PRAXEIS NEWSLETTER

JULY 2022

PRAXEIS
THE OPERATIONS CLUB
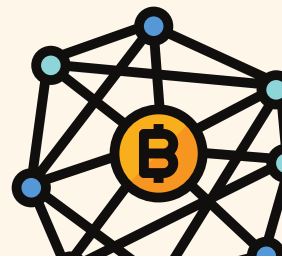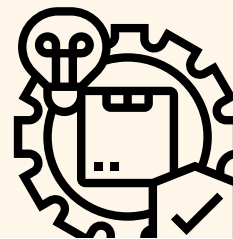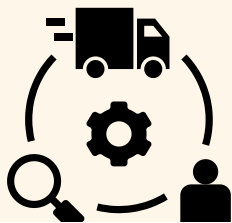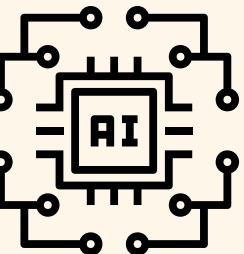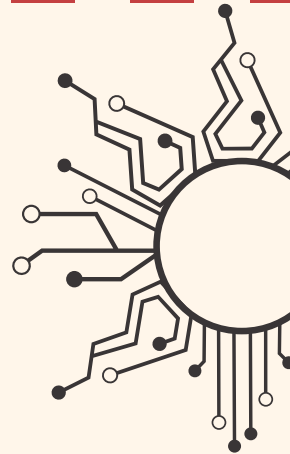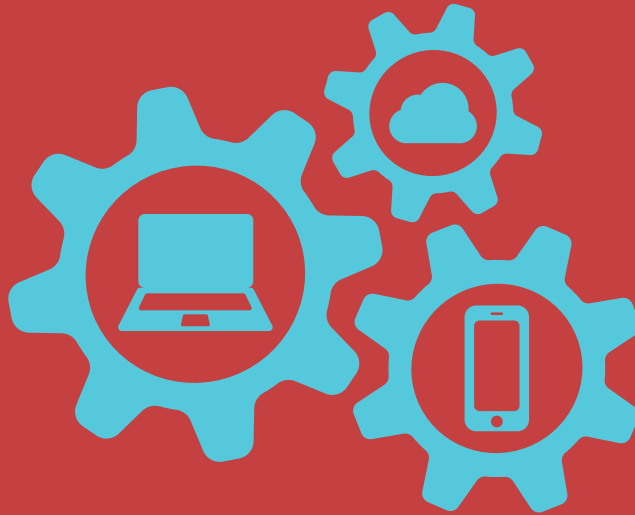
The Future of Operations is Here !

By- Sayan Chatterjee

Managing operations in both manufacturing and service organizations have evolved tremendously over the years with the change in market requirements. The market has become global, thereby compelling enterprise operations to keep up. The application of information technology/information systems (IT/IS) and outsourcing in managing operations have significantly altered the landscape of operations management (OM) strategies, techniques, and technologies. Consciousness towards environmental and safety also urges companies to examine th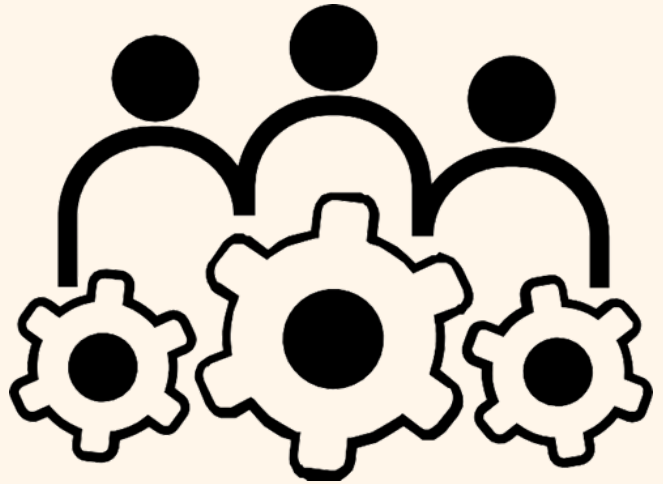eir OM approach and manufacturing from various perspectives. Recently, energy cost and protection against terrorism have changed the portfolio of enterprise operations and therefore the approach to OM. Now, it is time to revisit the OM principles, curriculum, and training at the institution of higher learning and industries.

Moreover, manufacturing has become more of a service activity, indicating significant service OM, including project management. The profile of service industries has also changed in view of the emergence of globalization, outsourcing, and IT, coupled with the rapid economic growth of emerging economies such as Brazil, Russia, India, and China (BRIC). In fact, services account for approximately 80% of the US gross domestic product (GDP); this is also a growing figure of the GDPs of other countries over the world.

Again, service OM needs to be revisited in the context of the abovementioned paradigm shifts. In considering the significance of the above-mentioned changes in the market and society as a whole, an attempt is made to study the evolution of OM and subsequently to develop a framework for new OM strategies and tactics that will support the competitiveness of organizations within the next 10–20 years.

Operations Management 4.0

Internet enabled commerce

Logistics 3PL
Omni Channels
Demand Management
Multi Sided Platforms

Dr. Christian Chen

Smart manufacturing
Global Supply chains
Shorter Product Lifecycles

Sustainability is the new "Lean"
Service Innovation

How Ops Managers Can Shape the Future

The future of operations management-related careers is looking bright. Technology will drive many changes, including increased automation and drones. Systems, software, and robots will all be able to complete tasks without human input. Organizations will need ops managers to understand how technology can work with humans.

Ops Managers are currently the most in-demand profession, and this trend is set to continue. So how can Ops Managers shape the future of their profession? Some suggestions include:

Operations Management Model

Combining Slack et.al (2013) and Guneskaran et.al (2012)
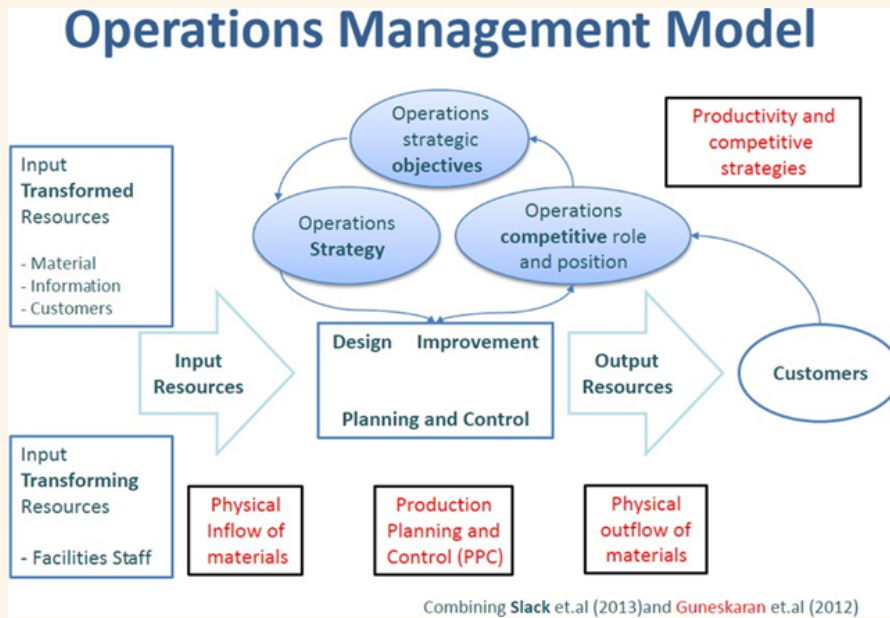
1. Increasing collaboration between operations managers and other departments, such as the HR team

2. Upgrading to more sophisticated enterprise resource planning (ERP) systems such as SAP

3. Emphasizing IT skills development The world is rapidly changing. More and more industries are moving to a cloud- based or digital-first model, and the percentage of jobs in manufacturing will continue to decrease. In contrast, tech jobs—particularly IT jobs— continue to increase.

To be a successful Ops Manager by 2022, one must have a solid understanding of AI and machine learning. Ops Managers must recognize the importance of using automation to improve their teams and processes constantly. Furthermore, Ops Managers also need to use data from their company's operations to identify problems and find ways to solve them.

Top 10 Positions for Operations Management

1. *Industrial production manager,*
2. *Management analyst,*
3. *Logistics specialist,*
4. *Quality assurance supervisor,*
5. *Purchasing manager*
6. *Manufacturing engineer*
7. *Production worker*
8. *Materials manager*
9. *Cost estimator*
10. *Project engineer*
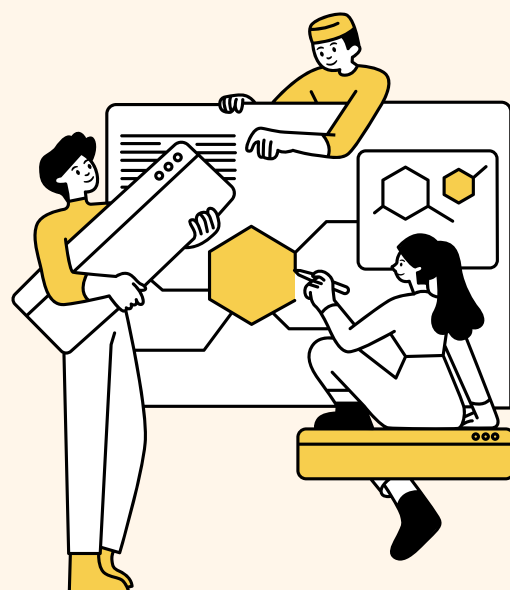
Industry 4.O: The Game Changer for India

By Sayan Chatterjee

The Industry 4.0 is already influencing sectors like manufacturing, supply chain management, construction, shipping etc. and shall impact all the aspects of our day-to-day activities.

Industry 4.0 is gaining popularity due to rapid improvements made in the cyber-computing capabilities in the last few decades. The gap between the virtual and the real world has narrowed by advanced technologies like Artificial Intelligence (AI), Internet of Things (IoT) and others so as to create an interoperable platform between Information Technology (IT) and actual physical operations. The term Industry 4.0 refers to the leveraging of cyber physical domains in association with latest technologies like AI, IoT, Cloud computing, AR, 3D printing etc. to enhance productivity. The Industry 4.0 is already influencing sectors like manufacturing, supply chain management, construction, shipping etc. and shall impact all the aspects of our day-to-day activities. It is truly considered to be a disruptive technology

Industry 4.0 Evolution

The first industrial revolution (popularly called Industry 1.0) commenced in the 18th century with the use of steam generated power and mechanization of production. This was an important transition from manual labour-based industry to the use of steam powered engines to increase human productivity. Textile industry was one of the early beneficiaries of this mechanization, with the steam engine powered weaving looms replacing the traditional handmade textile products for mass production.

A century later, the Second Industrial Revolution (Industry 2.0) began with advent of electricity and the assembly line production using the conveyor belts. The tipping point for the industry was when Henry Ford utilized the assembly line concept for mass production in automobile manufacturing. Further, Industry 3.0 was marked with innovation in the electronics world, when the memory-programmable controls and computers came into existence in the later part of 20th Century. The digital process automation enabled working of machines in a production process without human intervention. Use of robotics seen in manufacturing is one pertinent example here.

The fourth industrial revolution, Industry 4.0 was triggered by the hi-tech innovations which brought the cyber physical systems together i.e. smart machines capable of exchanging real time information over the industrial internet of things (IIOT) for decision making process. Industry 4.0 is the ambit of various modern technologies like Cloud Computing, IoT, Artificial Intelligence, Big Data science, 3D printing, 5G, Drones, Communications etc., all leveraged for the ability to enhance the productivity in the manufacturing processes.

Timeline
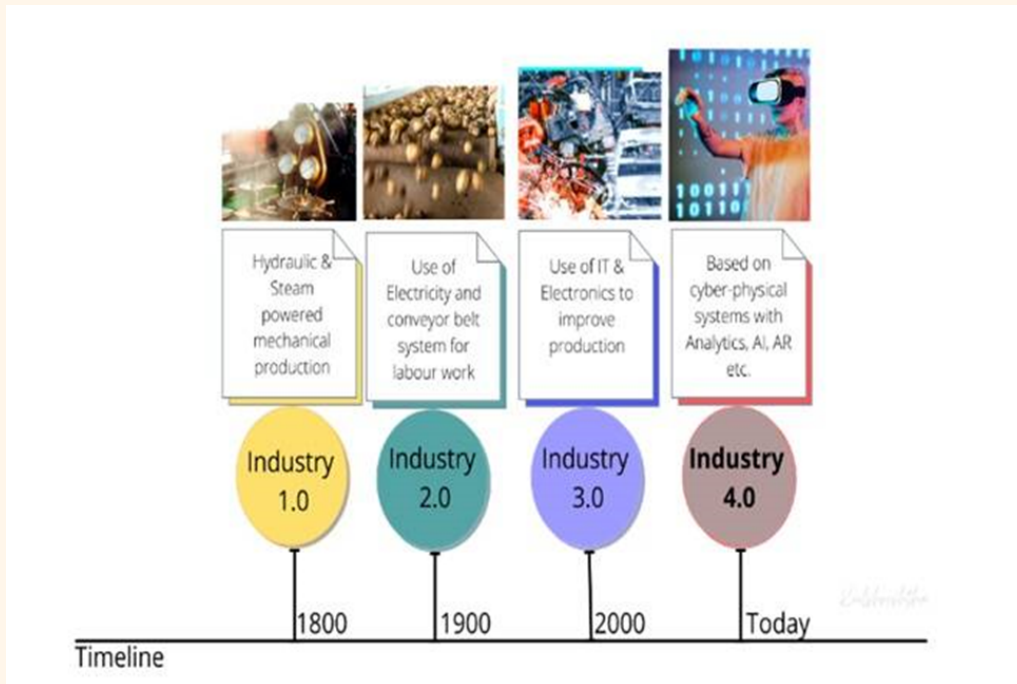
Industry 4.0 Technology

Today, machine-machine real time communication is possible over and above the previous human-machine interactions. The visualization and simulation techniques have seen a leap with increase of processing power of the chips. Various complex, customizable and modular products can be designed and directly communicated to the machines to follow. Thus, the embedded systems, factories and workers connect over the IoT to work together in a cyber- physical environment. As part of Industry 4.0, the robots when backed with AI and IoT are more flexible, and can make decisions in a factory environment. We have Cobots i.e. Collaborative Robots participating intrinsically with human activities, and their role is now more than being stand-alone machines doing repetitive tasks.

AR (Augmented Reality) technology is a step ahead of the popular Virtual Reality (VR) technique. It is a combination of both, the real world and the digital world brought together to enhance its virtual world applicability. With tools like Google Glass, the information is overlaid on the user's field of view to allow him to gain more insight about an object they are looking at (like technical parameters, tolerance limits etc.)

In the Industry 4.0 scheme, various cyber-physical systems operate together and make corrective decisions on their own so as to enhance productivity. A timely alert for human intervention is generated informing the predicted cause and likely maintenance required so as to ensure an uninterrupted machine availability. The logic of distributed processing for regular tasks with a centralized decision making using an analytics framework is extensively utilized here. The smart sensor information emanating from the cyber-physical systems is processed on the cloud servers. In the cloud servers, the AI analytics comprising mathematical models run predictive algorithms to improve productivity and assists in guiding the process of manufacturing. The implementation of Industry 4.0 requires not only a horizontal factory-to-factory integration but a vertical Integration to connect the hierarchies of a production line. Overall, the intelligence of the smart factory is achieved with the convergence of technologies of information processing as part of a digital ecosystem.

Indian Perspective

In 2018, the World Economic Forum setup its Centre for the Fourth Industrial Revolution in India to work in collaboration with the GoI. The National Institute for Transforming India (NITI) Aayog is the designated nodal agency to interact with the World Economic Forum for elaborating the new policy frameworks for emerging technologies. The GoI has already made the enabling policy framework and set up incentives for infrastructure development on a PPP (Public Private Partnership) model. Samarth Udyog Bharat 4.0 (Smart Advanced Manufacturing and Rapid Transformation Hubs) under the Department of Heavy Industries (Ministry of Heavy Industries & Public Enterprises) is the India's initiative to push for Industry 4.0 implementation with an aim to propagate technological solutions to Indian manufacturing units by 2025 through steps like awareness programme, training, demo centers etc. The industry, academia and international cooperation in the field of technologies related to Industry 4.0 is the policy formulated by the government. India's National Manufacturing Policy (NMP) has been promulgated which aims at enhancing the share of manufacturing in GDP to 25% and Industry 4.0 is the only way ahead to achieve this task.

How Does a Pandemic affect IT Service Management?

By- Bhargav

The Corona Crisis Accelerates The Digitalization of The Economy

- Just imagine if the current crisis situation had occurred about 40 or 50 years ago, and we had to go to the home office at that time. What would that have looked like? We would have used landline phones, and data transfer would have taken place by sending documents by mail.

- With technology of that time, it would have been unthinkable to move office work to the home office. Banking transactions could not have been handled online, and applications for short-time work could not have been submitted via the Internet.

- The corona pandemic is once again significantly accelerating the digitalization of the economy.

- The home office became the new standard virtually overnight; conferences and events are being replaced more and more by virtual experiences. Customers are increasingly buying online and requesting information via digital channels and social media.

- The focus now is on supporting and optimizing workflows and processes. What counts now is functioning ITSM. And, that has been on everyone's lips for a long time anyway.

Many companies are facing new challenges due to the effects of the Corona crisis. Often, it is a matter of bare survival, i.e. keeping their business running. It also means that working in the home office is increasing, and we are forced to follow strict rules: This includes keeping our distance from our colleagues and business partners. This affects the way we work and also means new working conditions for employees.

Nevertheless, you can still work productively together, communicate effectively and do business. Digital transformation, or rather the changes and improvements in working methods that come with it, can be the key to achieving this. So anyone who has not yet taken action should now, at the latest, take a big step towards digitalization.

Cost-cutting measures at the expense of innovation and digitization will only have a positive effect in the short-term.


A Structured Approach to Problem Solving Is Required

COVID-19 presented a dilemma for IT service management. Instantly companies had to catch up on something that had been missed completely in the last years, namely the implementation of an infrastructure that allows all employees to work in a decentralized way.

From the lessons learned, IT managers must derive medium-term strategies and fight the causes of too little digitalization and the lack of mobile infrastructure. A structured approach to problem solving is needed.

The fact is that companies that have already pushed ahead with digitalization and modern work in recent years are now at an advantage. For others, now it is the time to use the changes or challenges as an opportunity.

The fact is that companies that have already pushed ahead with digitalization and modern work in recent years are now at an advantage. For others, now it is the time to use the changes or challenges as an opportunity.

COVID-19
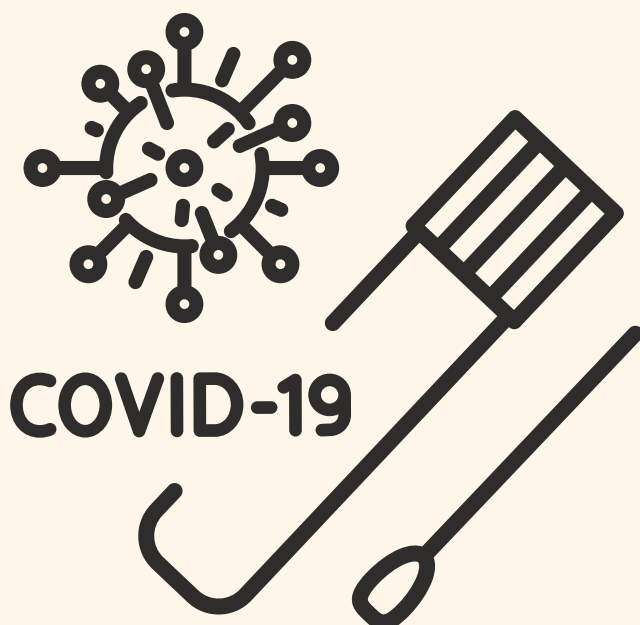
What Are The Concrete Benefits of Using ITSM Software?

ITSM software is used to digitize the processes that support service delivery. This benefits the company by offering:

- Structured, organized processing of requests
- Resource optimization
- Increased efficiency
- Fast elimination of errors
- Increased process quality
- Minimized downtime
- Long-term cost reductions
- Rapid risk identification
- Perfect documentation and reporting

Intelligent service management has a positive effect on business processes. However, individual requirements should definitely be taken into account.

An ITSM tool such as OTRS is the solution for customer and service-oriented work. It can be individually adapted, because every company has its very own, home-grown IT structures and processes. That is why our consultants customize OTRS ITSM software to be exactly suited to you.

The advantage:
OTRS has the almost unique ability to link existing processes and structures in a meaningful way, to change and improve them piece by piece and to raise your entire ITSM effort to a new level. By mapping your service scope through **OTRS**, your ITSM ticket system remains functional even if problems or malfunctions occur, like today's pandemic.

Make Your IT Support Smarter And Your Customers More Satisfied

Most companies are working full steam ahead on the automation of standard service requests. This is the only way to avoid productivity losses — even when working from the home office. Today, employee and customer satisfaction are more in focus than ever before. Experience shows that there are clear correlations between employee and customer satisfaction. Easy access to resources and coordinated support of employees, for example through modern technology, improves the culture — with correspondingly positive effects on sales.

Modern ITSM/ESM tools are of great importance in this context and support your teams and customers at the same time.

With OTRS as an ITSM solution, your customers do not have to search in the customer portal for long to get in touch with your team. This has the value of gold in times when circumstances change much more frequently than they normally would. Customers' need for information increases and in return, patience or understanding for, e.g. long waiting times, decreases.
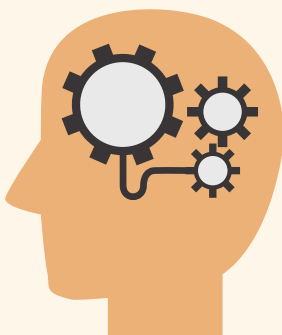
An ITSM tool such as OTRS can also be of great advantage here. Inquiries, complaints, incidents or other concerns can be easily sent to the responsible employees via customizable input masks. The input mask can be designed with the necessary request fields as required.

Working with your ITSM tool is even more efficient because OTRS automatically delivers employee, service and infrastructure information, which is automatically assigned to the appropriate department or agent. With its countless configuration options, OTRS gives your IT and all business units unlimited freedom and saves time – which can be used to expand your core competencies.
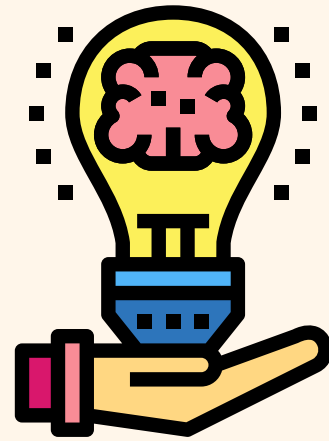
The quality and profitability of your service is easily tracked by KPIs – the clear and combinable reports provide valuable information that can be generated with just a click of the mouse. This allows you to react quickly and make adjustments at short notice, even in turbulent times with constant changes.

Even In Difficult Times, Think of The Intellectual Challenge

Mindlessly managing and processing incidents or creating reports are tasks that are not very motivating in the long run and also waste valuable resources. This is one of the reasons why companies should invest in technology that uses automation functions in order to relieve their staff of repetitive tasks and use them for more creative work.

Since Corona, many companies have become increasingly interested in an integrated self-service that can be used not only for IT services, but also for other departments, such as HR, facility management or accounting.

Where Is The Journey With ITSM Heading?

Since Corona, many companies have become increasingly interested in an integrated self-service that can be used not only for IT services, but also for other departments, such as HR, facility management or accounting.

So, the use and deployment of ITSM software will definitely spread even more to all service departments of companies. In fact, it is much more efficient and ultimately more customer-oriented if work is done across departments and there is a continuous exchange of information. Here, we speak of Enterprise Service Management (ESM).

In addition, today it is increasingly important to understand customers instead of focusing exclusively on technology or the fulfillment of SLAs. Workforce enablement, DevOps and Conversational Agents, for example, are trends that can help businesses achieve this.

And What Can We Say For The Future in General?

Teams today are made up of global and local, internal and external employees. This requires structures and models for smooth cooperation and coordination. ITSM/ESM tools enable the management and coordination of complex processes involving several departments, teams or even organizations.

In general, ITSM requires that IT be more involved in decision-making and not just act as a fire extinguisher in problem cases. Our exceptional pandemic situation underlines this once again: IT and business solutions must go hand-in-hand. And, we are still a long way from achieving this. Achieving this requires rethinking and a commitment from all parties involved.

An Optimistic Outlook:

Imagine it's November 2022, and companies have evolved according to the lessons learned from the current situation. Now, a new pandemic or similar disaster would not cause any more chaos. At least not on the scale we experienced in 2020. The conditions for working from any location will have been fulfilled. IT service teams would be in control of the situation, because responsibilities would have been clarified and defined and, in any case, fewer challenges would determine everyday work, because the causes had long since been eliminated.

THE NEW AGE CRISIS

- YOGESH SIGAR

What is "operations"? Is the definition still the same?

I think we should talk about this, operations are not about manufacturing anymore. Operations are to create, to have something to give to customers, it has always been the real value of the company. Throughout the history of the industrial revolution to the late 1800s, the field boosted the modern economy to the very next level. volume manufacturing and filing and fitting parts led this evolution. Now, the trend follows the modular approach.

The notion of interchangeable parts originated from the design of muskets and evolved into modular parts in modern technologies. Operations now include a wide array of other fields i.e., supply chain management that tracks the flow of goods and services also including all processes that transform raw materials into consumer goods. Overall management of business's supply-side activities to gain competitive advantage.

- *Not enough port container capacity,*
  After recession hit in 2008, port traffic slowed but it hit back with a greater force then it was before, and port expansions are bogged down by politics.
- *Railways are near capacity,*
  The backbone of Indian transport is limited and it's almost at capacity.
- *Highways can't keep up with the demand,*
  Trucks, trucks and trucks. In a country that spans over 3500+ it takes days to ship something.
- *Air freight isn't the answer.*
  Slowed by outdated traffic-control systems, limited runways and shortage of economical options.

But is this vast field without any faults? NO.
Congestion crisis: It is important to understand the severity of this looming crisis and the reasons which drive it.
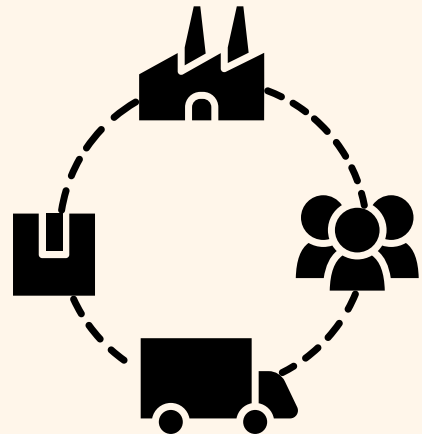
Impact on supply chain

The shortage of transport options and increasing demand have a heavy impact on businesses. Longer transport wait increase carrying cost related to financing and warehousing. This is just the first order of congestion, the next order costs are even greater. Demand and supplies can be easily maintained if they are linear but as soon as something changes every step of the chain must adjust, given the lag time to at every supply point, the effects are amplified.

Companies can minimize the impact of congestion and gain a competitive advantage by preparation. As they say "prevention is better than cure" redesigning their supply chain will help:

- Improve their process efficiency,
- Improve information flows,
- Reduce variability,
- And compress transit times.

All the bits and pieces of IT Analytics in Business

By Paulomi Nandi

IT Analytics is one of the prominent domains in the IT Industry. Business Analytics emerged in the 1950s. At that time, tools were developed to capture information and analyse it faster than the human brain. Analytics is a systematic analysis of a set of datasets, precisely statistical datasets. It is used to interpret the patterns of the data. It eventually leads to better decision-making.


What does IT Analytics mean?

- *Analysis of dataset based on technical approach.*
- *Data processing at a certain speed.*
- *Used for Business Strategic assets. It helps to understand many functional roles and skills inside an organization.*
- *To optimize operations and handle the complexity of any business.*
- *Structuring data in a proper sequence for organizational sustainable growth.*

IT Analytics is mainly used to yield a high-level view of the infrastructure that can enable better management of IT resources. When the IT resources become more effective, which leads to IT Operations Management (ITOM). There is software used by the Data Analysts for analysing data for competitive advantages. Analytics software mines data that tracks a diverse array of organizational operations, from current revenue on sales to inventory records.

The list of Data Analytics Tools for businesses are:

- *Excel*
- *R& Python -> These programming languages are used to code for the application features*
- *Tableau.*
- *Qlik Sense*
- *Power BI*
- *MicroStrategy*
- *ThoughtSpot*
- *Sisense*
- *TIBCO*
- *SAS*
- *Jaspersoft*
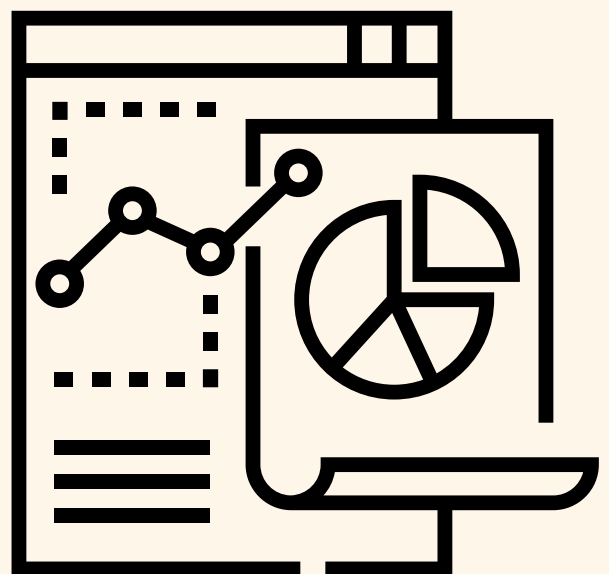
Here are some sights of the most used software:

- *Excel:* Excel is a versatile Analytical tool that works best for small data. It generates Pivot Table, VBA, etc for proper analytics tasks.
- *R & Python Programming:*

For any DevOps (Development Operations) team, python is the preferred software for the developers. Python helps you with predictable analysis along with statistical analysis.

- *Tableau:*

Its core feature is that it can prepare the most accurate PivotTable and PivotChart of excel. It is a powerful visualization Analytics tool that has added a data cleaning function that enables it to perform analytical functions efficiently.

Analytics have thrived all over the industry in recent years. From top MNCs to Stock Market company analysis, Analytical tools have been used. The more days pass it will take place gradually.

The Toyota Way: House of Lean Manufacturing

By Sayan Chatterjee
&
Ashish Sharma

The TPS in its simplest form is a powerful image.

The Just-in-Time concept provides a vision of flowing value directly to the customer without interruption. Increasingly, customers want customized products and services on demand. Built-in Quality follows the principle of doing it right the first time to avoid downstream rework. The foundation of the house suggests it is not possible to flow value smoothly and perform each step correctly, when there is chaos and instability. So, we need to level the flow of work to make it steady and consistent.

Many manufacturing and service organizations that have followed these principles have had dramatic success in eliminating waste, streamlining processes, saving money and better serving customers. As seen in the figure above, the goal in the roof of the house suggests that doing these things will improve quality, cost, delivery, safety and morale. It is shown as a system in which all the parts are interconnected, as in a structure—like a house.
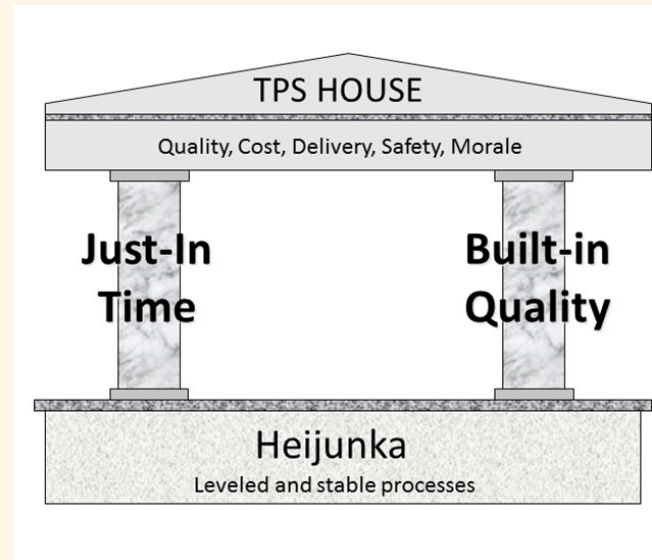

The Toyota Production System House

However, what is missing from this image is the people who are building and rebuilding the house to adapt to a dynamic environment. It is a static image. Often, people continuously improving are put in the center of the house, but when implementing the TPS, many organizations focus mainly on the tools of Just-in-Time and Built-in Quality.

The Toyota Way 2001 was introduced to provide a more holistic, human-centered image for the people of Toyota.

"The Toyota Way 2001 is an ideal, a standard and a guiding beacon for the people of the global Toyota organization."

Toyota develops people who live these values

In this image, respect for people and continuous improvement are front and center. These apply to any organization of people trying to continually get better in a changing environment. It is a dynamic image of people coming together to strive for excellence. The foundational values are:
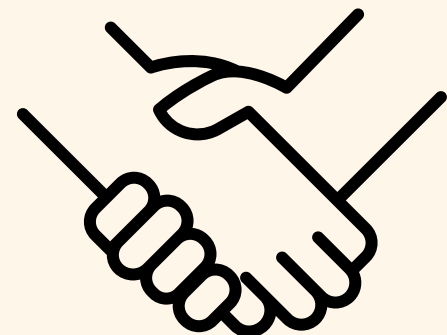

- Challenge: Stretch and develop us to creatively reach the goal
- Kaizen: Systematic problem solving that never ends
- Genchi Genbutsu: Observe to understand the actual situation
- Teamwork: Highly developed individuals working toward a goal
- Respect: People are our only appreciating asset

The lean concepts reflected in the TPS are a part of kaizen, as seen below.

Lean systems are one part of The Toyota Way

Notice that one of the three elements of kaizen is "building lean systems and structure." That includes what we think of as the TPS, such as Just-in-Time, Built-in Quality, and eliminating waste, unevenness and overburden.

Why would Toyota bury the essence of lean so deep within the house, essentially as a footing of the foundation? The reason is that the lean systems are powerful, yet limited. The essence of the Toyota Way is people creatively working to achieve the challenges necessary to survive in a volatile and often hostile world. Toyota is always thinking of the future, and how to use the creativity of all of its people to stay competitive and financially strong, while providing a good quality of life for its people. Eliminating waste alone through lean systems will never lead to the innovation necessary to stay competitive and healthy.
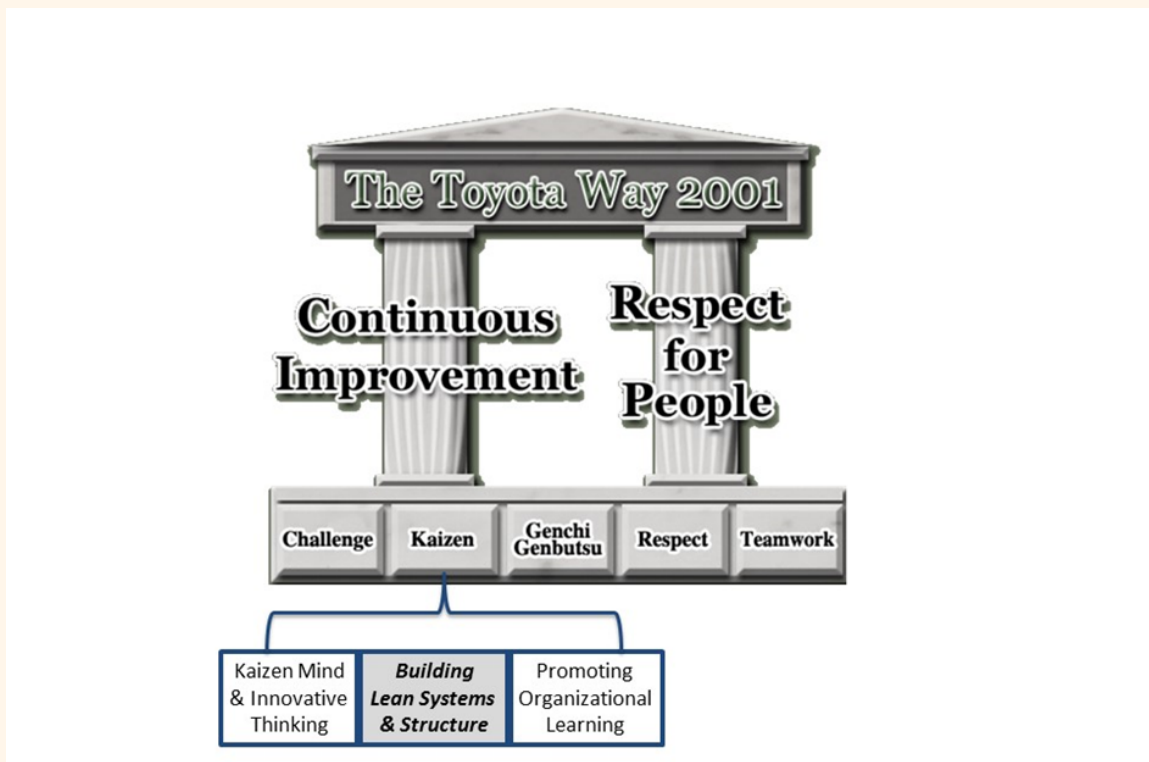
For example, Toyota has made huge leaps ahead in its product and processes. One example is innovation in the automobile assembly line. In the past, car bodies were flown around the factory hung on large and expensive conveyors, and then brought to the ground for assembly on conveyors deeply rooted into the concrete of the floor. These were inflexible.

When vehicles were remodeled, or when jobs were consolidated through improvements, it was very expensive to change these conveyors.
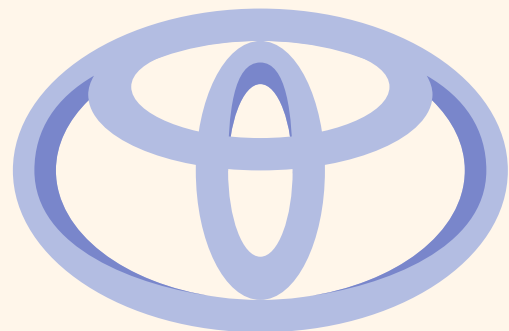
Over the last decade, Toyota began experimenting with alternatives to the conveyor line. They made changes in their Motomachi plant where they make many vehicles on the same line. Car doors were brought on inexpensive carts by automated guided vehicles to a holding area, where they were then brought one-by-one to an assembly line. The carts on wheels linked together and became the assembly line. Small motors pushed them along. This was then extended to the main assembly line where inexpensive motors pushed the car along.

Now, about ten years later it was announced that Toyota has a new flexible assembly line. This and other production innovations will allow Toyota to change the production lines over to produce a new product at half the cost, and the assembly line can be reconfigured over a weekend instead of a month. This will allow Toyota to be profitable at a broad range of volumes, instead of depending on full capacity to make money. Flexibility to adapt to the environment has been a major focus for Toyota, particularly since the Great Recession when like other companies, Toyota lost money.

We can see the principles of the TPS in these innovations, but what drives them is people creatively meeting a challenge. Respect for people and continuous improvement are what drive Toyota forward.

Just In Time Manufacturing + Jidoka = Toyota Production System