DISASTER MANAGEMENT: A PERSPECTIVE FROM PRODUCTION PROCESSES

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ABSTRACT

In most production and manufacturing industries, the occurrence of disasters during production processes is worthy of note. Production takes place regularly on a daily basis via various processes that make up for a complete production chain. These processes are often not well followed, hence leading to disasters. These disasters lead to a lot of damage in the industry as well as losses, sometimes, death occurs. The occurrence of these disasters could be as a result of accident, negligence or incompetence. There are other surrounding factors too. This paper is to focus on an overview of disaster related to production process. The attributes include: Disaster Management Function (prevention and mitigation), Time of disaster (before, during and after), Type of Disaster (accidents, fire). This paper under the mitigation area, describes the collaboration of Higher Education with the industry in educating workers and firms involved in production concerning the importance of disaster management. It is a field of study that should never be overlooked by any firm into production processes.

Keywords; Production process, Disaster, Management

1.0 INTRODUCTION

Disaster from a social phenomenon perspective is referred to as a form of crisis that has a very devastating ending [1], [2]. It could be a natural occurrence or manmade event that could cause intense and uncontrollable damage within a system or across an area [3], [4].

The terms disaster and management are words far away in meaning. Although, they have been brought together under this banner of the terminology disaster management. Generally, disasters occur every day. Even right now, there is a disaster somewhere. It occurs in any place where there is human activity. Ranging from the simple activity of moving from one place to another to the most complex activities [5]
Disasters cause a lot of harm in the world over every year. The United Nations Human Settlements Program (UNHSP) noticed that in the primary portion of 2001 alone, cataclysmic events caused over US$24 billion in harm all around. In the meantime, more than 60 million regular folks were influenced by exactly 30 clashes in different pieces of the world. The World Bank gauges that, in 1998, disastrous events murdered more than 50,000 individuals and demolished $65 billion worth of property and foundation. About 95 percent of these disaster related passing happened in producing nations, and influenced the least fortunate individuals generally harshly. It would likewise create the impression that similar nations experience the ill effects of catastrophes over and over. For instance, in Mexico, cataclysmic events asserted 10,000 lives and cost $6.5 billion of every 1980-2000. It would likewise create the impression that the event of calamities, and their belongings, is on the expansion. It is assessed that, of the 100 most costly cataclysmic events of the twentieth century, 65 happened during the 1990s, 25 during the 1980s and 10 during the 1970s, and many less in the past decade [6].

Human settlements are intended to ensure their occupants against assault by savvy antagonistic components. In the meantime, the innovation of war expects to check such guards. Undoubtedly, doubtlessly with financial advancement, settlements become progressively helpless as they become progressively dependent on their inexorably broadened supply lines, and consistently growing and essential 3 dispersion systems of water, power, gas and media transmission frameworks, just as different assets, for example, nourishment. They additionally turned out to be reliant on network systems and government organizations at different dimensions. Open social and security framework, for example, wellbeing offices, common resistance and the police likewise turned out to be critical. In addition, with globalization, the real settlements are additionally between associated and a disaster in one of them can encourage across the board interruption in numerous others. In reality, as the emotional occasions of September 2001 illustrated, while they can be images of national accomplishment and culture, specific developed things can be the objectives of assault, here and there with annihilating results [7].
1.1 ATTRIBUTES OF DISASTER

Disaster has various attributes as an entity. The attributes include various variables like: Disaster Management Function (prevention and mitigation), Time of disaster (before, during and after), Type of Disaster (accidents, fire). These are the attributes of a disaster in the industry. The disaster management function deals with the prevention and mitigation or avoidance of disasters in the industry. It is the attribute of disaster that unites it with control and management. This attribute of disaster management encapsulates principles that govern the way disaster is handled in the industry. This involves the decision-making process towards management of disasters and also to prevent them from occurring [8].

The time of a disaster with respect to the pre and post activities is an attribute of a disaster. At the occurrence of any disaster, there are various activities that occur before during and after the disaster. These activities combined are attributes of a disaster. Disasters have turned into a piece of the regular daily existence of humankind in every one of the districts of the globe. The problematic idea of a fiasco retains the elements of regular day to day existence making antagonistic impacts social, human, monetary, political, ecological concerns. The reasons for a fiasco might be of a changed sort and a significant part of hazard is additionally connected [9].

General Approach

The management of disasters is significant to the development of any industry. The higher the event, the more unfortunate the business. Disasters, that are required to end up increasingly visit and extreme, prompt harm to the fabricated and human condition. Every one of the partners who are probably going to connect with debacle circumstances have a duty to build up their ability to get ready, relieve, react and recuperate. Compelling relief and readiness can extraordinarily lessen the danger presented by perils of numerous kinds and post catastrophe reaction will decrease the effect of disasters and could limit the more extensive financial and social harm that may result generally [10].

Educational Approach

This segment gives the current ways to deal with disaster, the difficulties looked in giving disaster the board training and suggestions and great practice rules to give disaster management training through the consolidation of deep-rooted learning approach. The key existing ways to deal with
disaster management training recognized were the undergrad/postgraduate projects led by the Higher Education Institutions HEIs; last undertaking/thesis in undergrad and postgraduate projects; short courses directed by HEIs, proficient bodies and different establishments; generally accessible information on the internet; other conventional modes like reading material, magazines and different distributions; and learning by understanding [11].

Industry Approach
As far as the industry, specialized norms are set up that guide in disaster management. These measures control the usual methodology of the exercises in the industry. The prudent of these guidelines help in the decrease of disaster related issues. Specialized magnificence is the objective of all building associations and people, regardless of whether in government or private industry, national or global. [12]. It is apparent that specialized perfection is something that is of significance to an extensive number of associations and individuals, regardless of whether in the designing control or something else. This specialized greatness is delivered because of the models directing the tasks in the industry [13].

2. DISASTER MANAGEMENT IN PRODUCTION PROCESSES
The effect of disaster in the in a production line or process cannot be overemphasized. Disaster management is very vital for improvement of any given production process. The multifaceted nature of production forms prompts disasters if not pursued with enormity of carefulness. The reasons for disaster management in industries gradually gains colossal progress. It includes sub zones like: thoughtlessness, sick adherence to laid measures. Likewise, breaking down of a machine could prompt a disaster. There are numerous reasons for disaster. Dealing with these disasters as prior said could be seen from various methodologies. Concentrating on the production industry, we would take a look at the general review [14].

2.1 PRODUCTION PROCESSES IN INDUSTRY (OVERVIEW)
The procedure of production in industry depends on specific principles. These fill in as ventures towards the completion of an item. Lack of regard in the production lines lead to disasters which might be in form of damage, fire episode, damage of apparatus, machine to human contact to such an extent that individual is bound by machine, prompting genuine damage. Taking a gander at the
synthetic business, blending the wrong synthetic substances could be a wellspring of disaster turmoil. In the Automobile business, recklessness could prompt mishap that is in all respects hazardous to life and property. In the electrical business, amid generation of power, any thoughtlessness would be remunerated with death by means of electric stun. Disaster is relevant regarding industry concerned [15].

3. DISASTER SCENARIO IN PRODUCTION LINES

3.1 T. A. GILLESPIE COMPANY SHELL LOADING PLANT EXPLOSION
The T. A. Gillespie Company Shell Loading Plant impact, all over called the Morgan Munitions Depot impact or similar titles, began at 7:36 pm EDT on Friday, October 4, 1918, at a World War I ammunition plant in the Morgan zone of Sayreville in Middlesex County, New Jersey, United States. The fundamental impact, generally acknowledged to be incidental, set off a fire and coming about course of action of impacts that continued for three days, totaling around six kilotons, killing around 100 people and hurting hundreds more. Mischief to the plant was surveyed to be very demanding money wise and the US government paid some unknown figure of cash in insurance to locale occupants. According to a report, the impact sufficiently obliterated ammunition to supply the Western Front for a half year, assessed at huge number of high explosives. The plant had started creation three months sooner, and the battle finished one month after the impact. While a few blasts were spread over three days, the totality of the event situated as one of the greatest man-made non-nuclear impacts ever. Irrefutably the most grounded individual effects, from exploding storerooms or railcars of ammunition, split windows as far away as 20 miles from point of action. (WIKIPEDIA, 2019).

4. CONCLUSION
The need to give the development enterprises of developing nations with the limit and capacity to anticipate disasters, both normal and man-made, is plainly obvious. Activities at the national and universal dimensions are required. Much of the time, the vital mediations are basic and moderately economic measures and safeguards are required. It is vital to improve learning on the linkage between great assembling, structure and development and disaster remedial. The best spot to begin is at the universities, through fitting educational modules plan and conveyance, just as proceeding
with expert advancement for professionals. This will be a good startup for awareness of disaster management and subsequently as they progress into the various production industries.

REFERENCES

1. Tierney, K.J. 2007. Businesses and disasters: Vulnerability, impacts, and recovery. In Handbook of disaster research, ed. H. Rodríguez, E.L. Quarantelli, R.R. Dynes, and K.J. Tierney, 275–296. New York: Springer.

2. Zhang, Q., Lu, Q., Zhong, D., & Ye, X. (2018). The pattern of policy change on disaster management in China: A bibliometric analysis of policy documents, 1949–2016. International Journal of Disaster Risk Science, 9(1), 55-73.

3. Dwivedi, Y. K., Shareef, M. A., Mukerji, B., Rana, N. P., & Kapoor, K. K. (2018). Involvement in emergency supply chain for disaster management: a cognitive dissonance perspective. International Journal of Production Research, 56(21), 6758-6773.

4. Whybark, D. C., S. A. Melnyk, J. Day, and E. Davis. 2010. “Disaster Relief Supply Chain Management: New Realities, Management Challenges, Emerging Opportunities.” Decision Line 41 (3): 4–7.

5. Balcik, B., and B. M. Beamon. 2008. “Facility Location in Humanitarian Relief.” International Journal of Logistics: Research and Applications 11 (2): 101–121.

6. Adegite, S.A; Ilori, M.O; Irefin, I.A; Abereijo, I.O; Ademi, H. O. (2007). Evaluation of the Impact of Entrepreneurial Characteristics on the Performance of Small Scale. Journal of Asia Entrepreneurship and Sustainability, III(1), 1–22.

7. Chaudhari, P., & Charholi, L. V. (2018). Productivity in Manufacturing Industries Using Knowledge Management, (June).

8. Henao, R., Sarache, W., & Gomez, I. (2017). Social Performance Metrics for Manufacturing Industry. 24th EurOMA Conference, (July), 10.

9. Silaipillayarputhur, K. (2018). Process safety management in manufacturing industries a review, (January). https://doi.org/10.14419/ijet.v7i2.9252

10. Siriwardena, N. U., Haigh, R. P., & Environment, H. (n.d.). DISASTER ! IN SEARCH OF A DEFINITION : SPECIFIC TO CONSTRUCTION INDUSTRY, 249–259.
11. Thayaparan, M., Malalgoda, C., & Keraminiyage, K. (2014). Disaster Management Education through Higher Education – Industry Collaboration in the Built Environment. Procedia Economics and Finance, 18(September), 651–658. https://doi.org/10.1016/S2212-5671(14)00987-3

12. Singh, B. N. (2018). Role of Automation in Steel Industry, (May).

13. OLAYINKA, O. S., & ABDULLAHI, S. A. (2009). An Overview of Industrial Employees’ Exposure to Noise in Sundry Processing and Manufacturing Industries in Ilorin Metropolis, Nigeria. Industrial Health, 47(2), 123–133. https://doi.org/10.2486/indhealth.47.123

14. Gupta, A. K., & Nair, S. S. (2016). Chemical (Industrial) Disaster Management, (November).

15. Kamolsook, A., Badir, Y. F., & Frank, B. (2019). Technological Forecasting & Social Change Consumers’ switching to disruptive technology products: The roles of comparative economic value and technology type. Technological Forecasting & Social Change, (May 2017), 0–1. https://doi.org/10.1016/j.techfore.2018.12.023