

AGILE METHODOLOGIES AS DRIVERS OF INNOVATIVE DEVELOPMENT IN THE PRODUCTION SPHERE

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In times of large scale digitalization the Agile methodology is a key indicator in achieving production optimization for all levels in business administration. The implementation of Agile method in the manufacturing process leads to the development of flexible production systems able to quickly react to changes in the external environment. In this case, this is especially important in unstable market conditions and high competition. Flexible process management supports changes to every stage of product development, mitigating risks of obsolescence of technologies and approaches. The principle of creating cross-functional teams, involving specialists from different fields, contributes to integration between departments and good knowledge sharing accelerating the development of new products / processes and stimulates the creation of innovative solutions. An iterative approach of Agile allows the development process break into short cycles and simplifying project management. In other words, analysis of the results currently obtained and its adjustment, and testing, at each stage of its implementation reduces the cost of error correction and ensures rapid innovation.

Lean approaches, when integrated with Agile, facilitates flexibility in production, and provide for simultaneous optimization of production resources and acceleration of development (Fig. 1). The continuous analysis of the intermediate results and the opportunity of operational adjustments decrease the probability of failure of projects with innovation. They minimize the risks of time and resources being spent too much. Agile methodologies are concerned with constant interaction with the customer and their feedback. But with this, project team can create products in ways that best suit the needs of the customer, so direct focus in innovation on the end user. Agile methodologies are iterative by nature, thus allowing for faster hypothesis testing and solution implementation. Product quality and time-to-market get better with regular feedback from stakeholders.

Creating Agile – an organizational culture that thrives on creativity, initiative, and bringing attention to continuous improvement – is the result of

applying such methodolog. An organization that such a culture builds is one that is supportive of innovation and growth, and where employees from all levels are engaged in contributing to furtherance. Decentralization of decision is the objective of Agile principles to reduce bureaucracy and bureaucratic delays in the implementation of innovative ideas. By adopting Agile approaches, rolling digital tools into production becomes easier such as automation, the Internet of Things and big data analytics. The approach is flexible and therefore can adapt to new technologies and increasing productivity and innovating.

The scheme illustrates the interaction of lean manufacturing with advanced technologies such as the Internet of Things, artificial intelligence, robotics and cyber-physical systems to make manufacturing processes more flexible, connected and intelligent, reduce wastage and create additional value for customers. Agility concept emphasize the constant readiness for change, so it is an approach that is able to overcome the organizational resistance. This becomes even more significant for the manufacturing industry in order to adopt new technologies and processes.

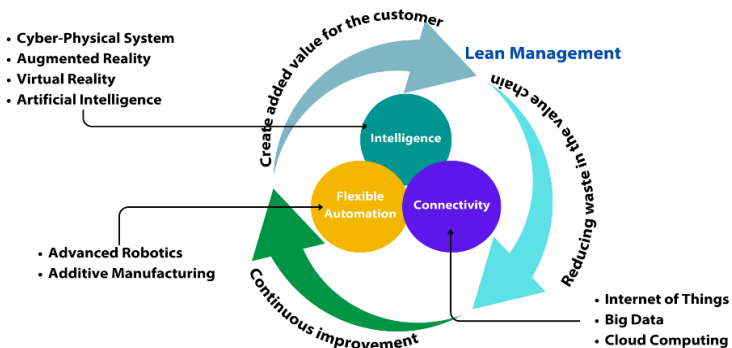


Figure 1. Lean Management Integration

Source: [1]

The involvement of employees in decision making helps them to take ownership of the end results and through this develop initiative and enhance their contribution to innovation projects.

Agile methodologies supplement sustainable production by bringing in environmentally- friendly technologies and enhancing resource usage.

References:

1. Florescu, A., & Barabas, S. (2022) Development Trends of Production Systems through the Integration of Lean Management and Industry 4.0. *Applied Sciences*, no. 12(10). DOI: <https://doi.org/10.3390/app12104885>