in finding the best maintenance or rather management system as it is through proper management that quality of production, safety of the production process and other operations within an organization, reliability and availability can be ascertained (Márquez, 2007).

Recent years has seen risk management becoming a necessary tool in any organization especially when it comes to emergency scenarios such as when a machine breaks down or lack of enough resources to complete a project. In America, the maintenance cost of activities and operations are estimated to be around 28% of the entire goods at the end of production. The reason for using such a high amount in maintenance is due to the fact that machinery has

developed into highly automated and even technologically challenging. A good example is the case of the modern operation systems. Most of them rely on sensor driven management models that offer alerts and alarms warning them of an impending danger. According to studies conducted on maintenance, it is forecasted that maintenance costs are found to go high with time (Fraser, 2014). The rise in management costs or rather maintenance costs are as a result of non-value added activities or rather wastes that is accumulated in the course of maintenance processes. Therefore, one of the mechanisms that seem most suitable to be used in elimination of non-value added activities is through the application of lean thinking (Tinga, 2013). Lean thinking can be done throughout all the activities that are conducted between suppliers and customers or rather the entire value stream. The use of lean thinking in management is referred to as lean management. Baluch, Abdullah, and Mohtar (2012) asserted that lean management is a fundamental tool to the success of a production organization since it offers a holistic technique in management.

The integration of lean management in the operation of an organization is started by specifying the customer value (Bhasin, 2015). In the management environment when managing a project, any management service can be regarded as a final insubstantial product. Since final products are the ones that are submitted to customers, it is thus essential that the management team identifies the value from the product perspective. In this case, it can be improving the product's availability and reliability in order to avoid the risk of inconsistency. After identifying the value, what follows is mapping the management value stream which is made up of all the endeavors surrounding risk management process. The third phase will be improving risk management in the value stream through the elimination of waste that held in minimizing lead time. The fourth step is known as pull (Baluch, Abdullah, and Mohtar 2012). This phase comes after an improved flow in the value stream. It is the time that the customer can pull the product from the manufacturer when it is in its completed and perfect form as required. The fifth and last lean principle is perfection. This phase entails wrapping up the previous four phases and developing them into a culture within an organization. All the other steps are very important, this last phase is the most significant of all since without a culture of lean management and in this case lean risk management process, and challenges are still inevitable in the future. Different processes are integrated to ensure that the entire lean system is perfect (Fraser, 2014).

### **Risk management strategies**

Risk management includes all the activities that are needed to keep a machine or process at its utmost level of operating condition. These activities are often conducted based on certain management strategies. The management strategies have developed with the advancement in technology and market trends (Shahin, Shirouyehzad, & Pourjavad, 2012). In the past, risk management was majorly conducted on the basis of correcting consequences that are as a result of an already occurred risk. However, currently management has developed to be a full scale function in a production operation process. With time, risk management has developed into a complex function that requires both technical and management skills and at the same time still requiring a lot of flexibility to help manage the current dynamic business environment. Management strategies have slowly changed from preventive management into design-out management and total productive management. The challenge with corrective management and preventive management is that the two are aimed at solving a problem before and after the problem has occurred (Baluch, Abdullah, and Mohtar 2012). They only focus on solely solving the problem and does not engage in any other activity apart from that. On the other hand, design out management is focused on improving a products design for purposes of eliminating the things causing risks. Design out management strategy is a better way of managing because makes management easier in the course of a product's life cycle. The strategy is best especially for items and products that incur high when their design is defected or when the operation has been conducted outside design specifications (Baluch, Abdullah, and Mohtar 2012).

### **Conceptual Framework**

There are several problems that necessitate change in an organization. Some of these problems comprise of poor planning, lack of qualified personnel, poor facilities, poor time management, ineffective customer communication and engagement. Due to the already prevailing risk mitigation and management principles, it is imperative to integrate lean principles, risk audit and assessments, workforce innovations and principles of management for proper task execution to be attained. Some of the things that can be evaluated in quality assessment when integrating the new model into the operation of an organization comprise of project sampling and quality checks,.., rewarding and punishing employees based on their quality of output, investing in quality improvement machinery and the use of independent people for quality analytics. Some of the short lived outcomes that can be attained after implementing a proper risk management model are seamless workflow and project execution

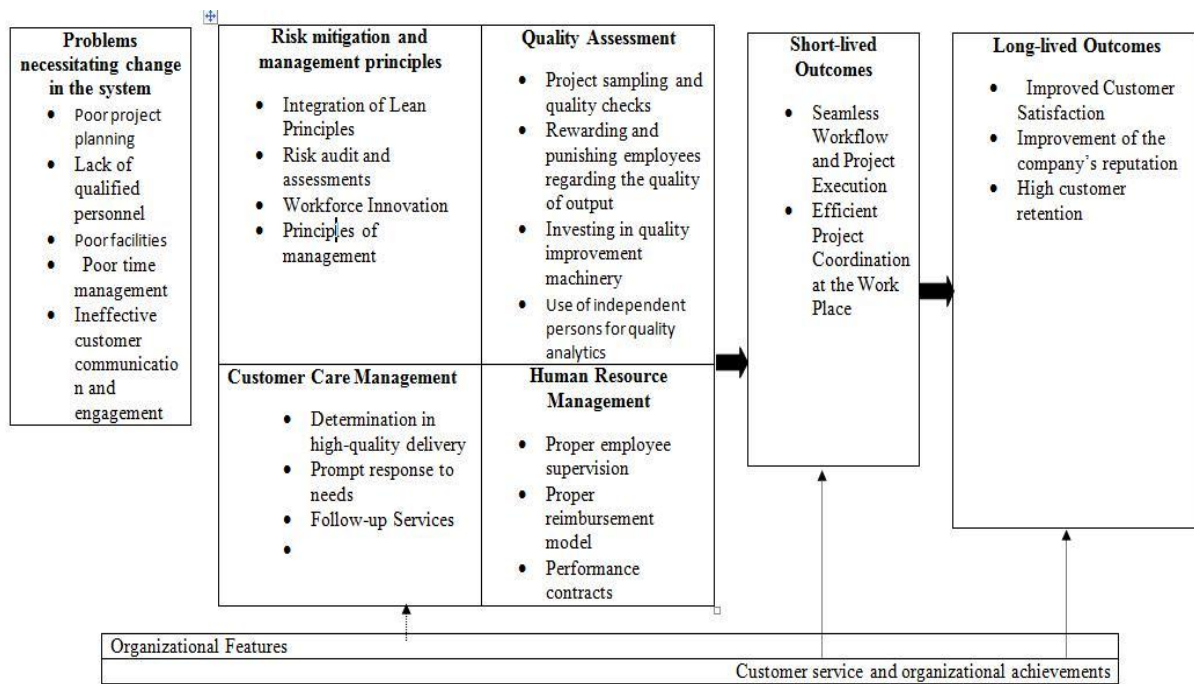
and efficient project coordination at the work place. On the other hand, the long term gains will be improved customer satisfaction, improvement of the company's reputation and high customer retention.

The conceptual framework illustrates the findings on the challenges within the organization that result in the low satisfaction levels among the customers. For instance, the employees of the company highlighted that poor facilitation by the organization was part of the challenges that resulted in the dissatisfaction among the clients. On the same note, the observations made by the researcher also showed that the quality of production and customer service was compromised by the lack of qualified personnel. The observations also indicated that ineffective communication and proper customer engagement undermines the process of efficient project delivery. This framework, therefore, outlines the challenges within the organization and breaks down the strategies that can be employed by the management to rectify the problem.

The framework indicates that the major problems resulting in the current situation at the semiconductor company are poor project planning, lack of qualified personnel for task execution, poor facilities, improper time management and ineffective communication within the organization and with customers. The framework established the highlighted factors to be the core reasons resulting in the production stalemate and increased customer dissatisfaction.

The framework identifies risk mitigation strategies and management principles to the primary solution to the problems in the organization. Risk mitigation is an imperative aspect in a production company because it shields the organization from unforeseen shortcomings that could hamper its operations. In the case of the semiconductor company, the management encounters a risk of desertion by their customers that can also result in an imminent shutdown of activities. A reduction in profit-making is also a resultant risk from the poor management strategies. However, the framework suggests the application of particular management strategies to salvage the organization. The integration of lean principles in the organization is important as it will minimize wastage of resources and products as well as guide the management on the required practices that will put the organization back on track. Besides, periodic risk assessment and assessments is crucial as it acts as a source of information that the management can use to take corrective measures to improve operations within the company. Besides, the framework establishes that innovation is key for the semiconductor company to improve its operations. Innovation plays a key role by introducing new

mechanisms to solve problems in the production process. Finally, the integration of principles of management acts as a guideline for managers to enhance their performance.



**Figure 1: Lean Principle-Risk Management Integration Model Conceptual Framework.**

**Proposed lean risk management process**

The advancement of lean principles has seen it grow and currently it can be applied in all organizations and sectors. The proposed process incorporates all the five lean management principles. The process proposed in this journal tries to integrate lean principles into risk management processes. The proposed process offers guidance and support to organizations that need lean risk management. The process is flexible and can be easily adjusted basing on the kind of risk that needs to be managed (Chapman & Ward, 2003). Furthermore, it can also be used simultaneously or complementary with other risk management frameworks.

**Step one**

The first step entails specifying the value. Here, an organization’s major concern is defining the organizational management system comprising of all the activities, risk management planning and strategies and the management crew. At this phase, the employees who are going to undergo training regarding risk lean management are chosen. Also, the types of risks that ought to be managed are identified (Fraser, 2014). The basic concept of lean production is removing all the different forms of waste. Here, the management ensures that they do not spend a lot of time and resources on management. Also at this point, the organization is

waiting for management resources and the assigned individuals to perform their tasks. Also, a central management is formed to oversee other departments within an organization both internal and external departments. From the central risk management department, mom standard management and excessive stock can be identified and eliminated (Márquez, 2007).

### **Step two**

The second step entails identifying the value stream. This phase is composed of all management related activities and processes. The stage begins by mapping the management value stream then identifying the sources of wastes. It is at this phase that the team sets the measures for performance which might comprise of availability, OEE and more importantly meantime between failures. Value stream management is employed to see how materials and information flow in a supply chain. The primary function of value stream management is to help an organizational management identify varied types of wastes and their sources. One of the key metric of value stream management is value added time percentage that is used in measuring value added activities against non-value added activities and it is done at this stage (Márquez, 2007).

### **Step three**

The third stage is known as flow the value. In this stage, the process begins from waste network and the analysis of wastes and other practices prior the outcome of the analyses are written at this state gap of management through the use of calculation of OEE in a particular organization or department. This proposal proposes the structure of this stage t be made up of two levels and four bundles which are just in time, human resource management and total quality management. This scheme can be used to depict the relationship between the eight kinds of risk management and the lean management practices (Fraser, 2014). The application of lean management relies on the use of each bundle. In each practice, there are advantages that are perceived within the risk management process. Therefore, from the different bundles and practices, the performance of the entire management department in organization can be enhanced (Márquez, 2007).

### **Stage four**

Pulling the value is the fourth stage. At this stage, the risk management team ascertains that equipment is pulling the value in all the risk management processes. It is at this phase that the execution of lean principles is carried out. This phase incorporates stages in reconfiguring the value stream management or even coming up with a better design of a stream map that will

be used in the future. Also, lean management practices for managing risks and the establishment of lean transformation scheme and the evaluation of OEE are also conducted at this phase. After the identification and evaluation of the different kinds of risks and lean tools, the lean management tools are chosen (Fraser, 2014). The chosen lean management tools helps organizations to attain their lean management targets by relating appropriate tools to handle the identified risks. The integration of lean principles into risk management considers customers' requirements and the technical features that are to be managed in the production process. Also, at this stage, there is development of a customer axis which helps in identifying what customers require, the importance of the customers' needs and the competitive performance. On the other handle, the technical axis is developed to assess the technical characteristics which are risky to the outcome of products and thus hindering customer satisfaction and expectations (Tinga, 2013).

### **Step Five**

The fifth and final stage is known as purse of perfection. At this stage, an organization and its risky management team sought total risk elimination from the lean management processes. This stage can be attained through the auditing the lean management outcomes and regulate the lean tools and practices. Also, the stage can be attained through developing teams and workers and advance their practices in risk management process through the integration of lean principles (Fraser, 2014).

### **CONCLUSION**

In conclusion, the advancement of lean principles has the capability of eliminating risks in production process and thus creating value to customers. Due to the competitive nature within the contemporary business society, many business organizations ought to integrate lean management in managing risks in order to boost their operations and outcomes to improve the value for their customers. Initially, lean was started as a mechanism of reducing waste in manufacturing companies. However, the recent past has seen advancement of lean principles in other sectors of production and business operations. Poor risk management planning has numerous consequences to production processes and the entire operations of an organization. Therefore, it is imperative that organizations incorporate risk principles when managing risks making management better for better operations to be attained within an organization. Better operations guarantee desired values for customers which is a major mission for all thriving organizations. Through proper planning, organizations will achieve timely delivery of

products, produce products with desirable qualities and achieve quality performance of systems. The recent past has seen increased dissatisfaction among customers and a major reason for this is poor management. With the integration of lean principles in risk management, customer satisfaction will be attained in organizations. The proposed risk management process provides one of the best risk management process models that will see elimination of risks in organizations and advancement of designs in production process. In this way, customers will receive products of their desired value and organizations will become more competitive as it is required within the current market.

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