

# Risk and Operational Management Practices of Manufacturing Companies in Ghana

Dorcas Nana Efua-Sekum Ewur  
Institute of Distance Learning  
Kwame Nkrumah University of Science Technology,  
Kumasi, UPO, Ghana

**Abstract:-** The act of risk identification is not enough when considering effective operational management for manufacturing. This requires a thorough understanding of risk, its types, management and how to align with various operational practices. The study adopted a qualitative approach to help delve into the subject matter. The study examined the day to day activities of plastic manufacturers in Ghana; risk components associated with their activities likewise their operational management practices for effective management and profit maximization.

The study adopted a qualitative approach because its main focus was to draw meaning from experiences, perception, beliefs and attitude from a specific context. The research approach sought to explore human experience to present a clear and holistic view of phenomenon to help understand human behavior and the assumptions which govern such behaviors. The findings of the study indicated that risk forms an integral part of operations, which requires effective management and control. It's also evident that proper management prevents wastage and enhances effective people and resource allocation.

With regards to Risk and Operational management practices, the study recommended key strategies such as risk culture, reinforcement, top management commitment and support, risk integration and reduction in risk management fragmentation for effective management.

**Keywords:-** Risk, Operational Management, Practices and Manufacturing Companies.

## I. INTRODUCTION

Risk is viewed as an important element in every business operation (Williams, 2002), yet, given little or no consideration. To undertake any form of business comes with risks such as, loss of properties, incomes, injuries and liabilities which are often inevitable. Some organizations on the other hand take steps to minimize risk and maximize return on investments. The increasing desire for Risk Management can be attributed to drawbacks in the operational activities emanating from financial crises, frauds, and scandals, as well as the folding up of corporate entities (Quon *et al.*, 2012). Over the years, organizations in Ghana have failed to implement practical risk management approaches to minimize intrinsic occurrences. Carey, (2001), reiterates the relevance of risk in financial

Institutions is to maximize profits, which can also be applied by other areas.

A study according to Alaa and Mukhtar, (2017), on the topic: "risk management and operational performances: coordinated model for the banking sector". Considering the Nigerian banking sector, the study shows an important evidence of a positive relationship between ERM and performance. As inferred from Teoh and Rajendran, (2015), "the impact ERM on firm performance": the outcome of the study from Malaysia, proved that there is an association between ERM implementation and organizational performance with regards to Public Listed Companies (PLC's). The study depicted that, Board of Directors, firm size and complexity also have impact on connection between ERM implementation and organizational performance. The study also concluded that, risk management impacts on Product Life Cycle (PLC).

## II. REVIEW OF RELATED LITERATURE

### A. Risk

Risk occurs in our daily life as a people, likewise in organizations, making risk a fundamental element for growth and development. Hence, risk identification and management is crucial in threatening, minimizing risk and improvement of organizational potential (IRM, 2006). It acts varying from the actual outcome or expected outcome, which considers the presence of uncertainty, where this might be in terms of loss. The severity of risk is estimated in degree of variability and not with reference to the probability of outcome display (Valsamakis *et al.*, 2005).

A study according to Harrington and Niehaus, (2003), posited that organization's future net cash flow is perspective of business risks. This serves as main source of unsteadiness for business value. Greater risks usually come with greater losses, where potential risks are not properly mitigated they can hinder an organization's ability to attain its overall objective and decrease shareholders' value. Risk is considered as any occurrence that tremendously affects the achievement of business objectives. Risk can also be seen as an opportunity (Anderson, 2005).

### B. Levels of Risk

Risk in enterprises as a large phenomenon, covers an organization and its various dimensions of risk. As a result, risk can be split into different categories as shown below by Figure 1. These are strategy risk, Operational, Market and Credit (Kontkanen, 2009 and The Risk Management Framework 2005).

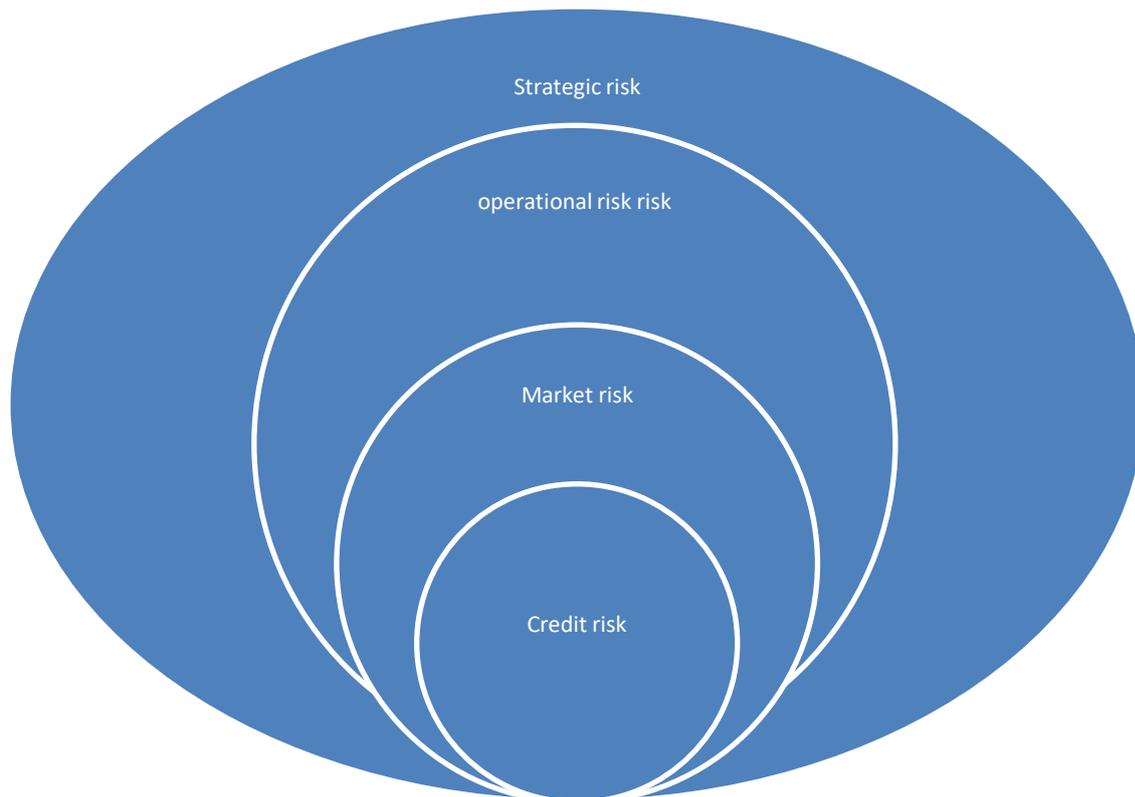


Fig. 1 : Levels of Risk management

Source: (Kontkanen, 2009) and (The Risk Management Framework 2005).

#### C. Strategic Risk

At this level, risk entails internal and external factors which affect smooth operations of organization as explained by (Pickett, 2005). Considering legal risk, the organization can be exposed to legal action (Padmanabhan, 2007). This category of risk also includes: regulatory, economic, competitor and reputational risk.

#### D. Operational Risk

The result of failed internal processes, human resource and system is defined as Operational risk (Moeller, 2007, and Basel II, 2006). Cummins *et al.*, (2004), contended that, when dealing with operational risk, salient factors such as product, business practices and clients cannot be eliminated from the subject matter.

A study according to Basel II, (2006), outlined Operational risk management factors as follows: internal process, system risk, people, and external.

- **Process Risk**- this type of risk arise as a result of failed procedures, and methods change in actions, *e.g.* inaccurate reporting of procedures, transaction errors, market errors and inadequate inspection, *etc.*
- **People Risk**- this type of operational risk involves the people within an organization, this considers human errors. Example: fraud, poor training, poor product execution, *etc.*
- **System Risk**- this type of risk can be connected to technology failure which later becomes evident in the day-to-day operations of an organization, *e.g.* data entry errors, programming errors, *etc.*

- **External Risk**- this has to do with risk associated external activities which stretches beyond organizational control with its effect often high, leading to unexpected damages. *E.g.* hacking of system, robbery, terrorist attacks, political instability, *etc.*
- **Internal Risk**- this form of operational risk occurs within the organization and it may be in the form of unauthorized transaction, embezzlement *etc.*

#### E. Market Risk

Organizations are faced with this category of risk due to unforeseen changes in interest rate which occurs as result of positions in fixed income securities. Abor, (2005), argued that, foreign exchange risk occurs when an entity required pays more or less than expected. Payment must be made leads to fluctuations in the exchange rate between domestic and foreign currency.

#### F. Credit Risk

A study according to Greuning and Bratanovic, (2009), defined credit risk as, the possibility that a debtor or issuer of financial instrument thus, a person, an organization, or a country will not repay principal and other investment-related cash flows according to the terms specified in a credit agreement. Greuning and Bratanovic, (2009), further posited, credit risk occurs when an organization, country, an individual, debtor or issuer of financial instrument are unable to repay principal and other investment-related cash flows in terms specified in a credit card.

### G. Current State and Size of the Ghanaian Plastics Manufacturing Industry

According to the Ghana Plastic Manufacturers Association (GPMA), in reference to the 2014 statistics, it was evident that, the plastic market has attained a drastic growth rate of 72% from its initial growth rate of 28% in 2010. The sector forms 95% of the entire plastic industry, which has a membership of 110 registered manufacturers who are predominantly Indians. The Ghanaian plastics packaging market is divided into the following:

- **High Density Polyethylene (HDPE)** - this category has to do with the production and distribution of bleach and shampoo bottles which are mostly imported from China and also represents an estimated 2% of the total market share of the industry.
- **Polystyrene (PP)** - this class of manufacturers are also concerned with the production of egg cartons, protective packaging for electronic materials. This class of manufacturers forms 10% of the total market share.
- **Polyethylene Terephthalate (PET)** - this sector is made up of producers of water processing packages as well as packages for herbal medicine. This sector has an estimated growth rate of 35%.
- **Low Density Polyethylene (LDPE)** - this sector comprises of the main players of the industry who controls an estimated market share of 50%. The sector embodies production of flexible lighter plastics which is also considered as the largest group for plastic packaging in Ghana. Which is made up of carrier bags, cling films, bin liners *etc.*

These types of synthetic polymers can all be recycled for reuse, recycling is a key factor in plastic production in Ghana. Recycling can be termed as the act reproducing already used plastic product into new products for new purposes. Plastic manufacturers in Ghana adopts both mechanical and chemical approaches of recycling by which already used plastic materials are converted into monomers for further production activities (Oever *et al.*, 2017).

### H. Operations Management

Operations management can be termed as a managerial function which considers decreasing difficulties associated with the production activities, the dynamics of industrial structures and various activities which form part of the production system. Where these functions are impacted technology and globalization (Fleury and Fleury, 2007). Operational activities are coupled with issues such as unstable economic factors and competition, as a result, operational management requires proactive measures for a long lasting business success (Bates *et al.*, 2009 and Chang and Park, 2012).Bozarth *et al.*, (2009), further suggested that, changes within the business environment turn to affect both internal and operational process which leads to changes in the chain of operations.

### I. Operational Management Practices

Operational practices focus on best actions which are exhibited in all operational endeavors which also impact on the organization's performance (Becker and Huselid, 2006).

OMP can said to be a group of activities undertaken by organizations to enhance their operational efficiency (Koh *et al.*, 2007).Nonetheless, Voss, (2005), also espoused that there is nothing like "best practices", in that, a particular practice may be suitable today but cannot be applied tomorrow. Below is a list of some practices:

- **Total Quality Management (TQM)**-This is an approach which focuses on improving every aspect of production. This approach stretches beyond systems to consider beliefs and attitudes. TQM combines a number of activities with the purpose improving product quality, meeting expectation and achieving a competitive advantage. TQM also calls for planning, benchmarking and building a good supplier relationship. A study by Cho and Pucik, (2005), espoused that there TQM has an array of impact on profitability and growth.
- **Just in Time (JIT)**- is the act of making goods and services available when their needed without wasting time or resources. JIT has become a means which help organizations to do things appropriately; it entails continuous improvement of product features, waste elimination and teamwork (Andre *et al.*, 2011). This system of practice entails three fundamental elements which are people, plant and systems (Patrick, 2013).
- **Health and Safety**-This practice makes sure that organization has a safe working environment. To achieve this there is the need for creating conducive environment, good ventilation, proper arrange of equipment, the use of helmet, safety boots, etc. Cork, (2005), argued that organizations which adopt this system often establish a good cordial relationship with their employees. OHSAS18000 establishes the actions and procedures associated with practicing Health and Safety (Occupational Health and Safety, 2012).
- **New Product Development (NPD)** -Product always call for innovation, addition of new feature which further leads to new product. In order to outwit competitors, there must be a better relationship between organizations and their suppliers. This practice encourages knowledge sharing and acquisition between organizations and suppliers which is vital for new product development (Lawson *et al.*,2009).
- **Supply Chain Management (SCM)** - Harrison and Van, (2005), posited the above practice is collection of activities involving changing raw materials into finished goods, and services which are sold to customers. In similar vein, Chopra and Meindl (2007), sought to expand the activities involved in the supply chain system by listing the following: transportation, warehousing, retailers and customer. From this claim, it evident that supply chain management creates linkage between internal and external activities of organization to enhance movement of logistics (Lamb *et al.*, 2014). For effect management, there is the need to establish a good relationship between both internal and external partners (Patrick, 2013).

### III. METHODOLOGY

To select the population for the study, Non-Probability Sampling was used. Non-Probability Sampling, units are chosen carefully, and unhurriedly to represent the exact features of the population (Ritchie *et al.*, 2003). However, the study also adopted a “purposive sampling” strategy, which spelled out a selection of settings, persons or activities intentionally to attain adequate information which could have not been obtained from other choices (Maxwell, 2005). Interviewees were selected for particular reason to represent the entire population of the study (Leedy and Ormrod, 2005). Furthermore, purposive sampling was adopted because the study aims at understanding the subject matter under considering. Based on this, the sample is deliberately and carefully selected in a manner that can be learned (Merriam, 2009). In the light of this top level, Managers were selected for discussion, decision and policy making, as well as to present better overview of risk and performance. Cohen *et al.*, (2007), contended that, qualitative research and samples most adopt purposive sampling method for a specific reason, which often entails the use of deliberate information source. This might be due to availability, willingness and qualities of the information sort after (Tongco, 2007).

The study adopted a qualitative approach because its main focus was to draw meaning from experiences, perception, beliefs and attitude from a specific context (Clissett, 2008). The research approach sort to explore human experience to present a clear and holistic view of phenomenon to help understand human behavior and the assumptions which govern such behavior. Qualitative research is essential in behavioral science because it explains human behavior (Kothari, 2004).

#### A. Thematic Content Analysis

The study adopted Thematic Content Analysis (TCA), (Braun and Clarke, 2006), because it most commonly used in most qualitative approaches. However, there is no general agreement about what it is and how it should be done (Tuckett, 2005). As a means of exploring respondent’s experiences, beliefs, and perception about the study, thorough transcription of all data set from the two interviews were analyzed, with aim of identifying the various Risk management practices, Operational process, and Operational practices of case organizations. Data transcription was undertaken in line with the following steps: identification and grouping of transcripts, identification of emerging themes, examination and analysis of theme structure and the building of theoretical models and checking for data accuracy (Guest *et al.*, 2012). This notwithstanding, the purpose of using Thematic Content analysis approach is to present an in-depth, accurate and proper reflection of the data gathered (Creswell, 2009).

#### B. Data Analysis and Coding

This involves the transcription of data gathered from interview participants after which the initial thoughts and

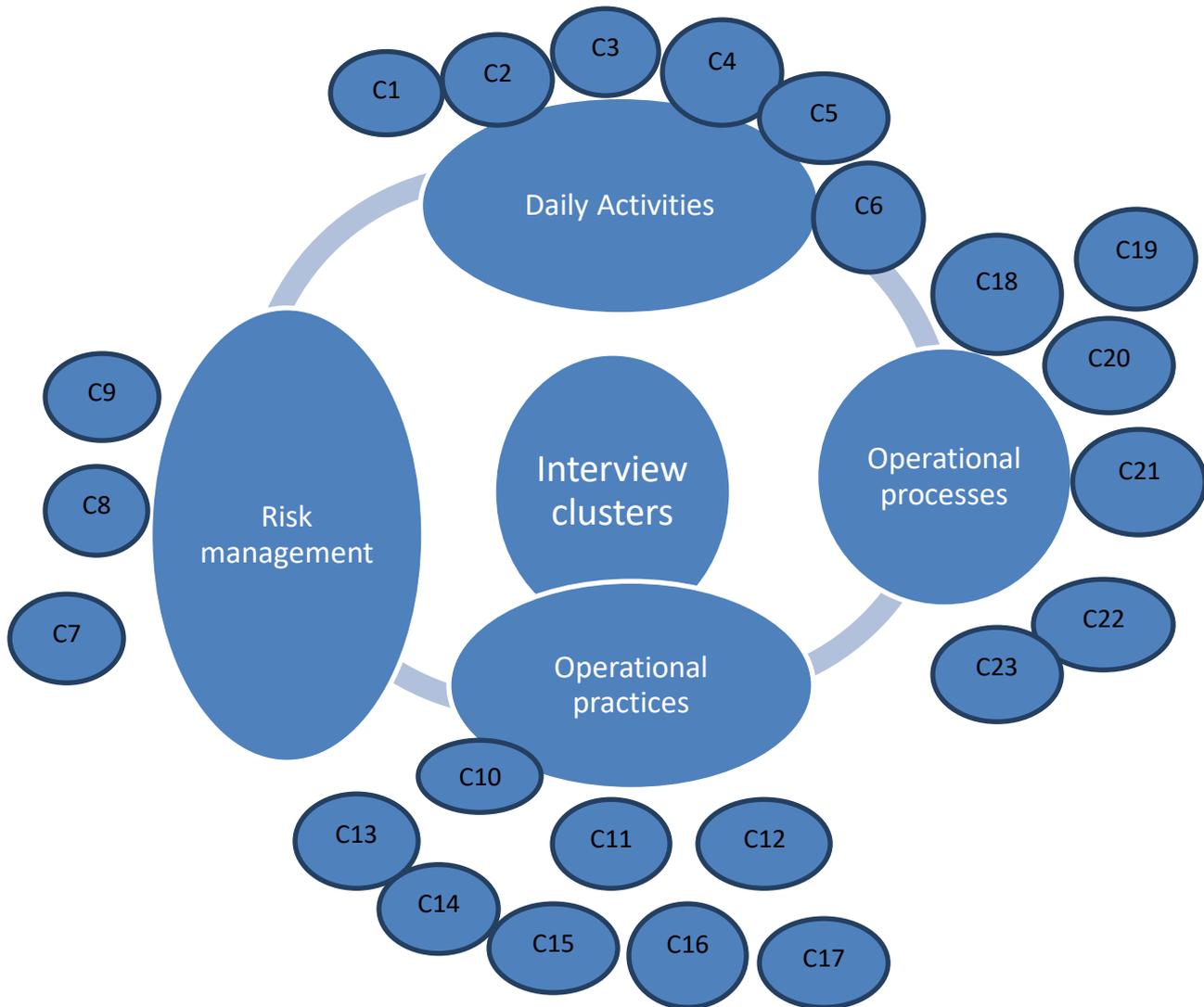
ideas expressed by participants are noted for further analysis. The data derived from participants were listened over periods of time for the researcher to be familiar with themes, to also help with effective transcription for reading and re-reading. These activities were carried out for proper identification and categorization of codes to reflect the research questions under consideration. Braun and Clarke, (2006), put forward that, adaptation of thematic maps enhances proper formation of themes and also gives a concrete attribution of the entire data. Olajumoke, (2013), posited that the adaptation of thematic maps in data analysis gives a clear picture and also establishes the relationship between themes.

This assertion, support Creswell, (2009), This notwithstanding, Braun and Clarke, (2006), also argued that thematic analysis, coding and categorization spells out the relationship which exists between variables, and factors as well as presenting a valid grounds of beliefs and thought. The coding process was made up of the following steps; first, the researcher was engrossed in the raw data by listening, transcribing, reading and re-reading the transcribed data. This was done to avoid the use of personal judgment which may override the viewpoint of participants. At this point, raw data were arranged into number of codes, which often comes in the form of short statements, and also serves as an index data for identifying a group of phrases which represent a similar idea (Boyatzis, 1998).

Number of categories	Factors
C1	Daily production activities
C2	Production of white plastic bags
C3	Production of black plastic bags
C4	Production of plastic cutlery
C5	Production of plastic cups
C6	Production of foam food containers
C7	Risk
C8	Types of risk
C9	Risk management practices
C10	Operational practices
C11	Continuous improvement
C12	Operational efficiency
C13	Warehouse arrangement
C14	Inspection
C15	Employee training
C16	Health and safety
C17	Total quality management
C18	Operational processes
C19	Warehousing
C20	Transportation
C21	Production
C22	Marketing and sales
C23	Distribution

Table 1 : Framework- Code Categories

*Thematic mapping for the four main clusters*



**IV. RESULTS AND CONCLUSIONS**

As espoused from literature, the study focused on risk within the plastic manufacturing industry which is regarded as element for effective operational management. This was conducted to help identify various operational management practices.

*A. Examine Risks Affecting Organizations.*

To addressing the Board themes afore mentioned, sub-themes where developed to help active the objectives of the study. Below is a systematic explanation of themes:

*B. Daily Production Activities*

The purpose of this theme was to establish daily activities of the case organizations. It’s constituted various production activities undertaken by the organizations understudy. These activities are made up of the following:

*C. Production of White Plastic Bags*

White plastic bags are common products in plastic manufacturing; they are mainly used for packaging food and are mostly light and disposable in nature. They are mostly referred to as single used plastics.

*“these types of plastic bags are produced by mixing virgin materials, blowing, rolling, cutting of rolls into bags, packaging and transporting of finished products to the warehouse”, Case Company A.*

*“materials (virgin) for the production of white plastic bags are often imported from US, China, Mexico, Vietnam, Thailand, etc. These materials are kept at the warehouse and transported to the production area for mixing, blowing, rolling, cutting, packaging and back again to the warehouse for storage” Case Company B.*

#### D. Production of Black Plastic Bags

Black plastic bags are often light and disposable in nature, they come in various dimensions and sizes like the white plastic bags and are also use for both commercial and domestic purposes.

*“The production of black plastic bags is similar to that of the white bags but the difference is that black bags are produced out of already used plastics. Plastic products such as containers, disposable bags, pure water sachets, etc. are collected and recycled to produce them” Case company A.*

*“this type of plastic bags is produced using recycled plastic materials, these materials are washed, goes through the blowing process, rolling takes place, after this rolls are cut into sizes, packaged and transported to the warehouse for storage” Case company B.*

#### E. Production of Plastic Cutlery

Disposable plastic cutlery comprises of spoons, knife and fork which are produced from plastic materials. These products are used for both domestic and commercial purposes.

*“Raw materials are transported from warehouse to production area after which these materials are converted into molds; the molds are the shapes of the spoons, knives and forks. Heating takes place, refrigeration, packaging and transportation of finished products to the warehouse” Case Company B.*

#### F. Production of Plastic Cups

These plastic cups are light and disposable in nature and meant packaging ice cream, beverage, etc. They are also used for both domestic and commercial purposes.

*“Cups are produced by dragging of polypropylene; the dragged materials are exposed to heat to enhance the formation of tables. From here the tables are punched and molded into shapes and sizes which are packaged and transported to the warehouse for storage” Case Company B.*

#### G. Production of Foam Food Containers

Foam food containers are often known as ‘takeaway packs’, these are light and disposable in nature and use for packing and serving takeout food in hotels and restaurants. These are used at all kinds of temperature whether hot or cold.

*“Foam containers are produced from EPS foam and other types of polystyrene foam; the production process is by injecting the foam material into molds. Foam materials are mostly white in nature, though there exist other colours such as cream, pink, etc.” Case Company B.*

#### H. Risk

The focus of the risk management cluster was to look at the various risk management practices. These factors also considered the level of insight into the subject matter, the

types of risk faced by case organizations and their means of controlling them.

Risk places a vital role in our daily activities as people and organizations, making it an essential element for growth and development. Hence, risk identification and management is crucial in threat minimization and improvement of organizational potential (Institute of Risk Management, 2006). With reference to Ai and Brockett, (2008), risk considered main two forms namely: Financial risk and Non-financial risk. The study further espoused that, financial risk comprises of capital and financial market risk while Non-financial risks consist of hazard risks, Operational risk, and strategic risks. As part of discussion, respondents revealed that:

*“Yes, our daily operational activities pose some level of risks to the organization” Case Company A.*

*“Yes, risk has become a part of our daily activities” Case Company B.*

Participant’s response from the interview represents a general agreement on the fact that, risks are essential elements in daily activities of organizations which requires understanding and fervent steps in its management (Liu,2012). These responses also fall in line with the idea that for organizations to excel there is the need for proper risk mitigation and control (Eccles *et al.*, 2001).

#### I. Types of Risk

This was one of the most relevant themes which emerged from the interview with the aim of establishing the types of risk associated with plastic manufacturing in Ghana. There exist a wide range of risk but as inferred from Ai and Brockett, (2008), risks are grouped into main two types namely: financial risk and non-financial risk. To achieve aim of the study, the interview focused on non-financial risk, with reference to operational risk. Studies according to Moeller, (2007), Operational risk and Basel II, (2006), is any form of risks which occur as result of failed internal processes, human resources and systems. Cummins *et al.*, (2004), contended that, when dealing with operational risk, salient factors such as product, business practices and clients cannot be overlooked. Respondents pointed out a number of operational risk factors:

*“as part of our operational activities, the organization is faced with risk such as injuries, slip and fall, car accident, fire outbreak, breakdown of machines and vehicles and theft” Case Company A.*

*“risk factors such as injuries, lost time injuries, machine breakdown, vehicle breakdown, theft, slip and fall occurs in our daily activities” Case Company B*

This discussion made it evident that organizations with the Ghanaian plastics manufacturing industry are faced with lot of risk as seen in the case of firms in other industries (Ai and Brockett, 2008). The interview also reveals that, although there might be slight difference in nature of risk faced by organizations, risk management adopted

management tool in the Industries (Klemetti, 2006 and Zou *et al.*, 2006). As inferred from Sobel, (2004), Organization's ability to identify its types of risk places it in better position to manage, control and mitigate risk from source.

#### J. Examine Operational Practices Adopted

##### • Operational Practices

Operational practices can be termed as the regular or continuous ways of doing thing within an organization. Operational practices consider the best ways of getting the task accomplished and achieving expected result (Becker and Huselid, 2006). The following practices were identified.

- **Continuous Improvement**- this practice helps organizations to better product quality; meet customer expectations and regulatory requirements. It was noted that this practice encourages employee learning, product modification and new product development.
- **Operational Efficiency**- efficiency is a key element in manufacturing, in that it helps organizations to measure their performance by evaluating work input against output. The discussion revealed that operational efficiency helps reduce wastage.
- **Warehouse Arrangement**- this practice entails the proper arrangement of warehouse to enhance easy movement, ventilation and identification of goods. According to respondents, warehouse arrangement is key to the organization, respondents further espoused those injuries and near missing does not occur at the production floor only, but also occur at the warehouse as well. In this light, proper arrangement helps reduce injuries and other risk related activities at the warehouse.
- **Inspection**- Inspection refers to the act close of checking organizational processes and activities. This act helps reduce wastage, correct mistakes, detects breakdowns and fosters effective and smooth operations. Response from both organizations depict that inspection is a key practice for plastic production, in that inspection begins from the warehouse where the raw materials are stored through to the production floor and back to the warehouse where finished goods are kept for sale and delivery.
- **Employee Training** - Being a manufacturing organization where a wide range of tools, equipment and machines are used, employee are expected to have high level of technical training. Hence, it is mandatory for management to embark on employee training; this was however disclosed by respondents from both organizations. Employee training helps develop soft skills, instill knowledge and also builds employee confidence.
- **Health and Safety**- This practice demands that organizations create conducive environment, good ventilation, proper arrange of equipment, the use of helmet, goggles, safety boots, etc. Respondents identified this practice as mandatory practice for all organizations, with the view that it focuses on employee wellbeing.

- **Total Quality Management (TQM)** - TQM as a practice aims to meeting customer needs and also conforming industry and regulatory specification. The discussion makes it evident that the organization's product must meet a predetermined specification by regulatory bodies.

#### K. Operational Processes

Operational process refers to various activities undertaken to achieve operational result. These processes are day to day activities carried out by organizations in their quest to convert raw materials into finished goods and services (Psomas *et al.*, 2011). The study identifies the following processes:

- **Warehousing**- This process forms an integral part of every production activity. Warehousing can be termed as the act of ensuring the safe keeping of raw materials and finished goods, this process requires a physical structure known as the warehouse. This is where all goods are kept from stealing and damages. It was noted that this process is meant to enhance the safe keeping of goods before, during and after production.
- **Transportation**- This process entails the movement of raw materials and finished goods in and out of an organization. The discussion revealed that the process of transportation covers movement by both sea and road.
- **Production**- The production function considers the organizations ability to create goods and services by using its limited resources. The discussion outlined a range of activities which come together to complete the production process. The purposes of production are to meet and identified customer needs and also make profit.
- **Marketing and Sales**- This is a management function responsible for the identification of customer needs, communication of needs for production, awareness creation and also making available goods to customer. The discussion considered marketing and sales as the management function as a liaison between the organization and its customers.
- **Distribution**- This process looks at the means by which finished goods are conveyed to the final consumer through a chain. From the discussion both organizations stated that there exist no specific department for distribution but rather the function is deemed as a responsibility for marketing and sales and warehousing department of the organizations.

## V. RECOMMENDATION

In order to enhance productivity there is the need to understand risk and how it concerns operational management practices. In this light, cursory steps are put in place for effective understanding and management. Below are the proposed strategies:

- Risk Culture- risk has become a part of human and organizational processes, in view of this assertion; risk culture has also become a core element for organizations. Risk culture can be termed as an organization's attitude towards risk acceptance, where this culture serves as a drive, helps people within an organization for better understanding of unforeseen eventualities. Risk culture helps sharpen and informs management decision making and also give employees a better understanding of organizational objectives.
- Reinforcement- considers effective measures, processes, and systems which have put in place by the organization to enhance employee and management attitude towards risk. Reinforcement may also be in the form of compensations, incentives and reward systems to help boost employee performance.
- Top Management Commitment and Support- the essential elements for effective risk assessment and management are commitment and support. This support system will encourage the effective integration of risk in both operational processes and practices of the organization; it also aids interaction and dialogue at various business units.
- Risk Integration- for organizations to be successful there is the need for effective risk integration. This approach makes it possible for an organization to have a fair knowledge about the various types of risk encountered at each departmental level. Risk management being a tool for curtailing uncertainties helps save guard an organization's managerial processes and strategy.
- Reduction in Risk Management Fragmentation- for effective practices, organizations must do away with the attitude of fragmented risk management activities. There must be a complete risk management plan to detail out all risk management activities, planning must also be done in line with the overall organizational strategy.

## VI. CONCLUSION

In order to improve and increase productivity there is the need for organization for proper review, evaluation and understand of risk to present a better picture of how it impact on operational management practices. The findings of the study indicated that risk forms an integral part of operations, which requires effective management and control. It's also evident that proper management prevents wastage and enhances effective people and resource allocation.

The outcome of the study supports Cummins *et al.*, (2004), who contended that, when dealing with operational risk, salient factors such as product, business practices and clients cannot be eliminated from the subject matter. The study also exhibits that risk management forms an integral part in coordinating operational activities to enhance performance as evident in Alaa and Mukhtar, (2017).

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