

How Leading Manufacturers and SMEs Can Increase Productivity with Digitalization

Become the Winner of Industry 4.0 Revolution



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01

Impact of Epidemics on Supply Chain Disruption

Any manufacturing company has to manage its inventory and supply chain effectively. Businesses that want to increase output require more intelligent and adaptable manufacturing procedures.

The management of inventories is a typical issue in the industrial sector. Too little inventory on hand can be detrimental to sales and customer relations. A surplus of inventory may be expensive to store and can be challenging to vend.

Following the Coronavirus (COVID-19) epidemic, the effects of supply chain issues have gained attention. For instance, as depicted by Matthews et al. (2022), approximately 65,000 enterprises in the United States had to close permanently, while almost 100,000 businesses had to close temporarily.

Most of the components used by manufacturers come from China, particularly computer and electrical equipment. Furthermore, the impact of the supply chain disruption is already being experienced by these businesses.



■ Labor Shortage

However, the incapacity to fill manufacturing positions is the leading cause of supply chain disruptions. A lack of labor impacts the whole supply chain, including production, warehousing, distribution, and logistics.

Before the epidemic, manufacturing already had trouble filling positions available now, the problem is far more severe making matters worse, numerous baby boomers are leaving their job and taking crucial skills with themselves.

■ Workload

The company's human resources have a significant role in determining whether it will succeed or fail in attaining its goals. The capacity of human resources to perform their duties undoubtedly supports effective organizational planning, ensuring that these goals won't encounter many difficulties throughout the planning process. Saturation or job tiredness brought on by the increased workload are issues that frequently occur in the workplace today. Because of the company's competitors, employees must continue to boost productivity while working harder and with fewer resources (Soelton et al., 2020).

02

How Leading Manufacturers Remain Competitive in Industry 4.0 Revolution



The quickly evolving and increasingly demanding consumer expectations that characterize our contemporary business environment are the fundamental cause of the digitalization of previous industries. These revolutions have dramatically altered many aspects of the world, offered enormous challenges to manufacturers and businesses, spurred massive breakthroughs and transformations, and profoundly impacted people's way of life. (Huang, 2017).

At this moment, it's getting increasingly important to be adaptable and quick to respond to market developments. As a result, several businesses have modified their production procedures to concentrate on producing customized goods on schedule. As we can see, the process of digitalization and virtualization provides manufacturers with several options to develop new values and foster innovation to increase their competitive success in their industry.

To survive in the context of globalization and ensure more ideal production processes defined by flexibility, agility, adaptability, proactivity, and other features, all companies today must integrate innovation into their manufacturing process. The most useful way to do this is manufacturing automation, often known as Industry 4.0 or smart factories. Because it provides the correct information to the right operator at the right time, the smart factory plays a crucial role in optimizing the movement of commodities (Mohamed, 2018).



■ Industry 4.0 Goals

The goal of Industry 4.0 is to improve production via the integration of new technologies and digitalization. In addition to enhancing product quality, it envisions a fully automated manufacturing and production system with complete flexibility and little environmental effect.

It describes a mechanized system where equipment and machines work alone or in tandem with people to produce goods according to specifications while continuously improving. By adopting Industry 4.0, a machine may become a self-sufficient entity that can gather, store, and analyze data and make choices on its behalf. Introducing self-customization, self-cognition, and self-optimization methods into the industries enables these technical developments. With its debut, the maker could interact with computers instead of just controlling them (Kumar, & Kumar, S. 2020).



■ Vital Elements of Industry 4.0

The Fourth Industrial Revolution is based on nine primary pillars that are essential components of Industry 4.0. It is crucial to becoming familiar with these pillars, whether you work in the manufacturing sector or not, since they are predicted to influence all industries and society significantly.

- Big Data and Analytics:
- The Internet of Things (IoT)
- Augmented Reality
- The Cloud:
- Autonomous Robots:
- Additive Manufacturing
- Cyber Security:
- Horizontal and Vertical System Integration
- Simulation

(Kumar, & Kumar, S. 2020).



■ Industry 4.0 Benefits

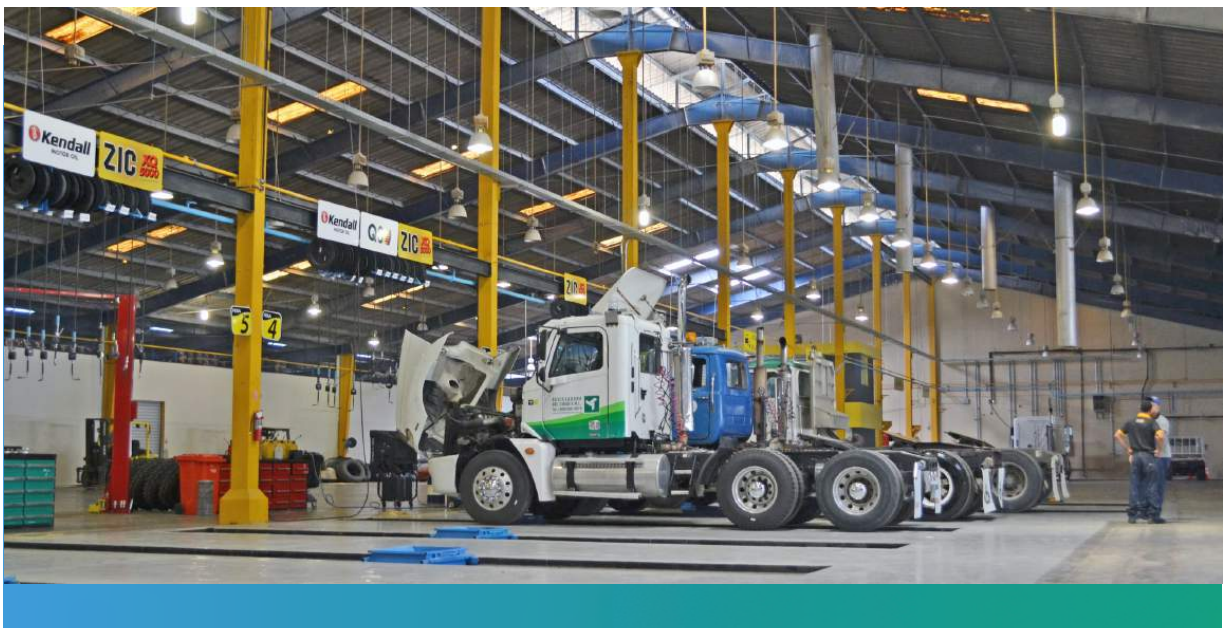
Businesses may profit from Industry 4.0 in a variety of ways. Numerous advantages are provided by Industry 4.0, including lower labor costs, simpler corporate operations, less inaccurate inventory, and more logistics process efficiency. These are essential to boosting revenue and productivity, which may spur economic growth.

■ Saving Costs

- Reduction of waste and excessive production
- Reduction of energy consumption
- Incorporate energy recovery throughout the system.
- Waste reduction, particularly during the product development stage
- Reduction of travel and transportation expense
- Conserve natural resources
- Participate in the environmental facet of current production facilities.

■ Decentralized and digitalized production

- Production is decentralized and digitalized.
- Products will be more modular and adaptable, encouraging mass customization to satisfy unique client needs.
- Value chains are becoming more responsive thanks to new, creative business models, and competition is rising as barriers between information and physical structures are removed.
- Digitization is the coming together of the real and virtual worlds, and it will significantly influence every area of the economy.



■ Improving Working Experiencing

The percentage of sophisticated and indirect jobs that workers regularly perform, such as working with machines, will increase significantly.

Employees will be required to do a variety of non-routine manual activities as well as

- (1) solve unstructured issues,
- (2) use new knowledge, and
- (3) do a variety of unusual manual jobs.
- (4) Strengthen physical attributes like strength or fine motor skills while reducing the physical strain associated



■ Increases Productivity and Economic Growth

Productivity in the automotive sector alone is anticipated to rise by 10-20%. After implementing Industry 4.0, the development it fosters would result in a 6% employment increase over the following ten years. For the next five years, operational efficiency will rise on average by 3.3% yearly, resulting in an average 2.6% annual cost decrease. With the implementation of Industry 4.0, revenue will grow faster than the expenditures associated with automating or digitizing the production process (Mohamed, 2018).



03

How Leading Manufacturers Take Digital Transformation

■ Digital Transformation in Manufacturing



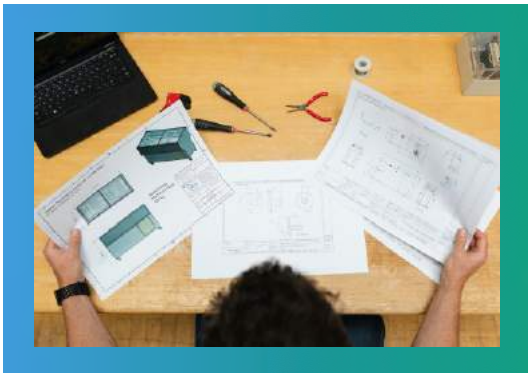
Rapid response to business opportunities is one of the most crucial elements for surviving competition in modern days. As technological capabilities increase and market conditions shift, intelligent manufacturing systems like Digital manufacturing, e-manufacturing, and Virtual manufacturing serve as a fresh paradigm in the manufacturing environment to improve the manufacturing company.

Traditional manufacturing techniques are labor-intensive, lengthen the development cycle, and are geared for mass production of similar items. Advanced manufacturing, or digital manufacturing, is becoming clear against this background. The concept of digital manufacturing, which has emerged from manufacturing efforts like the design for manufacture and assembly, computer-aided manufacturing, lean manufacturing, flexible manufacturing, etc., facilitates cooperation across multiple stages of the product lifecycle. Digital technology is breaking through the barriers of production.

Due to recent advancements in fields like artificial intelligence, human-machine interaction, 3D printing, robotics, and automation, as well as an explosion of data and increased processing capabilities, the disruptive and beneficial effects of digital on industries including IT, manufacturing, media, entertainment, and publishing, among others, are becoming tangible. The engineering and manufacturing sectors have been altered by additive manufacturing (AM), a 3D printing process that produces items by layering materials, from the mass production of identical items to the low-volume creation of creative, individualized, and sustainable products.

Numerous industries, including automotive, aerospace, military, medical, consumer goods, culinary, and architecture, have found a use for the unique skills of additive manufacturing (AM) technologies to create complicated structures with multi-material characteristics and complex architectures (Paritala et al., 2017).

■ Working to Achieve the Highest Productivity with the Lowest Expense or Wasted Effort



It may be challenging to identify methods to reduce costs, boost profitability, and boost productivity for manufacturers due to their significant capital expenditures on equipment and the number of human resources they frequently need to fulfill client demands. Businesses may save time and money by improving their production processes. A major component of this is automation.



Collaboration during crises, such as the worldwide pandemic that drove many experienced workers (including in the industrial sector) into home offices, is facilitated by technology.

When contracts and other documentation need to be modified repeatedly, printing, scanning, and delivering such documents wastes time, reduces worker productivity, and often results in a lot of "re-work."

By implementing technologies that enable staff members to securely exchange documents, interact digitally, and monitor workflow progress in real-time, manufacturers may reduce, if not eliminate, the use of manual and paper-based procedures.

■ Promoting Innovation More Conveniently

In a digitalized workplace, innovation is more straightforward but extends beyond computer-aided design. The brainstorming that fuels creativity is made much simpler when development and research teams can quickly communicate documents, files, ideas, and drawings using digital structures.

Your staff members will, for instance, be able to develop a prototype of the system, quickly convert them into Pdf files for sharing, set share configurations to maintain access, and enable the editor of strategies within that PDF by implementing technology that allows digital workflow processes for production process betterment. No more printing, annotating, scanning, and sending back physical papers. Everyone can use the same file. Even though, employees can work together even when they are not in the same office. Designers can still safely communicate digital designs in situations like the Covid-19 epidemic.



■ Increase Operational Agility

The manufacturing industry is seeing increased worldwide competitiveness as technology continues to advance at the speed of light. Customer expectations for your services, goods, upgrades, and modifications will make their lives simpler. Manufacturers who use digital solutions can react to shifting market conditions more swiftly. Implement software that enables the teams working on your research and development, marketing, and sales to swiftly communicate information, handle issues, and modify features and strategies as necessary.

The manual procedures that frequently clutter the system and hinder creativity and agility may be eliminated by digitization workflows to make idea exchange, file markups, CAD drawing converting to PDFs, and document storage easier.

04

Skyrocket Your Industrial Business with UPDF

UPDF is an all-in-one PDF editor, which promotes working experience in various departments of the industry, from taking orders to delivery of the product. And it allows you to read, annotate, edit, convert, OCR, organize, protect, and share your PDF files anywhere with any person digitally. Now we will discuss how UPDF helps you in every process of industrial manufacturing procedures.



■ Enhancing and Optimizing Manufacturing Documentation with UPDF

Receiving orders from clients may be laborious because it will generate a lot of paperwork. It requires the manufacturers to create the electronic order form, contract, etc. It may require a person to distribute relevant documents all over the manufacturing departments, which must be confirmed, signed, and saved in record files. Of course, these conventional procedures are time-consuming and may increase workload.



The UPDF software is designed to handle all these things in no time; it saves your employees time and minimizes workload. You can conveniently create a good-looking PDF document with UPDF and take clients' signatures electronically to make a deal.

You can highlight requirements by your client and even add sticky notes and send them to various departments' officials, managers, etc. in just one tab or click and get feedback instantly.

The great thing is that UPDF never leaves you alone and eliminates your work-related worries during the production process. You can easily create instructions, product-related information, production steps, and guides by using UPDF and instantly share them with the concerned personnel.

Paperwork and data documentation continues from the start to the last step of production to delivery, receiving, and feedback.

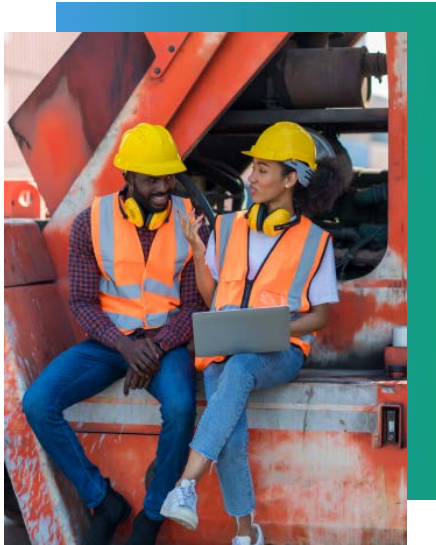
Already managed documents in UPDF to help you recognize the client's address, product size, etc., and also help you to create distribution forms that you can share with your clients and with management staff.

During delivery, the client is allowed to e-sign and add feedback or comments to the PDF documents, and you are able to review them instantly.



■ In-Hand Tools of UPDF that Can Accelerate Manufacturing Process

PDF document plays a real important role in the whole manufacturing process in this digital world. Taking advantages of a PDF software will be the fundamental strategy for manufacturers, and UPDF can help in the following ways:



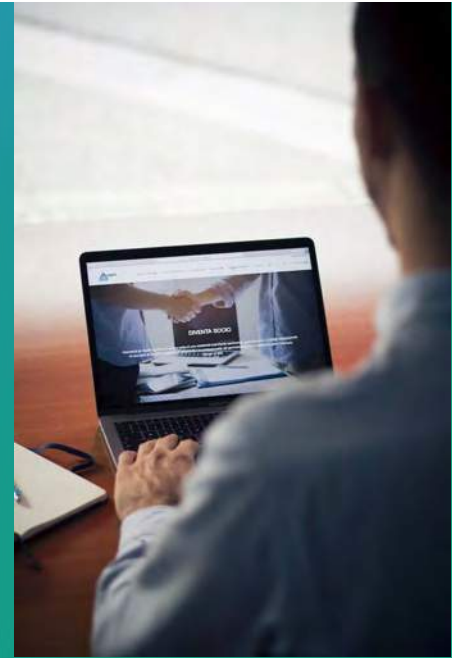
- UPDF offers you to view multiple PDFs in tabs, page layout options, bookmark management, and search and find text, which will help you manage your routine paperwork verifications during manufacturing and delivery.
- The converter tool will allow you to efficiently convert your documents into different file formats to promote the working experience and speed up the manufacturing process.
- Adding texts and making modifications to the texts and images in a PDF document is easy with UPDF.
- Adding suggestions in the form of comments, sticky notes, shapes, etc. to PDF documents will help you to inform concerned personnel about orders, products, and other related modifications and suggestions.
- UPDF allows you to add e-signature to PDF documents to show the approval, verification, or identification of a particular individual or organization.
- You can quickly add, delete, rotate, reorder, split, replace, or extract desired manufacturing-related PDF pages and can easily use and share them.
- Your documents are secured with the password-protection feature of UPDF. You can prevent any unauthorized access to your confidential PDF documents.
- It is important for manufacturers to archive all the documents of clients' information, contracts, invoice, etc. UPDF allows you to archive documents as PDF/A

During the current era, Small and Mid-size Enterprises (SMEs), even lead manufacturers, face supply chain disruption due to skillful labor shortages, pandemics such as Covid 19, and other issues due to the employment of conventional techniques. In order to meet the emerging needs of consumers more efficiently, it's time to step in toward industrial digitalization and implementation of Factory 4.0. UPDF is specifically designed to fulfill the demands of various industries. In collaboration with modern industry concepts, UPDF can increase workflow, workers' engagement, agility, and production efficiency.

UPDF is well aware of the various organizations' employees' working experiences and promotes advanced research to accelerate paperless working experience and tries to provide you best experience cost-effectively.



Have any questions, please let us know at
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