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Understanding of business performance from the perspective of manufacturing strategies: fit manufacturing and overall equipment effectiveness

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Abstract

Globalization and technological changes are now creating challenges for manufacturing companies. The latest technological developments in the manufacturing industry have forced companies to change from traditional manufacturing systems to advanced manufacturing technology systems. These changes have led manufacturing companies to adopt Fit Manufacturing strategies in order to enhance their Business Performance. Similarly, the Overall Equipment Effectiveness has become a major concern for modern manufacturing technology systems. However, limited empirical knowledge is available to confirm the effect of these strategies on Business Performance. To fill this gap, this study aims to assess the relationship between Fit Manufacturing (Lean Manufacturing, Agile Manufacturing and Sustainability) and Business Performance through the mediation of Overall Equipment Effectiveness.

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1. Introduction

Manufacturing sector is an essential ingredient to accelerate economic growth of the country. Recent advancements in globalization and technology affect manufacturing systems. Mostly, manufacturing sector focused on the usage of two broader manufacturing systems. These systems are Agile Manufacturing System and Lean Manufacturing System. However, stakeholders like customers, societies and policy makers consistently pressurizing manufacturing sector to incorporate the social and environmental factor within manufacturing process to protect society and environment from negative effect of the manufacturing process. The purpose of these all manufacturing systems is to enhance manufacturing effectiveness through increasing process effectiveness and reducing cost. More so, global competition has necessitated the formulation of both efficient and effective paradigms in response to the global economies for the purpose of improving the overall performance. Lean and Agile Manufacturing have gained wider acceptability in recent years’ enterprises. Leanness primarily leads to elimination of the non-value added activities while Agility focuses mainly on leads to market responsiveness [1]. Thus, by applying these strategies manufacturing sector is strategizing to enhance their Business Performance. Thus the integration of these two manufacturing strategies are vital to survive in current market competitive environment.

Recently, the managers have become strategic in developing measures techniques to effectively manage the manufacturing processes and machines. Most manufacturing companies are facing challenges, including waste of time, money and energy as well as overworked staff [2]. On the other hand, the Overall Equipment Effectiveness (OEE) has been shown to be a novel technique that can measure the effectiveness of a machine and it has been demonstrated to truly simplify complex production problems into simple and intuitive presentation of information. The OEE helps in the systematic analysis of the production processes while continually identifying potential problematic areas affecting the use of the machines [2]. Additionally, the OEE generates a quantitative metric based not only on element availability, but also performance and quality for evaluating the performance and effectiveness of an individual equipment or the entire processes [4]. Thus, these companies are attempting to raise the Business Process Management due to its achievement the overall improvement along with a quality of companies [5].

Managing OEE in the manufacturing industry is an essential strategy for continuous improvement of timely delivery and service quality in order to meet customers’ satisfaction as well as their expectations. Achieving customers’ satisfaction largely depends on vendors’ performance, reliability, responding to customers’ needs and continuous improvement. Managing the OEE is one of the approaches employed to ensure the reliability of the production operations and to be able to satisfy the customers and end users. This is the way for manufacturer to ensure reliability while supporting both entities’ competitiveness in the market, as well as complying the world class standards [6]. This paper is going to provide an overview of the Business Performance evaluation from the perspective of Fit Manufacturing and Overall Equipment Effectiveness.

2. Preliminary

Manufacturing is defined as a process of transforming materials into products. Hence, firms will ensure that customers are offered products with the lowest possible cost in order to have more efficient and effective manufacturing work. However, the environment of manufacturing seems to be faced with significant challenges, thus questioning the present view on manufacturing work. In fact, the most notable challenges for manufacturing in Malaysia today is the increased level of complexity and uncertainty as a result of increased globalization of the markets and operations, diversified demands of customers, drastic reductions in product lifecycles and manufacturing and ICT technology progress [7]. Moreover, all of these challenges are linked to the ability of the firms to catch-up with the recent trends of manufacturing in order to stay in business.

On top of that, the recent developments in the manufacturing system suggests that the perspectives on manufacturing should be changed from a resource-based to knowledge-based view; from linearity to complexity; from individual to system competition; and from mono-disciplinarily to trans-disciplinarily [8]. Hence, Fit Manufacturing is treated as a medium to improve manufacturers’ Business Performance from a resource based view perspective [9]. According to Pham and Thomas [10], Fit Manufacturing framework assists manufacturing firms in becoming economically sustainable, and meeting global market competition. However, there is minimum effort made for analyzing the implementation of Fit Manufacturing in manufacturing firms’ business operations.
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