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Improving Distribution and Business Performance through Lean Warehousing: Theoretical and Practical Aspects of Lean Warehousing

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Abstract

This study intends to enlighten the reader with the importance of lean warehousing and how it can improve the business yield. A two-way approach was opted in this research study that focused on the theoretical and practical aspects of lean warehousing. An indirect relation was found between the implementation of the principles involved in lean approach and productivity of the business. The principles allow the business to grow horizontally and vertically by improving the liquidity of the capital and various other factors. It allows the management to save the blocked capital by a considerable amount and invest it in the horizontal growth of the business. Moreover, by ensuring the safety of the workers and implementation of different approaches such as ABC approach and A3 thinking, it ultimately results in an enhanced productivity. The study throws light on the implications of the old warehousing techniques and approaches and how the efficiency can be improved through a revolutionized approach. Also, it highlights the causes of the wastage of material due to mismanagement and develops a new technique to avoid it.

Keywords: Distribution and Business Performance, Lean Warehousing, Mismanagement, Wastage of Material

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INTRODUCTION

Warehouse management is one of the significant processes in any business. Over the past few years, lean approach has been introduced to reduce the wastage of the product and allow the inventory to be used efficaciously. It enhances the productivity of the business by applying time and cost saving techniques and analyzes the process with a critical approach. Modern warehousing techniques such as ABC approach, workplace safety, A3 thinking and digital inventory management are a part of lean warehousing approach that helps to replace the conventional tools and techniques with a more productive method. It starts by the analysis of useful material and categorization of the inventory in to various classes, depending on the volume of its usage, available stock, cash inbound and liquidity etc. (Sharma and Shah, 2016). Further, the categorization in term helps to eliminate the wasted material and porpoise the inventory on the basis of supply and demand. Wasted material is the material that has relatively minimum demand and is a cause of cash and capital bound. Similarly, the optimization is also done by a two tier approach i.e releasing the bound cash by reducing the waste inventory and investing it in the liquid inventory to increase the volume of a material in high demand (Rexhausen et al., 2012; Pires et al., 2017; Battista et al., 2014). However, the stock is still prevented in this approach. In this way, lean warehousing results in an enhanced efficiency of delivery mechanism and relations with the retailers (Appelqvist et al., 2016; Pires et al., 2017; Hübner et al., 2016). This study aims at burgeoning the yield by identifying key differences by empirical analysis and replacing the conventional warehousing with lean approach for business growth (Sarwar & Bhamani, 2018).

REVIEWED LITERATURE

Lean Warehousing

In the previous few years, multiple researches have been conducted to improve the warehousing standards and efficiency of the business. In this regard, the waste material reduction has been an area of major concern. In order to reduce it and prevent the material from being wasted, lean warehousing technique has been introduced in supply chain management. It includes the optimization of the warehouse standard operating procedures and development of cost saving mechanism to reduce the inventory capital while maintaining a constant and smooth flow in the supply (Rexhausen et al., 2012; Pires et al., 2017; Battista et al., 2014). Therefore, the term 'lean warehousing' is a newly introduced term in supply chain and warehouse management (Sharma and Shah, 2016). Because of its unmatched and unique characteristics, it aims at increasing the efficiency by implementing waste reduction practices and norms in inventory management (Pires et al., 2017; Hübner et al., 2016). In addition to warehousing, the lean approach can also be applied in transportation mechanism to surpass all the material wastage norms and methods (Villarreal et al., 2016; Sharma and Shah, 2016; Shah and Khanzode, 2017).

Impact of Lean Management on Business Productivity and Capital

Implementation of lean principles in warehouse and transportation management directly benefits the business in terms of blocked capital saving and injecting the liquidity of the cash by saving the wastage (Holweg, 2007; Shah and Ward, 2007). Let's have a bird's eye view of the factors and processes in which lean approach induces a revolutionized and cost saving mechanism in the organization. This is done by identifying the waste in a warehouse and its reformation via lean approach. (Bozer and Britten, 2012; Piercy and Rich, 2009; Myerson, 2012; Sharma and Shah, 2015; Salhieh et al., 2018).

Identified Waste	Reformation via Lean Approach
Inventory	Under consumption and over production ultimately effects the business growth. The blocked capital is minimized by reducing the unnecessary inventory and investing on rather the fast moving goods. In this way, warehouse space is managed alongside capital saving mechanism
Transportation	The lean approach also reduced the transportation cost. Minimized number of waste goods will resultantly minimize the extra transport for the movement and shifting of goods. Thus, cost saving mechanism is developed
Waiting	This happens when representatives are prepared to proceed with their work, yet the process doesn't permit them to, because of inaccessibility of items, machines or the framework. Further, it very well may be seen in term of holding up in the parking garage as truck drivers line up simultaneously. Pausing may prompt under use of individuals and asset limits
Over production	picking and getting ready requests before being requested downstream the production network by stores or clients can be seen as overproduction in distribution centers. This may prompt pointless clog and work-in progress in the dispatch region
Over processing	It occurs when warehouse laborers need to return certain data. It incorporates various checking of standardized identifications or utilizing gear with extra limit. unnecessary investigation of picked orders and superfluous pressing. For instance, directing quality checks a few times at the various stages. Moving items through beyond what one forklift could be additionally observed as over handling
Motion	In situations where stock isn't put away at the right area level, workers need to reach or twist around to pick the things. In the other case it is evident, when workers need to store things at unreachable heights, a strategic and safe distance and easily be maintained. Superfluous developments in attempting to find hardware left by others in non-assigned regions
Defects	Picking an inappropriate thing or amount may prompt under or over providing the client, or perhaps providing them with an inappropriate request. It further prompts more returns that should be handled which implies more staff is required. Damage inside the premises of a warehouse influences an organization's primary concern

Distribution and Its Function

Distribution is a process that deals with the movement and shifting of the goods from retailers to the consumers via storage and transportation (Eng, 2016; Rexhausen et al., 2012; Satyam et al., 2017). Since it involves storage, so warehousing is an integral part of distribution process. Therefore, optimization in warehousing will ultimately result in optimization of the distribution (Rexhausen et al., 2012; Shah and Khanzode, 2017; Hübner et al., 2016).

METHODOLOGY

Previously, due to the lack of data and available methods, Delphi technique was used to analyze the results and productivity of warehousing (Kembro et al., 2017). It includes the devising of questioners by addition of suitable and relevant questions regarding the efficiency and material management (Okoli and Pawlowski, 2004; Melnyk et al., 2009; Piecyk and McKinnon, 2010; Von der Gracht and Darkow, 2010). On the basis of responses, most suitable trends and results are deduced. However, the performance analysis of lean warehousing has been done with the help of empirical data, based on previous and latest productivity results. Moreover, the results are analyzed under the supervision of experienced personnel having experience of at least five years or above in the relevant field. Even the experience criteria also focused and those having experience in multiple cultures and continents were preferred.

Round	Purpose	Description	Output
Round 1	This was an initial stage in which panelists were required to answer open ended and basic questions	All the questions were focused on identifying as much waste practices as possible	The answers were in turn used to develop a questionnaire that involved the questions in the mentioned domains
Round 2	The questionnaire developed at the end of round 1 was sent to the panelists to answer	The selected panelists were asked to review the questions of the questionnaire and make suitable changes accordingly	As per the suggestions of panelists, the areas of agreement and disagreement are identified
Round 3	The questionnaires were again altered and each panelist received a changed and consensus based questions	Kendal's coefficient was utilized to check and measure the consensus among panelists	As per the refined and eliminated results, the identified waste items we reduced

RESULTS AND DISCUSSIONS

As per the literature review of this paper, the warehousing techniques and procedures involved the wastage of material and capital blockade (Frazelle, 2002; Faber et al., 2013; Faber et al., 2017). By opting lean warehousing approach, it can be resolved and efficiency can be improved. For this purpose, samples and studies were conducted in various Middle Eastern and European countries. A brief comparison was drawn between the system of procedures and distribution mechanisms of the companies located in both regions (Hair et al., 2014; Oyewobi et al., 2017). In this regard, two step approaches was followed. In the first step, the overall process and method was analyzed in terms of its validity, while in the second step, all the path coefficients were assessed briefly (Chin, 2010; Oyewobi et al., 2017). It was found that the companies had a significant impact of the workplace environment and culture on the working procedures. Hence, lean warehousing not only develops optimized SOPs but also reforms the general culture and approach of an organization.

CONCLUSION

Warehousing is a key operation in logistics and distribution but has remained negligent in terms of the wastage of material and efficiency (Rexhausen et al., 2012; Appelqvist et al., 2016). This study has focused on how warehousing management via lean approach can directly affect the productivity of the business. This has been accomplished through interpreting the types of waste to the distribution center condition, yet in addition through building up an instrument for estimating the warehouse optimization, in the light of a Delphi study (Pires et al., 2017; Hübner et al., 2016; Abushaikha, 2018). This is the principal insightful work to develop empirical basis for warehouse waste reduction (Grant, 1991; Rexhausen et al., 2012; Eng, 2016). The significance of considering lean warehousing is that it will eventually result in the growth of business and optimization of the capital (e.g. Shah and Ward, 2007; Dotoli et al., 2015; Faber et al., 2017). The study demonstrates that distribution center waste decrease level has a noteworthy positive effect on warehouse efficiency. The findings moreover recommended that organizations with significant levels of defined warehousing operational procedures have considerably low level of wastage (Frazelle, 2002; Bozer and Britten, 2012; de Leeuw and Wiers, 2015; Pires et al., 2017).

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