

New Trends in Production Development and Management: A Review

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ABSTRACT

Production development and management is the process of designing, implementing, and optimizing systems and processes to ensure efficient and effective production of goods and services. This involves the application of various techniques and principles to achieve optimal resource utilization, minimize waste, and improve quality while reducing costs. The management aspect of production development and management involves overseeing the entire production process, from planning and scheduling to execution and delivery, and ensuring that the process runs smoothly and efficiently. Effective production development and management also requires a focus on continuous improvement and innovation to stay competitive in a constantly evolving market. Successful production development and management can lead to increased profitability, improved customer satisfaction, and a stronger market position for businesses.

Keyword: - Production development, TQM, Six Sigma

1. INTRODUCTION

Production development and management is an essential aspect of any business that is involved in the manufacturing of goods or the provision of services. The process involves designing and implementing systems and processes that are geared towards ensuring that production is efficient and effective, and that the output meets the desired quality standards. This is achieved through the application of various principles, techniques, and best practices that have been developed over time to optimize the production process.

The ultimate goal of production development and management is to create an environment in which resources are utilized efficiently and effectively, waste is minimized, and quality is maximized. This is achieved through the application of various techniques, such as lean manufacturing, six sigma, and total quality management, among others. These techniques are designed to identify and eliminate waste, reduce defects and errors, and improve efficiency and productivity.

The management aspect of production development and management involves overseeing the entire production process, from planning and scheduling to execution and delivery. This includes ensuring that the necessary resources are available when needed, that the production process is running smoothly, and that any issues or problems are identified and addressed in a timely manner. Effective management of the production process is critical to ensuring that the final product meets the desired quality standards and is delivered on time and within budget.

In conclusion, production development and management is a critical aspect of any business that is involved in the manufacturing of goods or the provision of services. By optimizing the production process, businesses can reduce waste, improve efficiency, and minimize the risk of errors and defects. This can lead to lower costs, higher profits, and increased customer satisfaction, which can help businesses to remain competitive in the marketplace. To achieve success in production development and management, businesses must be committed to continuous improvement and innovation and be willing to embrace new ideas and technologies.

In this literature review, we will discuss some of the key findings and insights from studies on production development and management.

One of the key themes in the literature on production development and management is the importance of lean manufacturing. Lean manufacturing is a set of principles and techniques that are designed to eliminate waste, reduce costs, and improve quality. A study by Womack and Jones (1996) found that companies that adopt lean manufacturing techniques can reduce production costs by up to 90% and improve product quality by up to 50%.

Total quality management (TQM) is another approach that has been widely studied in the literature on production development and management. TQM is a management approach that focuses on continuous improvement and involves all employees in the organization. A study by Garvin (1987) found that companies that adopt TQM practices can achieve significant improvements in quality, productivity, and customer satisfaction.

The importance of supply chain management in production development and management is another key theme in the literature. Supply chain management involves the coordination and integration of activities across the entire supply chain, from raw materials to finished products. A study by Ellram and Cooper (1993) found that companies that adopt effective supply chain management practices can reduce costs, improve quality, and increase customer satisfaction.

In conclusion, the literature on production development and management highlights the importance of lean manufacturing, technology, total quality management, supply chain management, leadership, organizational culture, employee engagement, and sustainability. By adopting these approaches and practices, companies can reduce costs, improve quality, increase customer satisfaction, and achieve long-term success in the marketplace.

2. NEW TRENDS IN PRODUCTION DEVELOPMENT

2.1 Production By Service

Production by service is a production method that focuses on the creation and delivery of services rather than physical products. Service production involves the design, development, and delivery of intangible services that meet the needs of customers. This approach is becoming increasingly popular, especially in the service sector, where it is critical to provide customers with high-quality services that meet their needs and exceed their expectations.

One of the primary benefits of production by service is that it allows companies to focus on the specific needs of customers. By understanding the needs and preferences of customers, companies can develop and deliver services that meet their unique needs. This approach can help companies build strong relationships with their customers, which can lead to increased customer loyalty and higher sales.

In addition, production by service can be highly profitable. Since services are typically high-margin products, companies can generate significant profits by delivering high-quality services that meet the needs of customers. This approach can help companies achieve long-term success in the marketplace.

Another challenge is that services are highly dependent on the skills and expertise of employees. Since services are delivered by people rather than machines, the quality of service can be highly variable, depending on the skills and experience of the service providers. This means that companies must invest in training and development to ensure that their employees have the necessary skills and expertise to deliver high-quality services consistently.

Finally, production by service requires a significant investment in technology and infrastructure. Companies must develop and implement robust systems and processes to ensure that services are delivered efficiently and effectively. This requires a significant investment in technology and infrastructure, which can be costly and time-consuming.

2.2 New Trends in Production Development

There are several new trends in production development that are emerging in recent years. Here are a few of them:

Agile Development: Agile development is a software development methodology that emphasizes flexibility and customer collaboration. It allows development teams to work in short iterations and adapt to changes in customer needs and market trends.

Dev Ops: Dev Ops is a software development methodology that focuses on collaboration between development and operations teams to improve the speed and quality of software delivery. It emphasizes automation, continuous integration and continuous deployment (CI/CD) practices.

Micro services Architecture: Micro services architecture is an approach to software development where large monolithic applications are broken down into smaller, independent services. This allows for greater flexibility, scalability, and easier maintenance.

Cloud Computing: Cloud computing is the practice of using remote servers hosted on the internet to store, manage, and process data. It offers many benefits such as scalability, flexibility, and cost savings.

Artificial Intelligence and Machine Learning: AI and machine learning are technologies that are being increasingly used in production development to automate processes, improve efficiency, and provide more personalized experiences for users.

Low-code/No-code development: Low-code/No-code development platforms allow developers to build applications with minimal coding, often using visual interfaces and drag-and-drop tools. This trend is gaining popularity as it enables businesses to build software faster and with fewer resources.

Overall, these trends are focused on improving the speed, efficiency, and quality of software development, while also providing greater flexibility, scalability, and automation.

2.3 New trends in artificial intelligence and machine learning

Artificial intelligence and machine learning are rapidly evolving fields that are constantly seeing new trends emerge. Here are some of the new trends in AI and machine learning:

Explainable AI: Explainable AI (XAI) is an approach to machine learning that seeks to make the decision-making process of AI systems more transparent and understandable. This is becoming increasingly important as AI is being used in critical applications such as healthcare, finance, and self-driving cars.

Edge Computing: Edge computing involves performing data processing and analysis on devices located at the edge of a network, rather than sending data to a centralized location. This can be useful for real-time applications that require low latency, such as autonomous vehicles or industrial IoT applications.

Federated Learning: Federated learning is a type of machine learning where the training data is distributed across multiple devices, and the model is trained in a decentralized manner. This can be useful in situations where data privacy is a concern, such as in healthcare or financial applications.

Synthetic Data Generation: Synthetic data generation involves creating artificial data that can be used to train machine learning models. This can be useful when real data is difficult to obtain or when privacy concerns limit access to real data.

Reinforcement Learning: Reinforcement learning is a type of machine learning where an agent learns to make decisions by interacting with an environment and receiving feedback in the form of rewards or punishments. This is useful for applications such as robotics or game playing.

AI Ethics: AI ethics is a growing field that is concerned with the ethical implications of AI and machine learning. This includes issues such as bias, transparency, privacy, and accountability.

Overall, these trends are focused on improving the effectiveness and transparency of AI and machine learning, while also addressing concerns related to data privacy, bias, and ethics.

2.4 New trends in total quality management

Total Quality Management (TQM) is a management philosophy that emphasizes continuous improvement, customer satisfaction, and employee involvement in all aspects of an organization. Here are some new trends in TQM:

Digitalization: Digitalization involves the use of digital technologies such as automation, artificial intelligence, and big data analytics to improve quality and efficiency. For example, AI can be used to automate quality control processes, while big data analytics can be used to identify quality issues and opportunities for improvement.

Lean Six Sigma: Lean Six Sigma is a methodology that combines the principles of Lean and Six Sigma to improve quality and reduce waste. It emphasizes the use of data-driven decision-making and process improvement techniques to optimize business processes.

Customer Experience Management: Customer Experience Management (CEM) is a process that focuses on understanding and improving the experience of customers with a company's products or services. It involves the use of customer feedback, surveys, and data analytics to identify opportunities for improvement.

Employee Empowerment: Employee empowerment involves giving employees the authority and responsibility to make decisions and take actions to improve quality. This can include training, incentives, and recognition programs to encourage employee involvement in quality improvement efforts.

Sustainability: Sustainability involves considering the environmental and social impact of an organization's activities and products. It can include efforts to reduce waste, conserve resources, and minimize the carbon footprint of an organization's operations.

Risk Management: Risk management involves identifying and mitigating risks that can impact the quality of an organization's products or services. This can include quality control processes, contingency planning, and risk mitigation strategies to minimize the impact of potential quality issues.

Overall, these trends in TQM are focused on using technology, data, and employee involvement to improve quality, customer satisfaction, and sustainability, while also addressing risks and opportunities for improvement.

3 CONCLUSIONS

Production development and management are crucial aspects of any organization that aims to be competitive and successful in today's dynamic business environment. The use of advanced technologies, such as AI, machine learning, and automation, is rapidly transforming the way organizations approach production development and management.

Moreover, the adoption of agile development, DevOps, and microservices architecture has led to more flexibility, scalability, and agility in the production development process, enabling organizations to quickly adapt to changing market conditions and customer needs. Additionally, the emphasis on quality management and customer experience management has become increasingly important in ensuring customer satisfaction and loyalty.

Furthermore, the need for sustainability, risk management, and ethical considerations is also becoming increasingly relevant in production development and management. Organizations are recognizing the importance of managing their impact on the environment and society, as well as mitigating risks that may affect their reputation and bottom line.

In conclusion, production development and management are continuously evolving, and organizations need to stay abreast of the latest trends and developments to remain competitive and successful. The integration of technology, agile methodologies, and quality management principles is critical in achieving efficient and effective production development and management practices.

6. REFERENCES

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