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Agility and Productivity Management in the Manufacturing Industry

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ABSTRACT

The manufacturing industry is faced with ever-evolving challenges, including rapid changes in technology, global competition and increasing consumer demands. The success of manufacturing companies depends on the extent to which they can manage and increase organizational agility to face market changes and how efficient they are in increasing productivity. This research aims to analyze and improve agility and productivity management in the manufacturing industry. The results of this research show that the implementation of agility and productivity management strategies in the manufacturing industry has a significant positive impact. Through the use of advanced technology, automation, and employee training, companies can improve operational efficiency and workforce productivity. Flexibility in product design, efficient supply chain management and integrated production plans support companies in responding to changes in market demand more quickly and effectively. Smart inventory management has also been proven to minimize storage costs while maintaining raw material availability. Continuous performance measurement and application of continuous improvement principles help create an environment that is responsive to change and innovation.

INTRODUCTION

Increasing productivity is the main magnet for multinational companies in determining their production locations (Buckley, 2009). Countries around the world compete to attract foreign investment by providing infrastructure facilities, favorable fiscal policies and a qualified workforce (Dang & Pheng, 2015). High productivity is a key factor in determining a country's competitiveness in competing for investment from multinational companies. Countries that succeed in increasing labor productivity will become more attractive destinations for global industry (Gelb et al., 2020).

In addition to attracting investment, the spread of production locations has positive consequences related to managing production and supply chain risks (Kleindorfer & Saad, 2005). By diversifying production locations, companies can reduce risks arising from natural disasters, changes in government policy, or disruptions in global supply chains (Abe & Ye, 2013). Dispersed production locations also allow companies to be more flexible in responding to market changes and create a more resilient supply chain strategy (Nandi et al., 2021).

Although distributing production locations provides advantages in managing risk, countries hosting production should still strive to increase the productivity of their workforce (Appelbaum, 2000). Competition between countries in terms of productivity is becoming tighter, as companies look for locations with low production costs while still

maintaining quality and efficiency (Porter, 2011). Therefore, these countries need to invest resources in workforce education and training, improve infrastructure, and encourage technological innovation to ensure that their workforce remains competitive in the global marketplace (Melitz & Ottaviano, 2008).

Increasing labor productivity not only supports a country's economic competitiveness, but also provides benefits for social development and community welfare (Gardiner et al., 2012). Investments in education and training improve the skills of the local workforce, create better jobs, and improve the overall standard of living. Thus, productivity development strategies are not only economic, but also have a positive impact on social and humanitarian aspects in a country (Porter & Kramer, 2002).

In the modern consumer era, expectations for products are increasingly high and complex. Consumers are not only looking for quality products, but also want uniqueness, customization, fast delivery, and competitive prices (Broekhuizen & Alsem, 2002). This places a huge burden on the production and manufacturing industry to not only operate effectively and efficiently, but also to be highly flexible (Wu et al., 2013). The success of a company is now not only measured by how well they can meet market demand, but also the extent to which they can adapt to the changing dynamics of consumer demand (Duclos et al., 2003).

Agility is the main key in responding to these demands. An agile company can quickly adapt its production processes to various consumer needs (Chonko & Jones, 2005). This means that companies must not only be able to produce high-quality products, but also have the ability to respond to changes in demand quickly and efficiently. This includes the ability to produce multiple product variants, customize production processes, and optimize supply chains to meet fast delivery times (Yusuf et al., 1999).

In this context, a productive workforce plays a central role. A company's agility cannot be achieved without the support of a skilled, creative and responsive workforce. Increasing workforce productivity involves investing in training, skills development, and creating a work environment that supports innovation (Gunasekaran & Yusuf, 2002). As demand changes and product complexity continues to grow, a productive workforce will become a valuable asset in maintaining a company's competitiveness in a very dynamic market (Leite & Braz, 2016).

Thus, to achieve the desired level of agility, companies need to understand that production effectiveness and efficiency are only the basis. Flexibility to respond to change and meet increasingly varied consumer needs is the key to success (Sanchez, 1995). As part of this strategy, a focus on developing workforce productivity becomes essential, ensuring that the company can not only produce high-quality products, but can also remain relevant and competitive in an ever-changing market (Youndt et al., 1996).

This research aims to investigate and improve agility and productivity management in the manufacturing industry. The aim is to understand the key factors that influence agility and productivity performance in the context of the manufacturing industry, and identify effective strategies to improve them. Thus, this research has the potential to provide practical guidance for manufacturing companies in managing market changes and increasing production efficiency. The benefits include increasing the competitiveness of the

manufacturing industry through better management of change and innovation, as well as optimizing productivity to support sustainable growth and sustainability of the industry.

METHOD

This research uses qualitative research methods with a descriptive approach. This approach was chosen to gain a deep understanding of managing agility and productivity in the manufacturing industry. According to Creswell & Poth (2016), qualitative research is directed at understanding natural phenomena by giving an important role to individual experiences and specific contexts. Thus, through a descriptive approach, this research aims to describe in detail how manufacturing companies manage and increase their agility and productivity A qualitative approach provides advantages in producing more in-depth information, as stated by Denzin & Lincoln (2009). The data obtained is not only limited to facts and events, but also includes the meanings contained therein. This research does not only focus on what is seen and said, but also seeks a deeper understanding regarding the meaning underlying the actions and decisions taken by manufacturing companies in facing industrial dynamics. In addition, this qualitative research involves the role of the researcher as the main instrument in collecting and interpreting data. This is in line with the natural approach of qualitative research which emphasizes the uniqueness of individual experiences and contextual understanding. By using this method, this research hopes to make a significant contribution in uncovering deeper aspects related to managing agility and productivity in the manufacturing industry.

RESULTS AND DISCUSSION

Agility and productivity management in the manufacturing industry involves a number of strategies and practices to face the challenges of market dynamics, technological innovation and intense competition. The following are several forms of agility and productivity management that are commonly applied in the manufacturing industry. First, the use of advanced technology and automation has become the main pillar in increasing the productivity of the manufacturing industry. By utilizing automated machines and advanced software, companies can reduce production cycle times significantly. Processes that previously took hours or even days can be carried out in a much shorter time. Additionally, automation helps reduce the rate of human error in the production process. Advanced machines can perform tasks with high consistency and accuracy, reducing the risk of product defects and the need for repeat work due to human error.

In addition to operational efficiency, automation also allows companies to be more responsive to changes in market demand. Automated production systems can be quickly changed and adjusted to produce different types of products or product variations according to customer requirements. With this flexibility, companies can respond to market trends, changing customer demands, and even sudden changes in the business environment more quickly and effectively. Therefore, the implementation of advanced technology and automation not only results in increased productivity, but also creates a strong foundation for company resilience and adaptability in the dynamic industrial era.

Second, investment in employee training and skills development marks a company's commitment to the growth and welfare of its workforce. Training is not only a must to improve employees' technical competence, but also provides opportunities for the development of interpersonal, leadership and innovation skills. By building employee capacity, companies create an environment that supports professional and personal growth, provides high levels of motivation, and creates more efficient teams.

Effective training can have a significant positive impact on workforce productivity. Employees who have a deep understanding of their tasks and master the necessary skills can carry out those tasks more efficiently and without as many obstacles. In addition, training that focuses on improving skills also allows employees to overcome new challenges and adapt to changing technology and market demands. Thus, investment in skills development is not just an investment in individual employees, but also a long-term investment in a company's capacity to compete and adapt in an ever-changing marketplace. Through this approach, companies create a strong foundation for increasing productivity, improving product or service quality, and achieving competitive advantage.

Third, in the era of globalization and intense competition, the need to be more responsive to market changes and consumer demands is becoming increasingly urgent for companies. Agility, especially in the context of product variety, is emerging as a critical element in achieving competitive advantage. Companies that are able to produce products with a greater variety have an advantage in meeting increasingly diverse consumer needs. This flexibility is especially reflected in product design, where companies must have the ability to quickly adapt their product portfolio according to changing market trends, consumer preferences, or even technological developments.

Flexible product design allows companies to dynamically adjust product characteristics, features, and other offerings according to changing market needs. Product innovation and the ability to respond to current trends become more accessible through quickly customizable designs. This flexibility also allows companies to better face competitive challenges, as they can provide products that are unique and tailored to consumer tastes without causing significant delays.

Apart from that, flexible product design also supports efficiency in the supply chain and production. Companies can minimize excess stock and speed time-to-market by streamlining the product development process. By leveraging advanced design technology and integrated production management systems, companies can ensure that they not only meet consumer expectations, but also maintain their competitive edge in an ever-changing marketplace. Therefore, having the ability to produce a greater variety of products is a key strategy for companies that want to remain relevant and successful in a dynamic business environment.

Fourth, efficient supply chain management is not just about running a smooth flow of raw materials and finished products, but is also a crucial foundation for increasing the sustainability and competitiveness of a company. By optimizing logistics processes, companies can minimize lead time or the time required from the production stage until the product is available on the market. This not only provides the advantage of responding

more quickly to changes in demand, but also helps companies reduce inventory costs and increase operational efficiency.

Efficient supply chain management also has a direct impact on the availability of production materials. By ensuring the supply of raw materials on time and in sufficient quantities, companies can prevent disruptions in the production process. Consistent availability of production materials not only supports smooth operations, but also provides companies with the flexibility to adapt to fluctuations in demand without facing the risk of raw material shortages.

Apart from that, efficient supply chain management also strengthens company agility. In the face of a dynamic market, companies can more quickly adapt production and distribution strategies, ensuring that they can always meet customer needs. The integration of information technology in the supply chain can also provide better visibility into the entire process, enabling faster and more accurate decision making. In other words, efficient supply chain management is not only instrumental in maintaining smooth operations, but also an important pillar in building a solid foundation for a company's agility and competitiveness in an ever-changing market.

Fifth, implementing appropriate inventory management strategies is key in maintaining a balance between minimizing storage costs and ensuring the availability of raw materials and finished products. By optimizing the amount of stock held, companies can reduce storage costs involving warehouse space, insurance and the risk of item obsolescence. These cost reductions help improve operational efficiency, resulting in a positive impact on a company's financial health.

Furthermore, an effective inventory management strategy has a positive impact on production productivity. By maintaining appropriate inventory levels, companies can avoid the risk of raw material shortages which can cause delays in the production process. This ensures smooth operations and prevents costly production vacancies. In this way, production productivity can be increased because the company can meet market demand without excessive logistical constraints. Apart from that, effective inventory management also supports production agility. In a dynamic business environment, companies need to be able to adapt to changes in demand and rapidly changing market conditions. By having well-managed inventory, companies can be more responsive to fluctuations in demand without incurring extra costs due to unnecessary waste or excess stock. Therefore, implementing smart inventory management strategies can help companies achieve an optimal balance between cost efficiency, productivity and production agility.

Sixth, implementing an integrated production plan is a strategic step that has a positive impact on the company's ability to plan and coordinate the entire production process. With an integrated production plan, companies can unite various production elements, from inventory planning to production schedules, in one coherent framework. This helps create better visibility into the entire supply chain and production process, enabling companies to identify potential bottlenecks and address production challenges more proactively.

In addition, integrated production plans also support improved demand predictions. By bringing together data from various parts of the company, such as sales, marketing, and

production, companies can use more holistic data analysis to understand market trends and forecast demand more accurately. This better prediction is key in avoiding the risk of overstock or understock, and in turn, increasing efficiency in inventory management.

Furthermore, the advantage of an integrated production plan lies in its ability to respond to changes more effectively. When changes occur in market demand, inventory conditions, or other aspects that affect production, an integrated production plan allows companies to quickly adjust production strategies and schedules. This creates the flexibility necessary for companies to remain competitive in a dynamic business environment. Therefore, implementing an integrated production plan not only harmonizes production processes, but also provides a solid foundation for increasing the company's predictability, efficiency and responsiveness to market changes.

Seventh, continuous performance measurement, especially through the use of Key Performance Indicators (KPIs), gives companies a clear view of the effectiveness and efficiency of their operations. KPIs provide an overview of the extent to which companies are successful in achieving their operational and strategic goals. For example, KPIs may include labor productivity, production efficiency levels, cycle time, or inventory accuracy. By continuously monitoring KPIs, companies can identify areas that need more attention or improvement, allowing management to make more timely and data-driven decisions.

The principle of continuous improvement is the basis for continuously improving production processes. By integrating this concept into corporate culture, companies motivate employees to continually look for ways to improve efficiency and quality. This process involves not only identifying weaknesses, but also creating and implementing innovative solutions. By focusing on continuous improvement, companies can proactively optimize production processes, increase productivity and reduce waste at every stage of production.

Additionally, this principle creates a continuous learning cycle throughout the organization. Production teams can engage in regular analysis and performance evaluation to identify opportunities for improvement. This results in a culture that is responsive to change and innovation. Thus, continuous performance measurement and the principle of continuous improvement not only create a more transparent and accountable environment, but also stimulate sustainable development and increased operational effectiveness of the company.

CONCLUSION

Agility and productivity management in the manufacturing industry involves various interrelated strategies to respond to dynamic market demands. The use of advanced technology and automation, employee training, flexibility in product design, efficient supply chain management, intelligent inventory management, integrated production plans, and continuous performance measurement are key points in achieving optimal agility and productivity. The application of technology and automation speeds up production processes and reduces the risk of errors, while employee training increases labor productivity. Flexibility in product design and intelligent inventory management support production agility, allowing companies to adapt to changing market demands. Efficient supply chain

management ensures a smooth flow of raw materials and finished products, while integrated production plans enable companies to plan better and respond quickly to changes. Lastly, continuous performance measurement and the principle of continuous improvement create a continuous learning cycle, encouraging companies to continuously improve the effectiveness and efficiency of their operations. By integrating all these elements, manufacturing companies can achieve the required levels of flexibility, adaptability and productivity to remain competitive in an ever-changing global market. By understanding and managing these elements holistically, companies can achieve long-term success in responding to industry demands and dynamics.

REFERENCES

1. Abe, M., & Ye, L. (2013). Building resilient supply chains against natural disasters: The cases of Japan and Thailand. *Global Business Review*, *14*(4), 567-586.
2. Appelbaum, E. (2000). *Manufacturing advantage: Why high-performance work systems pay off*. Cornell University Press.
3. Broekhuizen, T. L. J., & Alsem, K. J. (2002). Success factors for mass customization: a conceptual model. *Journal of Market-Focused Management*, *5*, 309-330.
4. Buckley, P. J. (2009). The impact of the global factory on economic development. *Journal of World Business*, *44*(2), 131-143.
5. Chonko, L. B., & Jones, E. (2005). The need for speed: Agility selling. *Journal of Personal Selling & Sales Management*, *25*(4), 371-382.
6. Creswell, J. W., & Poth, C. N. (2016). *Qualitative inquiry and research design: Choosing among five approaches*. Sage publications.
7. Dang, G., & Pheng, L. S. (2015). Infrastructure investments in developing economies. *Springer Science Business Media Singapore. DOI*, *10*, 978-981.
8. Denzin, N. K., & Lincoln, Y. S. (Eds.). (2011). *The Sage handbook of qualitative research*. sage.
9. Duclos, L. K., Vokurka, R. J., & Lummus, R. R. (2003). A conceptual model of supply chain flexibility. *Industrial Management & Data Systems*, *103*(6), 446-456.
10. Gardiner, B., Martin, R., & Tyler, P. (2012). Competitiveness, productivity and economic growth across the European regions. In *Regional competitiveness* (pp. 55-77). Routledge.
11. Gelb, A., Ramachandran, V., Meyer, C. J., Wadhwa, D., & Navis, K. (2020). Can Sub-Saharan Africa be a manufacturing destination? Labor costs, price levels, and the role of industrial policy. *Journal of Industry, Competition and Trade*, *20*, 335-357.
12. Gunasekaran, A., & Yusuf, Y. Y. (2002). Agile manufacturing: a taxonomy of strategic and technological imperatives. *International Journal of Production Research*, *40*(6), 1357-1385.
13. Kleindorfer, P. R., & Saad, G. H. (2005). Managing disruption risks in supply chains. *Production and operations management*, *14*(1), 53-68.
14. Leite, M., & Braz, V. (2016). Agile manufacturing practices for new product development: industrial case studies. *Journal of Manufacturing Technology Management*, *27*(4), 560-576.

15. Melitz, M. J., & Ottaviano, G. I. (2008). Market size, trade, and productivity. *The review of economic studies*, *75*(1), 295-316.
16. Nandi, S., Sarkis, J., Hervani, A. A., & Helms, M. M. (2021). Redesigning supply chains using blockchain-enabled circular economy and COVID-19 experiences. *Sustainable Production and Consumption*, *27*, 10-22.
17. Porter, M. E. (2011). *Competitive advantage of nations: creating and sustaining superior performance*. simon and schuster.
18. Porter, M. E., & Kramer, M. R. (2002). The competitive advantage of corporate philanthropy. *Harvard business review*, *80*(12), 56-68.
19. Sanchez, R. (1995). Strategic flexibility in product competition. *Strategic management journal*, *16*(S1), 135-159.
20. Wu, D., Greer, M. J., Rosen, D. W., & Schaefer, D. (2013). Cloud manufacturing: Strategic vision and state-of-the-art. *Journal of Manufacturing Systems*, *32*(4), 564-579.
21. Youndt, M. A., Snell, S. A., Dean Jr, J. W., & Lepak, D. P. (1996). Human resource management, manufacturing strategy, and firm performance. *Academy of management Journal*, *39*(4), 836-866.
22. Yusuf, Y. Y., Sarhadi, M., & Gunasekaran, A. (1999). Agile manufacturing:: The drivers, concepts and attributes. *International Journal of production economics*, *62*(1-2), 33-43.