

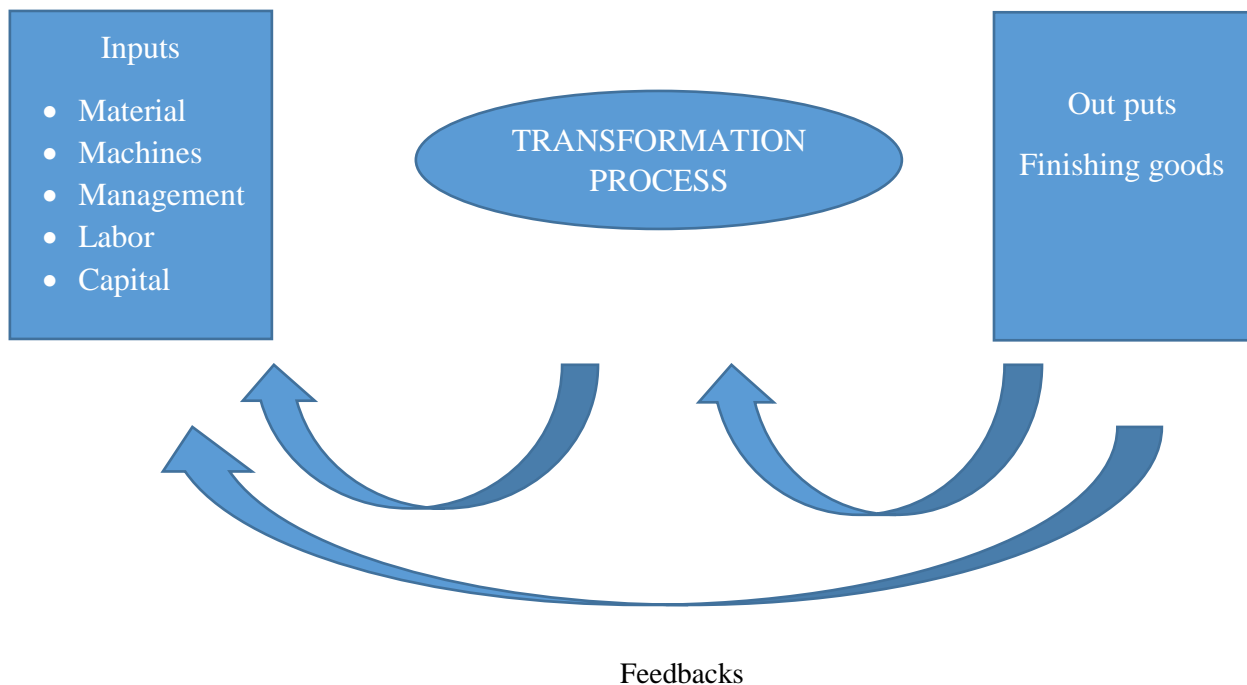
Operation Management

Question 01

“Any business that produce something, whether tangible or not, must have an operations activity”.

Considering how the definition of operation management has been changed overtime, above statement can be considered as a correct statement. Initially, operation management concepts only applied for manufacturing sector. Traditionally, operational management mainly performs a transformational process which convert inputs to outputs. Generally, inputs are raw materials, energy, human resources etc. Outputs are various finishing goods.

Figure 01 – Operation as a transformation process



(Source: Russel and Taylor, 2014)

However, instead of manufacturing sectors, services sector were also developed. Therefore operational management can be applied to service sector too. Different kind of service providers have been developed such as retailers, logistic services, communication services, healthcare services, banking and finance services, entertainment services, IT services, digital services etc. Some of services are related to tangible goods such as logistics and retails. However, the most of the newly developed services such as communication, entertainment services, IT services and digital services are not related to tangible items. In warehouse sector transformational process is locational, in healthcare sector transformational process is physiological. Further, in entertainment

industry transformational process is psychological and in communication sector, transformation process is informational. Similarly, knowledge services have been developed in wide range.

These businesses also which provide intangible outputs need to conduct operational activities. Providing easy access to customers and provide prompt services are common operational activities in any businesses. Further, operation need to be adopted according to business strategy. Therefore, operation activities need to be adopted according to business strategies such as cost leadership, differentiation or etc. Porter's value chain is also adjusted according to service sector which provide intangible outputs.

Asiri Hospitals is the largest private healthcare provider of Sri Lanka. Healthcare sector is one of main example for how to handle operational activities in service sector. Mainly, hospitals provide intangible services such as patients' treatments. Instead of that, hospitals provides tangible services such as reports. As an example, Asiri Hospitals provide healthcare services such as obstetrics & gynecology, baby delivery, general & laparoscopic surgery, urology and kidney care and all the healthcare services available in the country. In this operational process, patients, human resources, medicines, technologies etc. can be considered as inputs and treated patients can be considered as output. Ease access to customers, installation of equipment and providing required resources are the inbound logistic process. Treatment process and accommodation facilities are the main operational process. Further, there need to be efficient patient discharging process which is similar to outbound logistics. Sales and marketing is a secondary activity in many service based companies. Certain patients need to be continuously monitored and examined. Considering all these factors, many service sector businesses maintain operation activities even though their outputs are intangible.

Question 02

Operation management play significant role in supply chain in any business. There wouldn't any product or service to offer without operation management. Concepts and models of operation management directly link with manufacturing sector. However, operation management also involves with service sector. However, there are significant difference of operation management between manufacturing and service sector.

Tangibility of output

One of the major difference between of service and manufacturing organization is the tangibility of the outputs. In manufacturing organization, there is always tangible output. In service sectors, output is intangible. Manufacturing companies transform raw material to different kind of tangible output with support of managing processes, human resources and many other factors (Hill, 2018). FMCG to automobile industry, there are tangible output that can be clearly identified. On the hand, service organizations provide intangible products such as information, assistance, and ideas etc. service organization expand in broad range such as healthcare, education, communication, entertainment, hospitality etc. There are the services which customers can experience but not be seen or touched. Mobile service providers such as Mobitel or Dialog are the service organizations which provide intangible product.

Customer specific production

Service organizations do not produce services unless a customer demand a service. However, there need to be established operation process to design and develop the service scope and content prior. Service organizations offer services tailored to customers' requirements based on different type of dimensions. Audit firms charge for services mainly based on time such as hours of consultancy. Hospitality service providers charge based on duration of stay. Mobile service providers offer prepaid and postpaid packages. Manufacturing companies produce their output even without customer order or forecast of customer demand. Therefore, manufacturing companies need to maintain inventory operation. Service organizations generally do not need to hold inventory for its main outputs. Manufacturing companies keep minimum stock level based on the market demand. Some service providers such as travel agencies do not maintain any inventory. Sometimes, service companies need to maintain inventory for value added services. Hospitality service providers need

to maintain stocks of foods and drinks for provide better service. However, inventory management is not significant operation in service sector compared to manufacturing companies.

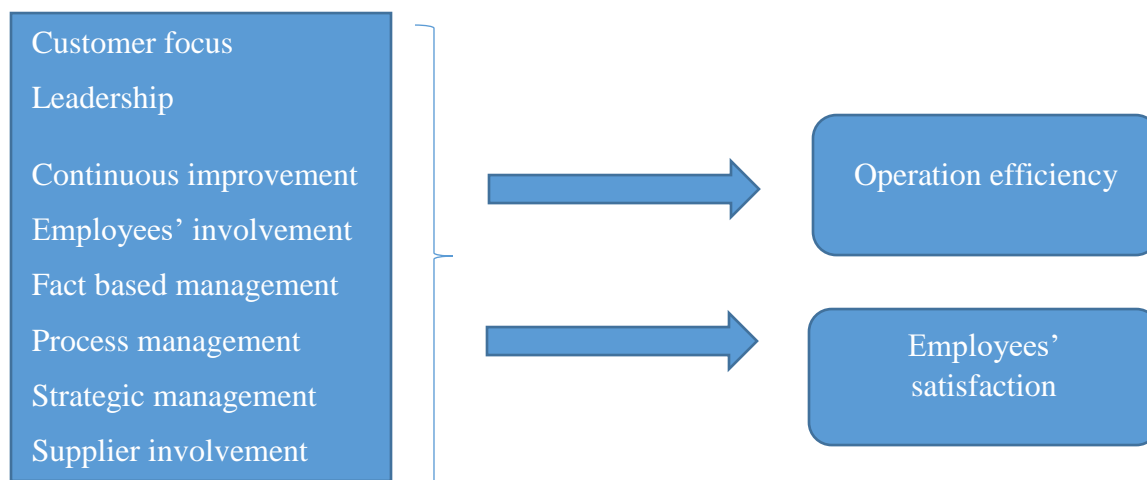
Question 3

Total Quality Management (TQM) and Just in Time (JIT) are the widely discussed operation management concepts. Both these instruments can be used differently for both manufacturing and service sectors to improve performances.

Total Quality Management (TQM)

TQM is the concept of continuous improving the quality of goods, services or processes by considering customers' requirements, improve customer satisfaction and organization performance. TQM is originally developed for manufacturing sector to detect, reduce or eliminate defects in manufacturing. TQM mainly focus on 8 principles, customer focus, leadership, continuous improvement, employees involvement, fact based management, process management, strategic management and supplier involvement (Russel and Taylor, 2014). All these aspects directly influence to improve the operational efficiency and employees' satisfaction.

Figure 02 – relationship between TQM and organizational performance.



Many research have been identified that there is positive relationship between TQM implementation and operational performance. Manufacturing companies use TQM method to minimize the defects, reduce the cycle time and reduce the production cost. These aspects directly impact to improve the performances of manufacturing companies. This method is mainly used by

Ford Motors to improve its assembly line to increase the production while maintain the quality level high. Further, Ford use six sigma to reduce the defects.

It is very clear that how to use TQM for manufacturing sector. However, service organization also use TQM principles to improve the organizational performance. Service companies mainly focus on improving customers' satisfaction through TQM concept. Implementing TQM to service sector is identified as five step process.

- Developing a service quality strategy.
- Evaluate the service process and define the quality measures.
- Establish service process control system.
- Evaluate the service process to fine further improvements.
- Improve process quality (Daft, 2014).

TQM implementation focus on employee empowerment in service organization. Through that, firms try to improve its operation process by improving efficiency and consistency. Further, TQM implementation helps to service firms to review the customers' expectation and customer satisfaction. The main objective of TQM is to achieve continuous improvement. Therefore, TQM also can apply for service organizations effectively.

Just In Time (JIT)

JIT is the model that mainly used by manufacturing firms to reduce manufacturing waste. JIT focus on producing right part in the right quality at the right time. JIT is lean production method which produce more with less inventory, less space and fewer workers (Russel and Taylor, 2014). This method is an example for pull system which product are made based on customers' demand. In manufacturing sector, JIT emphasize to minimize the inventory level and smooth the production process that raw materials are arrived to production process on time. This helps to improve the operation efficiency and reduce the cost. JIT is the method that firstly introduced by Toyota Motors. Basic concept behind the JIT is that if firm produce its output what the amount is required and when it is required there would be no room for defects. Further, JIT helps to achieve to steady production, quick set up, high quality, find reliable suppliers and equipment (Hill, 2018). It helps to reduce the work in progress and completely eliminate damages during storage. Therefore, it leads to reduce inventory cost significantly. Further, this lead to save time and labor cost by

eliminating excessive production. Therefore, implementation of JIT directly influence to operational performances of manufacturing firm.

JIT also can apply for service sector. In service sector, JIT is applied for service process. The main challenge of implementing JIT is that synchronizing service process with the demand. Services such as hotel and restaurants use this method to level their demand. JIT method can use to improve the service responsiveness. Therefore, JIT method also can use to improve organizational performance in service firms.

Question 4

Currently, world is undergoing industry 4.0 (fourth industrial revolution). Industry 4.0 is the digital transformation of all production and its relevant industries and all the value creation processes. This is the era of using smart machines, storage systems and production facilities which has ability to take actions, exchange information and control the systems without human interference. There are many other elements in industry 4.0 such as Internet of Things (IoT), machine learning, cloud computing, 3D printing, big data, automation etc. These technologies disrupt traditional businesses and create new opportunities too. Therefore, it also affects to supply chain management and inventory management fields too.

Industry 4.0 technologies have already affected to business operation by making it more agile, flexible and responsiveness. Concept of smart factory which use software, wireless sensors, IoT help to optimize manufacturing system. Industry 4.0 creates smart processes, products and procedures. In this stage, it is not just using high tech equipment, these equipment exchange information and also has ability to predict and maintain and its operational process autonomously (Scalabre,2017). Further, there are decentralized systems which work autonomously as self-functional segments for manufacturing processes such as product design, product, production planning etc. therefore, this supply chain process has ability to quickly response to the changes in demand levels, machines defects, stock levels and unexpected delays (Bonchek, 2013) . Smart logistics is also highly important to the value chain. Technologies such GPS, RFID (Radio frequency identification), NFC (near field communication) etc. are effectively used to improve the performance of supply chain in industry 4.0. Further, these new technologies able to review real time customer feedbacks and change its supply according to that. Therefore, in Industry 4.0, firms can use digitally integrated and smart supply chain which has boundless opportunities. Therefore,

it improve productivity, efficiency, quality, asset utilization, agility and market responsiveness in entire supply chain.

When it comes to inventory management, industry 4.0 impact mainly on inventory process, inventory classification, inventory system parameters and inventory system reviews. There are fully digitalized and automated purchasing processes. Inventory systems are able to make the order automatically at the right time and with the right quantity based on the real time information. There are some inventory classification methods which change to automatically update at real time using new technologies in industry 4.0. Impact of industry 4.0 is able to exchange inventory system parameters such as supply lead time, carrying cost, purchasing price, ordering cost etc. within different parties in quick time (Scalabre,2017). Further, these information can be used to forecast future trends. Due to inventory 4.0, periodic inventory system review has been completely replaced by continuous reviews. Further, inventory optimization is maximized by through deep data analytics.

Conclusion

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