Operations strateg

- performance ob[j]ectives – [q]uality, speed, dependability, flexibility, cu[s]tomisation, cos[t]
- new [p]roduct or servi[c]e design and development
- supply chai[n] mana[g]ement – logistics, e-commerce, global sourci[n]g
- outsour[c]ing – advantages and disadvantages
- te[c]hnology – leading edge, established
- inventory management – advantages and disadvantages of holding stock, LIFO (last-in-first-out), FIFO (first-in-first-out), JIT (just-in-time)
- quality management
  – control
  – assurance
  – improvement
- overcoming resistance to change – financial costs, purchasing new equipment, redundancy payments, retraining, reorganising plant layout, inertia
- global factors – global sourcing, economies of scale, scanning and learning, research and development

Chapter 6
OPERATIONS STRATEGIES

We now understand the strategic role of the key business function of operations. We also know the specific steps that the function performs (the processes), and have an understanding of the types of things which can change in the business environment that will impact the way operations processes are functioning. Changes in those items, referred to as influences, will have impacts on both the transformed resources, and the transforming resources and transformation processes, overseen by operations.

To respond to those influences will require a change to operations processes - and the ways that the operations manager can respond to those influences are referred to as **strategies**. Remember that strategies are the ways in which the operations manager can choose to modify the operations processes in order to respond to the threat, or opportunity, presented by the influences. In this way, **the strategies are like solutions**, or an approach to a problem where the goal is to improve the performance of operations in some measureable way. For example, the strategy may reduce costs, or the strategy may reduce wastage, or increase the quality of the good or service produced by the business.

Operations strategy
A response to an influence which will require changes in transformed resources, transforming resources and transformation processes in order to improve the way that the operations function is achieving its strategic role within the business.

In operations management there are nine distinct strategies as response options for the operations manager. Sometimes the strategy has a clear relationship to an influence. For example the influence of quality expectations can be addressed by the operations strategy of quality management, or the influence of technology can be addressed by the operations strategy of technology. Other times one operations strategy may address several influences - for example we will see that outsourcing could be an effective response to globalisation, cost based competition, or changes to quality expectations or technology.

In all cases, however, the strategy is being used by the operations manager to improve the way that the operations function is achieving its strategic role within the business.

Each of the nine operations strategies (performance objectives, new product or service design, supply chain management, outsourcing, technology, inventory management, quality management, overcoming resistance to change and global factors) are separately addressed below. In each case, the problem to be solved is identified, the strategy described, and then metrics outlined that can measure the success of the strategy in responding to the problem. (the threat or opportunity caused by the influence).

Syllabus
operations strategies

performance objectives – quality, speed, dependability, flexibility, customisation, cost

Operations Strategy
Performance Objectives

Problem that strategy addresses/influences causing problem
The operations team is unstructured and unclear on expected performance levels on key attributes of quality, speed, dependability, flexibility, customisation and cost. The business could be facing influences of cost based competition or quality expectations and losing market share, or could be facing declining profits as operations expenses for transformed resources and transformation processes are too high.

It is somewhat of a truism that in business, what gets measured, gets done.

It follows that if operations in a business does not have any specific objectives then the activities within the function will not be efficient, or directed towards achieving the goals of the overall business. It would be very, very rare today for operations function not to have set a range of performance objectives as part of operations management.

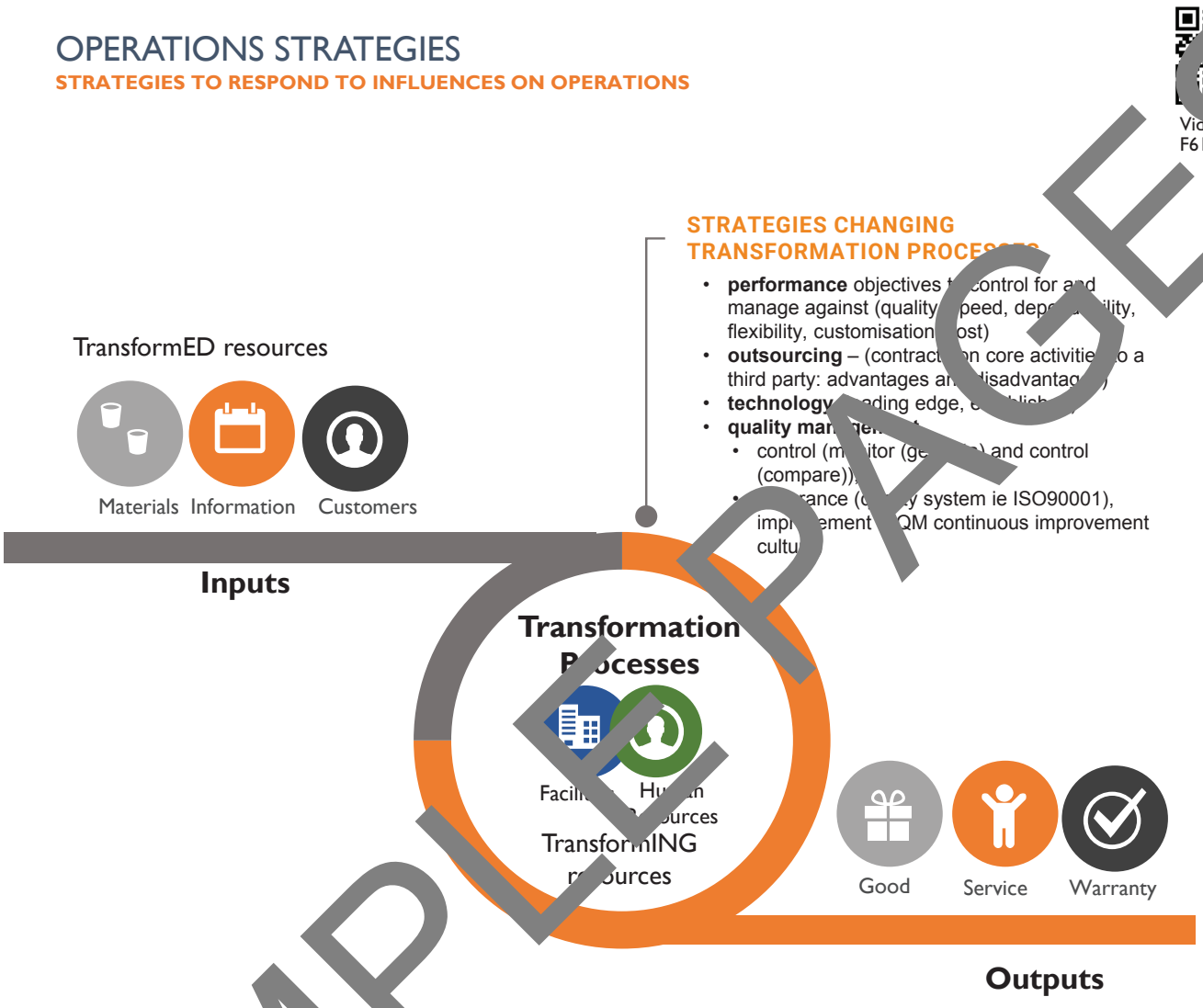
However, it is so important to set objectives that is listed in the syllabus as the first strategy - almost assuming that an existing business does not have any operations objectives and therefore performance could be improved by setting objectives, and then monitoring and controlling against them.

Description of strategy
The operations manager establishes performance measures and tracks performance (monitors) and controls (compares to goal and takes corrective action) in order to achieve the performance level. Using LEGO as an example, the attributes for performance objectives to establish are:

Link
L71

- **quality** the dimensions, colour and clutch strength of the blocks. How long will they last? How will they perform in different temperatures?
- **speed** how many bricks will be produced per hour, how many parts will be painted, and packaged per hour
- **dependability** how consistent and reliable will the production of bricks be - this goes to issues of maintenance and reliability of the facilities making the blocks
- **flexibility** how long does it take to switch moulds in the injection moulding machine so that a different brick can be made. How much flex is in the factory to cope with high demand - that means operating the factory at below capacity in some periods
- **customisation** how long does it take to modify production runs to enable one-off products and designs as short order runs for commemorative or promotional sets. Customisation would be more of a performance objective for Porsche, Ferrari and Harley Davidson rather than LEGO.
- **cost** - clearly an important objective. For LEGO, the CEO set a performance objective of 2-3% reduction in costs, per year, continuously, since 2004. If there are no objectives in relation to cost management, at a low level of detail, i.e. managing the cost of electricity in the factory in Beijing, then management attention and focus does not get directed there, and costs inevitably increase, hindering the performance of the business.

FIGURE 6.1: Operations strategies impacting transformation processes



Changes to processes (transformed and transforming resources)

Setting of performance objectives, and then monitoring and controlling against them, can have a range of implications for transformed and transforming resources as follows:

Performance objective	Potential impact on operations
Quality	Where current transformed resources (materials) are of insufficient quality, new supplier relationships will be required. On the other hand, if the quality level of existing resources is too high, it may be necessary for operations to source, and incorporate into transformation processes, lower quality materials which may provide cost advantages. Quality objectives will require monitoring and control processes to be established, and may require changes to transforming resources (facilities and human resources) in order to meet the quality performance objectives.
Speed	Particularly relevant for transforming resources. Monitoring and control processes will need to be established, and changes may be required to facilities and human resources in order to meet the speed objectives set.
Dependability	Monitoring processes and testing processes will be required to assess the dependability of the operations processes - how reliable are the processes to produce the goods and services as planned and scheduled. Where dependability is not sufficient, this may involve changes to either or both of transformed and transforming resources in order to achieve the level of performance set as the objective for dependability of production.
Flexibility	Spare capacity will need to be established in facilities, and in purchasing and storage of transformed resources and flexible arrangements secured with human resources.
Customisation	An expanded range of transformed resources will need to be purchased and inventory levels managed, in addition to changes to transforming resources to enable customisation of product in an efficient way throughout the transformation process.
Cost	Reduction in costs can be achieved through supply chain management (volume purchasing, sourcing products from overseas) or reducing average cost of production through changes to facilities and human resources, or transport, warehousing and logistics.

Metrics to determine if strategy is working

- number of units failing quality tests reduced
- reduction in wastage
- number of quality units produced in a given time increases
- number of defects in customer use in a given time decreases
- number of warranty claims decreases
- longer period of performance testing before failure
- reduced downtime for production processes when changing product type
- increased volume range achievable by business in response to demand change
- increased ability to customise product in response to customer choice
- decreased cost to customise product in response to customer choice
- reduction in average cost of production (either through reduction in transformed resources or other costs incurred in transformation processes including distribution costs)

Operations Strategy

Outsourcing

Syllabus
operations strate

outsourcing dvantages and disadvan es

Link
L74

Problem that strategy addresses/influences causing problem

Either the business is facing cost based competition, or is seeking to reduce costs as part of the competitive strategy for the product or service set by marketing. The business' current average cost of production may be higher than those of competitors.

Description of strategy

Identify parts of the business process which the business does not have competitive advantage in and contract that process out to another business that does have compe ive advantage in the performing of that activity. Those activities are often referred to as "non core activities". By outsourcing the activity to another business, the business ca reduce capital invested in facilities and human resources, and obtain lower average cos f production compared with continuing to perform that operations process itself.

Note that this is often confused with **offshoring**. Offshoring is where the bu ness relocates production activities to another country, but the produ tivitie main owned by the business. This would occur, for example, where LEGO rel ates p duction to China. **Outsourcing** does not require this geographic ch e of pr uction - he key with outsourcing is that a process that was done by a business no longer performed by that business, but is being contracted out to be performed by a fferent business. This occurs, for example, with Apple where they outsou e the assembly the iPhone, iPad and computer range to a separate business, Foxconn ased in Taiwan.

Offshoring
relocating jobs within the business to overseas locations seeking lower labour and other costs of production.

Outsourcing
Contracting out to a third party (domestically or globally) a process which was formerly performed within the business

Offshoring and outsourcing are different conc ts:

- a business can outsource a process to anoth usiness i the same town
- a business can outsource a process to another sine overseas
- a business can offshore a proce to another cou , but to an operation it creates in the other country. This is offshorin but not out ourcing
- a business can offshore proc s to a ther ountry, to a business it does not own, which is a form of ou ourcing

Changes to proce s (tra formed and transforming resources)

Where operations in usi ss use his strategy there will be very significant changes to transforme nd transf min esources within the business.

Firstly, the bus ss wi longer purchase the transformed resources (materials) used in th oduction pr ess. This is because the outsource provider will now have to purchase and tore inputs the production process. For the business that is outsourcing their proc s thi me that inventory of inputs will no longer have to be purchased and stored, and fa ies that were used to store inputs can be re-purposed or sold.

ndly, since the business will no longer be performing the transformation process it will no l ger need the transforming resources of facilities and human resources which used to p oduce the good or service for the business. This occurs both in the outsourcing of the production of a good (machinery and factories are sold, and production workers made redundant) and also in the context of the outsourcing of services like a telecommunications company outsourcing a call centre (the premises and equipment are sold, and the call centre workers either transferred to the outsource provider or made redundant).

Entering outsourcing arrangements can have very large change management costs associated with redundancy payments for staff, although may also result in positive cash flow as a result of selling machinery, equipment and premises which are no longer required by the business.

Outsourcing as a strategy carries a number of risks as well as benefits. Implementing the strategy is not a guarantee of a positive outcome - it very much depends upon what it outsourced, and the terms and management of the outsourcing agreement as to whether the outsourcing strategy has positive or negative impacts on the business. Because of this, the syllabus requires students to be able to articulate both the advantages and disadvantages of outsourcing.

Advantages of outsourcing

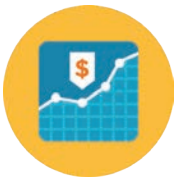
Advantage	Description
Reduction and control of operating costs	Instead of employing expensive specialists that might not be kept busy at all times it could be cheaper to 'buy in' specialist services or products as and when needed. Outsourcing firms may be cheaper because they benefit from economies of scale, as they may provide similar services to a large number of other businesses. Much outsourcing involves offshoring – buying in services, components or assembled products from low-wage economies.
Increased flexibility	By removing departments from the staff payroll and buying in services when needed, fixed costs are converted into variable costs. Additional capacity can be obtained from outsourcing only when needed and contracts can be cancelled if demand falls much more quickly than closing down whole factories owned by the business.
Improved company focus	By outsourcing 'peripheral' activities the management of a business can concentrate on the main aims and tasks of the business. These are called the 'core' parts of the business. So, a small hotel might use management time to improve customer service and outsource the laundry in operations completely.
Access to quality service or resources that are not available internally	Many outsourcing firms employ quality specialists that small to medium-sized businesses could not afford to employ directly.
Free up internal resources for use in other areas	If the assembly of electronics is closed and outsourced to a third party (i.e. Foxconn), then the factory and office space and computer facilities previously used by assembly could be made available to improve operations management in areas in which the business has competitive advantage.

Link
L75

Disadvantages of outsourcing
On the other hand, the disadvantages of outsourcing are as follows:

Disadvantage	Description
Loss of jobs within the business	Workers who remain directly employed by the organisation may experience a loss of job security, reducing motivation. Bad publicity may result from redundancies, especially if the business is accused of employing very low-wage employees in other countries to replace the jobs lost. The firm's ethical standards could be questioned.
Quality issues	Internal processes are monitored by the firm's own quality assurance system. This will not be so easy when outside businesses are performing important functions. A clear contract with minimum service-level agreements will be needed. The company contracting out the functions may have to send quality assurance staff out to the business undertaking the tasks to ensure that product quality and customer service standards are being met.
Customer resistance	This could take several forms. Overseas telephone call centres have led to criticism about inability to understand foreign operators. Customers may object to dealing with overseas outsourced operations. Bought-in components and functions may raise doubts in customers' minds over quality and reliability.
Ethical concerns	If outsourcing is undertaken by firms in countries with poor human rights or employment rights records, it may be cheaper for the business that has outsourced – but how will the media and consumers view this potentially unethical decision?
Security	Using outside businesses to perform important IT functions may be a security risk – if important data were lost by the business, who would take responsibility?

Methods to determine if strategy is working
- Reduction in average cost of production
- Increased speed in delivery and shorter lead times for customers (time from order to delivery)
- Increased customisation options and speed of customisation
- Increased flexibility in volumes and response to variety changes
- Reduction in total capital employed in operations processes resulting in a higher return on capital invested
- Increased quality and increased customer satisfaction
- Decreased warranty claims
- Reduction in senior management time involved in operation processes



Syllabus
operations strategies

technology - leading edge, established

Operations Strategy
Technology

Problem strategy addresses/influences causing problem
Technology provides an opportunity to increase speed, flexibility, quality and customisation whilst decreasing average production cost. Where competitors have already instituted technology to take advantage of the opportunity, the business may be facing threats of cost based competition, quality expectations and lack of speed and flexibility compared to competitors. Technology may therefore respond to influences of cost based competition, quality expectations, technology, globalisation and environmental sustainability (by using technology to decrease waste, energy consumption and emissions).

Description of strategy
Operations invests in new devices or techniques which may impact both transformed and transforming resources.

The syllabus differentiates between what are referred to as **leading edge technology**, and **established technology**. Those concepts are defined in the table below:

Leading edge technology
refers to technological devices, techniques or achievements that employ the most current and high-level IT developments; in other words, technology at the frontiers of knowledge

Established technology
refers to technological devices, techniques or achievements that are commonly employed in industry and are no longer novel or new.

Type of technology	Definition	Implications for operations
Leading edge	Technological devices, techniques or achievements that employ the most current and high-level IT developments; in other words, technology at the frontiers of knowledge	Can be relatively expensive for early adopters, and may have installation and operation difficulties. However, may provide first mover advantage in quality and speed and reduce average costs of production before competitors
Established	Technological devices, techniques or achievements that are commonly employed in industry and are no longer novel or new.	When technology becomes established it is generally cheaper for operations to purchase and install, and less installation and operation difficulties are encountered. However, business may be only catching up with advantages already secured by competitors who embraced the technology when it was leading edge.

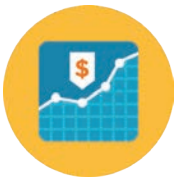
Link
L77

In the operations context, the following would be considered leading edge and established technologies:

Leading edge	Established
Drone based delivery systems to customers	Computer aided design (CAD) using computers to dr and design specifications that can then be digi y used in production processes by computer aided m ufactur
Artificial intelligence in robotics	
Industry 4.0 internet enabled manufacturing where robotics perform different functions depending upon the particular item presented at the point of the manufacturing process to permit limitless customisation without downtime	Online ordering of transformed resources (ials) fro suppliers and automated ordering stock vels ar w via the internet
	Bar coding of products and in ts (or QR co s)
3D printing in diverse materials including skin	Automated quality control proce using ray, digital imaging, digital weigh g a hemical diagnostic testing
Autonomous vehicles	
Augmented and virtual reality	Computer aided manu e (CAM) the use of software to control m chine ols a production processes
Holographic projection	Robot for as mbly pro esses and movement of transform esources and intermediate goods throughout manufacturi facilities
	Online ordering by customers and tracking through oduction and distribution processes
	RFID gs to track produced elements through processes and h ugh inventory

Changes to processes (tra med nd tran orming resources)
Implementation of technol y, eithe within he ansformed resources (and the processes to order and manage th upply ch) or in t e transforming resources can have very significant implications for nsf mation processes in operations. All aspects of operations are impacted, inclu nform on management, quality control processes and processes involved in the produ ti of th od and the service and after sales service.

Metrics to de mine strategy is working
- ction in a rage cost of production
- crea eed in delivery and shorter lead times for customers (time from order to d iv y)
- In eased customisation options and speed of customisation
- Inc ased flexibility in volumes and response to variety changes
- cre ased quality and uniformity of production
- horter times to change to different products through production processes
- ncreased customer satisfaction
  Decreased warranty claims
- Decrease in lost time to maintenance processes and unscheduled maintenance as machinery self diagnoses issues and maintenance needs
- Less capital tied up in inventory as automated processes handle inventory purchasing and management on a just in time basis



Syllabus
operations strategies

quality management
- control, assurance, improvement

Operations Strategy
Quality management

Problem strategy addresses/influences causing problem
An operations manager may have to take action to manage quality for a number of reasons including:

- an increased rate of defects, wastage, or customer returns with warranty claims
- an increase in quality required by the design of the product from marketing, which is responding to the influence of quality expectations of customers
- changes to transforming resources (i.e. technology) which means that consideration needs to be given to designing and establishing processes to monitor and control quality of production using the new production approaches.

Remember quality from within the operations processes
Within the operations processes in the syllabus "monitoring, control and improvement" which introduces students to the quality processes which are present within most businesses, including processes for monitoring, controlling, and improving quality:

- **monitor** (record data on important things - i.e. the weight of Coca Cola can),
- **control** (compare the recorded data against a target for that variable - i.e. the target weight for a filled Coca Cola can and take corrective actions where appropriate)
- **improvement** (make changes to the transformed, or transforming resources to increase the target level of performance objective)

The example that was provided in operations processes was a blood pressure monitor for a person. In the context of a person, monitoring is putting on a blood pressure monitor to get data on current blood pressure of the patient. Control is comparing that reading for blood pressure to the normal range for blood pressure for a person of that age and gender and using medication to achieve the desired level. Improvement is either changing medication, or diet, in order to achieve an even better outcome for the measure of blood pressure.

Monitor	Have a system or process in place to get the data. For example, a process to weigh LEGO bricks on the production line.
Control	A process to compare the recorded (monitored) value against a benchmark or specification (also called key performance indicators) and to take corrective action. For example, a process which compares the weight of the current brick to the appropriate weight for the LEGO brick, and takes corrective action.
Improvement	A process to seek to increase the performance target to be achieved. This may require a change to the transformed resources (i.e. the supplies being used) or it may require a change to a transforming resource (i.e. the equipment may need modification). For example, LEGO may improve the target defect rate by replacing moulding equipment with the latest technology.

Link
L79

In the operations strategies, this in turn leads to strategies of:

- **Quality control**: having in place processes to monitor and control
- **Quality assurance:** having in place a **documented system** about **ALL** of the processes, and controls that exist in relation to quality throughout the entire production enterprise
- **Continuous improvement:** a philosophy of continuous improvement in quality in an organisation, that is, always striving to increase the quality and reduce the defect rate

Quality control
processes to monitor and control quality within operations processes

Quality assurance
a documented system about all do the processes and controls (monitoring and controlling) in relation to quality throughout the entire production enterprise

Continuous improvement
a culture of working to continuously improve the level of quality achieved within production processes

THE QUALITY STRATEGIES

In this part of the syllabus, it is assumed that the business either:

- has an existing problem with quality (and the solution to that problem will be one of the quality management strategies), or
- they have no quality management processes in place and should put them in place in order to avoid a quality problem in future.

Irrespective of the approach to quality management used, there will be processes for monitoring (getting the performance data) and controlling (comparing the performance data to benchmarks).

There are three elements in the syllabus in quality management strategies:

- **control**: this encompasses both the monitoring and the controlling aspects from the operations processes. That is because you cannot control if you have not monitored in order to obtain the data to control with.
- **assurance**: this is about a detailed, documented system for quality throughout the business, which would include documenting all of the processes for monitoring and controlling throughout all processes of the business.
- **improvement**: is about increasing the performance target, and also refers to an approach to quality known as TQM (total quality management) which focuses on continual improvement of quality in the business (as against assurance which merely documents the quality processes to be followed). In other words, TQM is more of a cultural approach to continuous improvement, whereas assurance is more a system, compliance approach to achieving a prescribed level of quality.

QUALITY ASSURANCE

Quality assurance is about having a documented system of all of the processes for quality within an organisation. This includes processes for monitoring and processes for controlling. These documented process form the basis for staff training, and also the basis for external audit (checking) that the business has the processes documented, and is actually following those processes.

There are a range of external quality standards against which businesses can be measured, and certified if they comply with those standards for documentation and processes. The most common is ISO9001.

Link
L80

QUALITY IMPROVEMENT: TOTAL QUALITY MANAGEMENT

The next quality management strategy, in addition to having processes (controlling), and then having documented processes (assurance), is quality improvement. This is about a cultural focus on continually improving quality - rather than simply achieving or maintaining consistent quality targets. Within quality improvement is a concept known as Total Quality Management or TQM. What this means is a management approach to long–term success through customer satisfaction which is derived from an organisational, culturally embedded focus on improving processes, products, services, and organisational culture.

Total Quality Management (TQM) is defined by the International Organisation for Standardisation (ISO):

> "TQM is a management approach for an organisation, centered on quality, based on the participation of all its members and aiming at long-term success through customer satisfaction, and benefits to all members of the organization and to society."

In Japan, Total Quality Management (TQM) comprises four processes, namely:

- Kaizen – Focuses on Continuous Process Improvement to make processes visible, repeatable and measurable.
- Atarimae Hinshitsu – The idea that things will work as they are supposed to (e.g. a pen will write.).
- Kansei Kansei – Examining the way the user applies the product leads to improvement in the product itself.
- Miryokuteki Hinshitsu – The idea that things should have an aesthetic quality which is different from "atarimae hinshitsu" (e.g. a pen will write in a way that is pleasing to the writer.)

Link
L81

Total Quality Management (TQM) requires that the company maintain this quality standard in all aspects of its business. This requires ensuring that things are done right the first time and that defects and wastes are eliminated from operations.

Changes to processes (transformed and transforming resources)

As a result of introducing quality management there will generally be an increase in the planning, documentation and analysis of production steps and the quality of inputs, resulting in changes where appropriate. In the context of continuous improvement (TQM) the expectation is that the transformation process is never perfect and will always be subjected to change in order to improve quality.

Metrics to determine if strategy is working

- Reduction in average cost of production as a result of decreased waste
- Reduced defect rate
- Reduction in unplanned production line downtime
- Reduction in warranty claims and costs
- Increased customer satisfaction

1.1 Approach toward Quality Assurance

1.1.1 Basic Policy

The Sony Group is not content simply to improve product and service quality, and is instead deploying Company-wide activities to realize the world's top management quality in order to provide the highest level of satisfaction in all aspects to our customers. As a member of the Sony Group, the Semiconductor Business Unit is charged with the development, design, manufacture and sale of semiconductor products.

Within the Semiconductor Business Unit as well, all divisions, related departments and factories aim to realize "No. 1 Quality (No. 1 customer satisfaction in the industry with minimum quality losses), based on the quality values of "Quality First / giving priority to quality over individual profits." To achieve this, the Semiconductor Business Unit deploys various quality improvement activities, with attention also given to improving management quality.

1.1.2 Operation of a Quality Management System Based on the ISO 9000 Series

The Semiconductor Business Unit has established and operates a quality management system that conforms to the ISO 9001 Standard, and all divisions, related departments and factories have acquired ISO 9001 certification from the certification body.

The Semiconductor Business Unit's quality policy has been established as follows, based on achievement of the Unit's quality values and vision.

Quality policy: "To build a great relationship of trust with customers, improve the Quality Management System based on the ISO 9001 continually with the concept of making quality the first priority, in effort to achieve No. 1 Quality (No. 1 customer satisfaction and minimizing the quality loss)."

The Semiconductor Business Unit constantly strives to improve the quality of its semiconductor products based on this quality policy, through activities such as maintaining and controlling the quality management system, continuously working to improve the effectiveness of processes, and improving quality through quality engineering and other scientific approaches.

1) Document system

The Semiconductor Business Unit's quality management system is classified and documented with quality manuals at the top supported by overall Business Unit standards, individual division standards, procedures, related documents and records.

Syllabus
operations strategies

supply chain management – logistics, e-commerce, global sourcing

Supply chain
an entire system of producing and delivering a product or service, from the very beginning stage of sourcing the raw materials to the final delivery of the product or service to end users.

Supply chain management
the management of the flow of goods and services and includes all processes that transform raw materials into final products. It involves the active streamlining of a business's supply-side activities, logistics and distribution to maximise customer value and gain a competitive advantage.

Link
L83

Operations Strategy
Supply chain management

Problem that strategy addresses/influences causing problem

The supply chain includes all of the processes to obtain inputs from suppliers, store the inputs and partly finished goods in the production processes, store finished goods at the business, transport the finished goods to warehouses and distribution centres and then transport the goods from distribution centres to stores and customers.

A common mistake students make with supply chain management is thinking that it only means distribution of finished goods to customers. In fact, it is much broader than this.

Supply chain management is the oversight of materials, information and finances as they move in a process from supplier to manufacturer to wholesaler to retailer to consumer. Supply chain management involves coordinating and integrating these flows both within and among companies.

So, the supply chain includes:

- obtaining raw materials or transformed resources (inputs) from suppliers
- storing the inputs at the factory
- moving transformed resources, and partly completed resources, within the factory
- storing completed goods
- shipping completed goods to warehouses and distribution centres, and then to customers

Why is supply chain management a strategy?

For supply chain management to be a strategy, it must exist to fix a problem which has arisen within the business or an opportunity or challenge that has been presented by external influences on operations. In this way, supply chain management as a strategy actually means to make a **change** in the supply chain to make it **more efficient**.

So why would a business make changes to the supply chain - what are the **advantages** sought by making changes to the supply chain?

1. to reduce costs of inputs
2. to improve quality of inputs
3. to increase speed or reliability of distribution (and lower damage)
4. to reduce storage and transportation (logistics) costs

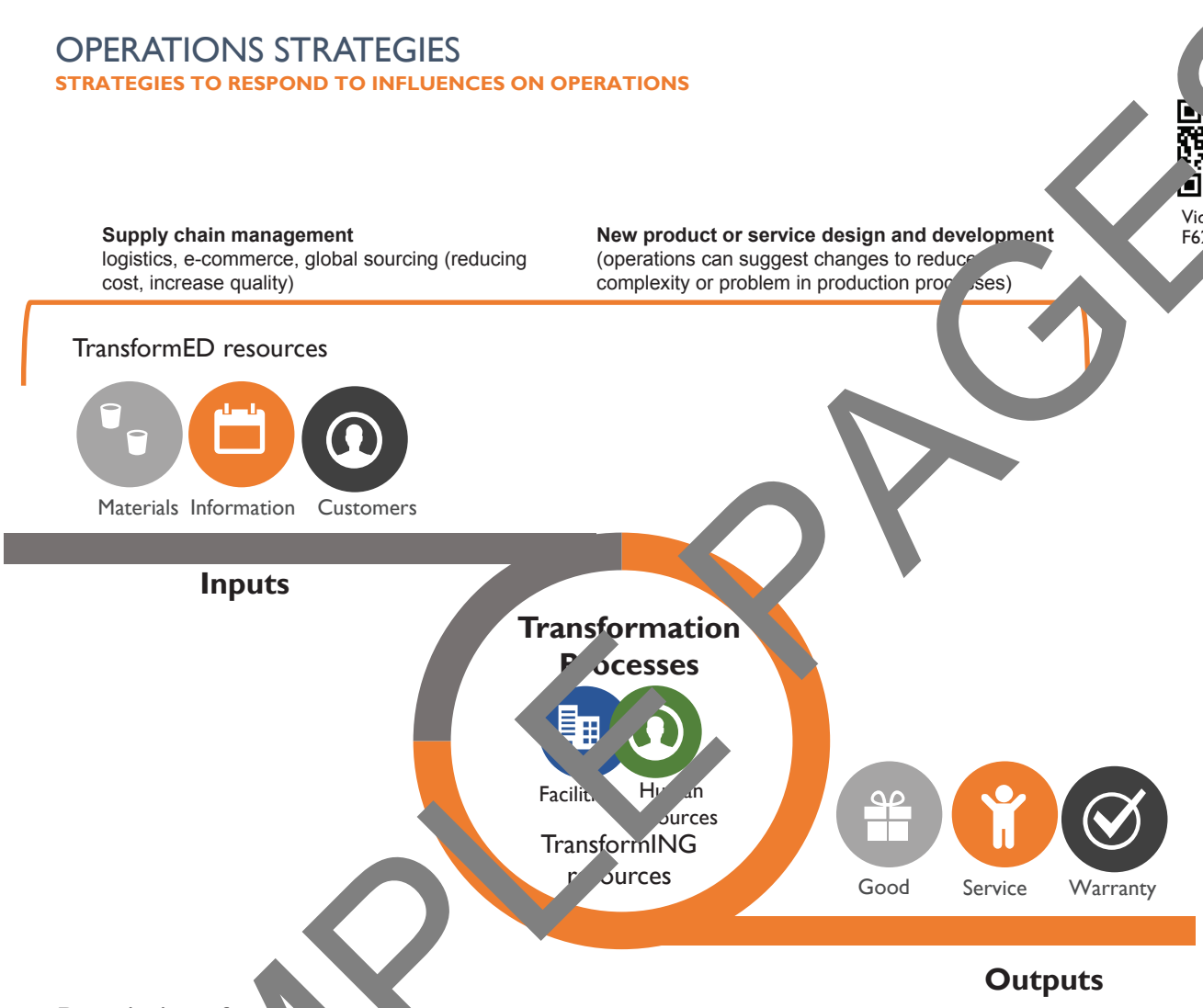
In addition to seeking to obtain these benefits, sometimes **problems** with the existing supply chain influence the operations manager to make changes to the supply chain. Those problems include:

1. poor reliability or high cost of existing suppliers: inputs that do not arrive on time, or that are too expensive relative to inputs used by other businesses, reduce the cost-effectiveness of the operations process

2. cost of transportation and storage processes

The influences which can be addressed with the strategy of supply chain management can include quality expectations, globalisation, cost based competition and technology.

FIGURE 6.2: Supply chain management and new product design



Description of strategy

Changes which the operations manager can make to the supply chain to reduce cost and increase efficiencies can include one or more of the following:

- consolidating suppliers - increasing volume of purchase from a smaller number of suppliers and negotiating volume purchasing discounts to reduce input costs. A smaller number of suppliers to manage also reduces management time invested in supplier management, further decreasing costs
- purchasing suppliers (called vertical integration). Because the supply chain includes input suppliers, and logistics companies, the operations manager can either vertically integrate backwards (i.e. purchase suppliers), or forwards (purchase logistics or wholesaling companies that store and distribute the business' goods)
- keep the number of suppliers, but re tender the supply arrangements and negotiate better pricing or service arrangements, or negotiate more flexible pricing that responds to activity level changes
- improving logistics to reduce costs of transport and storage and improve service (which may result in outsourcing, or changing contractual arrangements with logistics providers)
- using e-commerce to either automate ordering and management (reducing labour costs), of both supply purchases by the business, and ordering by customers from the business
- using global suppliers to access lower costs both for inputs, and also as potential locations for offshoring and outsourcing in particular to access lower labour rates and costs structure in other countries

The syllabus has three elements within the strategy of supply chain management:

- logistics,
- e-commerce, and
- global sourcing

LOGISTICS

Logistics
the movement, storage, and flow of goods, services and information inside and outside the business. Managing logistics is one element of managing the supply chain.

Note that as part of the marketing strategy, marketing will have determined the distribution strategy as part of the place/distribution strategy. This includes the distribution channels, whether to be intensive, selective or exclusive, and then also the strategy for transport, warehousing (storage of products in the medium term and the use of distribution centres to facilitate movement to end point retail locations).

Logistics management is that part of supply chain management that plans, implements and controls the efficient, effective forward and reverse flow and storage of goods, services and related information between the point of origin and the point of consumption in order to meet customers' requirements. In other words, moving, storing, and delivering goods.

Being able to reduce these transportation, storage and delivery costs can be a key part of managing costs in the supply chain. For example, Woolworths in 2014 announced that it was investing over a billion dollars to improve logistics in its supply chain. This operation moves 20 million cartons of goods every week.

Making a change to logistics arrangements can also overlap with outsourcing. For example, for most businesses, their strategic core competency is not logistics but something else. For example, LEGO is outstanding at designing and building bricks, but was not efficient or world best practice at operating a logistics operation. To achieve better economies of scale, and better logistics handling at a lower cost, LEGO rationalised (reduced) its number of distribution centres, and outsourced the management of the distribution centres to DHL. This has been a very successful change to logistics for LEGO which continues today. This use of supply chain management and outsourcing by LEGO achieved a 20% reduction in logistics costs for the company.

E-COMMERCE

E-commerce
commercial transactions conducted electronically on the internet. In the context of the supply chain this includes ordering and managing supplies, stock, distribution centres and customers orders.

Electronic commerce, or e-commerce, has significantly influenced the operation and management of supply chains, including:

- online ordering from suppliers
- electronic equipment automatically ordering from suppliers when components needed (i.e. automated email orders if plastic pellet silos require re-supply for LEGO)
- online ordering and stock management by business customers (i.e. wholesalers placing orders, and managing orders)
- online ordering by consumers (i.e. customers purchasing LEGO products directly through LEGO.com)

Again, the key here is not to consider the supply chain as only the movement of finished goods to purchasers, but the entire length of the supply chain, before and after the business. Typically e-commerce has reduced transaction costs and labour costs in administrative processes, however has increased some costs for operations in ensuring systems are available for customer access and accurately reflect available stock levels in the range of different locations operated by the business.

GLOBAL SOURCING

Global sourcing
sourcing transformed resources (materials) or partly completed or finished goods via offshoring or international outsourcing, in order to reduce cost and increase quality.

The final part of supply chain management is global sourcing, which essentially means that in a globalised world, business can source inputs from any corner of the world. What this opens up is reduced costs, and increased choice, however does introduce transportation and availability risk. As mentioned previously, modern businesses have extensive global webs through which the various materials are assembled, and services obtained from around the world in order to create the good or service for the business. As changes in technology, transport and communication reduced the costs and difficulties of global trade the operations manager now considers suppliers of goods and services globally when managing their supply chain, rather than being limited to suppliers in their local town.

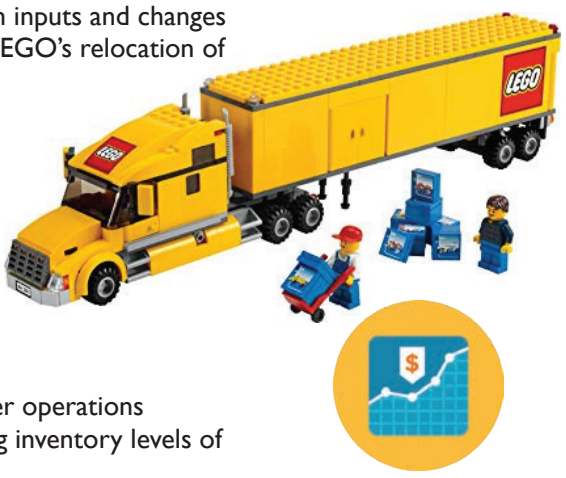
Supply chain example LEGO
In 2004 LEGO needed to reduce costs, and improve efficiencies in its supply chain. At the start of the process this was the situation the operations manager confronted:

- 11,000 different suppliers.
- frequently sourced unique (and therefore higher cost) materials,
- LEGO did little to leverage its total buying power
- its systems and processes were at least 10 years out of date
- poor customer service, spotty availability of products and inventory outages
- supply chain built for custom delivery to the smaller retailers, not changed as market changed to large retailers (Walmart etc)
- Other global competitors had changed supply chain, analysing and optimising every cost driver to provide JIT stock deliveries to the new retail giants (ie Walmart etc).

After the rationalisation of the supply chain by the operations manager LEGO:

- significantly reduced the number of plastic resin suppliers,
- signed longer term contracts reducing and stabilising pricing, lowering costs and enabling better planning
- promoted sustainable supply chain, all suppliers and business partners are required to sign the LEGO Group supplier code of conduct which covers human rights, labour rights, health & safety, anti corruption and environmental sustainability
- The number of logistics service providers was cut from 26 to 4
- Part of LEGO's sustainable competitive advantage was a long term strategy to have the packaging plants closer to their core markets in order to reduce delivery times

Changes to processes (transformed and transforming resources)
By definition, any change to the supply chain will impact transformed resources significantly - both as to the sourcing of those transformed resources and the transportation and storage of inputs and partly completed goods throughout the supply chain. Supply chain changes will also impact transforming resources in facilities adjusting to changes in inputs and changes to plants in order to meet the new supply chain strategy (for example LEGO's relocation of packaging plants).



Metrics to determine if strategy is working
- Reduction in input costs
- Reduction in distribution costs
- Reduction in storage costs
- Reduction in management time spent in supplier management
- Increase in environmental sustainability of operations and supplier operations
- Increase in ease of ordering transformed resources and managing inventory levels of transformed resources
  Better quality information to make decisions in relation to supply chain of inputs, partly completed goods and finished goods in the supply chain

Syllabus
operations strategies

new product or service design and development

New product design or development
Where operations work with marketing (in a process led by marketing) in relation to the design of a new product using operations experience in production processes, warranty claims, and materials.

Link
L87

Operations Strategy

New product or service design and development

Problem that strategy addresses/influences causing problem

This strategy can arise in two different ways, and as we shall see below causes great confusion for students. First, operations participate in working with marketing in the design or development of new products or services for the business. Note that this process is led by marketing, but operations play a key role in determining how products can be made, what materials can be used, or how features can be made to work in the product.

The second way this can arise is where operations are making a product to the specifications and designs provided by marketing, but in attempting to do so problems are arising in relation to wastage levels in manufacture, the number of products failing quality control tests, or failures of the product during customer usage within warranty periods. For example, the way a particular lighting fixture has been designed is getting too much usage which is causing failures of the product during warranty time frames. In these cases, either where costs are being encountered during production processes, or where products are failing in usage, operations managers may seek to identify designs or development approaches which can address these problems and then work with marketing to see if the proposed changes are acceptable to marketing.

For example, if a hinge on a laptop is breaking all the time, and operations are seeing many warranty claims, they may suggest to marketing that the design of the hinge should be changed. Indeed, using their equipment, they may even design a prototype to show marketing their idea. In this way, they are contributing to the new product design and development, but are not accountable for it, nor do they have the organisational responsibility for new product design and development. Another example would be Samsung and their Note 7 phone which had serious issues with the battery catching fire. Operations may liaise with marketing in relation to the design of a new product, the Note 7, and with the knowledge of operations about the problems experienced by customers with the Note 7 then the Note 8 should be improved.

The key here is that you must focus on the knowledge and skill of operations **responding to and influence on operations,** rather than suggest that operations are usurping the role of marketing in creating new products to respond to **general market trends**. This is a common area of confusion for students because of the way the syllabus is drawn. From the way that the syllabus is drawn students may mistakenly believe that it is operations who have the primary responsibility for design and development of a new product - which is not the case.

Description of strategy

Operations staff use their expertise to assist marketing design and develop a new or improved product to address issues encountered by operations in the transformation process or causing warranty issues for customers.

Changes to processes (transformed and transforming resources)

If a new product or design is created, appropriate different transformed resources are purchased, and transformation processes changed as appropriate.

Metrics to determine if strategy is working

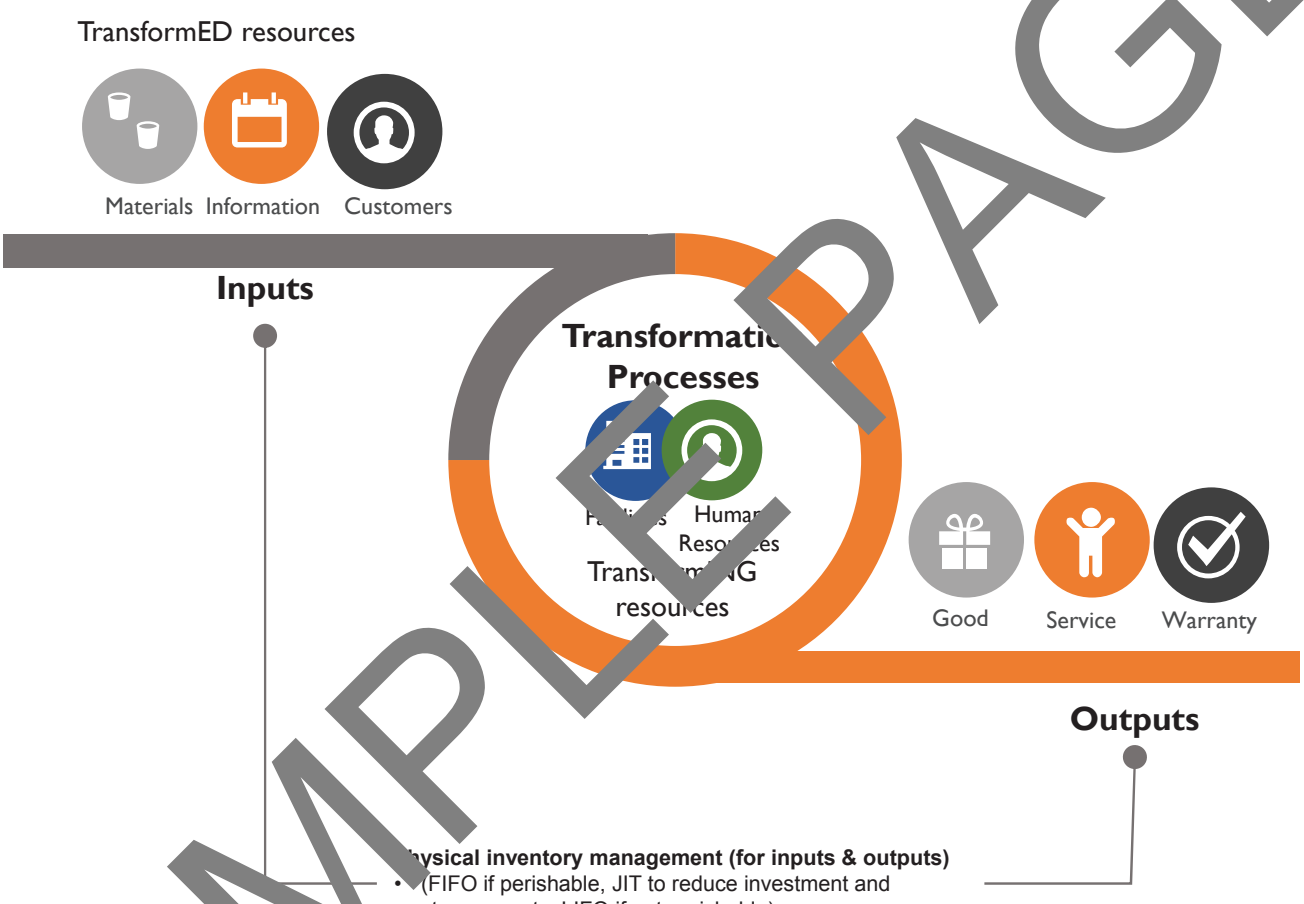
- Reduction in wastage during production processes, reducing average cost of production
- Increased speed in production
- Decreased warranty claims and increased customer satisfaction

FIGURE 6.3: Physical inventory management

OPERATIONS STRATEGIES

STRATEGIES TO RESPOND TO INFLUENCES ON OPERATIONS

Video
63



Syllabus
operations strategies

inventory management – advantages and disadvantages of holding stock, LIFO (last-in-first-out), FIFO (first-in-first-out), JIT (just-in-time)

Operations Strategy

Physical inventory management

Problem that strategy addresses/influences causing problem

Inventory management encompasses managing inventory (i.e. stock) of inputs (like plastic granulate for LEGO), or partly completed goods (like moulded but unpainted LEGO blocks) or finished goods (at the factory and in distribution centres). Students often assume that inventory management only relates to the last of these elements (managed stock of finished goods), however inventory management relates to all three.

Problems that inventory management addresses include:

- not having enough inventory when needed - both as inputs to production processes, and also when required to meet customer orders
- having too much inventory which can perish (for example stock of perishable goods), or become out of date and obsolete (like a warehouse full of one megapixel digital cameras)
- increased costs to store the inventory and keep it secure and insured, and capital of the business tied up in inventory in warehouses
- physical placement of inventory in store to ensure that the oldest stock is sold to customers first (called first in first out rather than last in first out)

Link
L89

Description of strategy

The operations manager determines the minimum levels of stock which are needed in order to support production processes and selling processes to customers having regard to expected production and sales levels. The operations manager ensures processes are in place to properly manage different types of inventory including safety in relation to storage of chemicals, security and insurance for high value inventory, refrigeration or frozen storage for preserving fresh and frozen goods. Finally the operations manager ensures that new stock is positioned for sale to customers only after older stock (first in first out) to minimise expenses in perished, out of stock, and damaged goods through fading or deterioration in storage. In relation to inventory management, the syllabus requires students to consider:

- the advantages and disadvantages of holding inventory (why would a business want to hold inventory of inputs and completed goods, and are there limits on how much they should hold?)
- how should they physically manage their inventory (LIFO, FIFO, JIT)?

Advantages of holding stock of inputs and completed goods	Disadvantages of holding stock of inputs and completed goods
• Able to meet customer demand, increasing revenue and market share • Stocks of inputs, and completed goods, can reduce lead times to fill customer orders • Stock in distribution centres enables efficient delivery to customers and consistency of supply • Cheaper prices may be obtained from purchasing inputs in bulk from suppliers (economies of scale) reducing production cost • Stock of inputs means production is less exposed to disruption in the supply chain (i.e if a supplier has a difficulty, or natural disaster or pandemic disruption)	• Increased cash tied up in stock of inputs and completed goods, impairing cash flow • Increased costs for storage, insurance and premises with increased risk of theft • More exposed to a change in market tastes and preferences and may be left with stock that can only be sold at lower prices or not at all (called obsolescence)

Changes to processes (transformed and transforming resources)
The operations manager must decide a strategy for the **physical management of stock** of inputs, and completed goods, in the factory and in the supply chain.

Those choices for strategy in relation to the physical management of inventory are:

- **LIFO** - last in first out, where the last produced LEGO set is the first out of the distribution centre to customers, or where Woolworths places the last received tomatoes from the distribution centre on the top of the tomato display for customer purchase
- **FIFO** - first in first out, where the earliest produced (first) LEGO set is the first out of the distribution centre to customers, or where Woolworths changes the tomato product display, to place the earliest received tomatoes (the oldest ones) on the top of the display, and places the newly received tomatoes on the bottom of the display. FIFO should be used where you are dealing with perishable stock, whereas LIFO could be used where the stock does not perish (i.e. a box of matches). Most businesses would use FIFO as their physical inventory management method
- **JIT** - just in time, where inputs are available at the factory just in time to be used in the production process, and finished goods are completed just in time for supply to the distribution channel. This strategy is good in that it minimises investment by the business in stock, and minimises cost for storage of inventory, however exposes the business to difficulty if there is any interruption in the supply chain - as occurred when an Icelandic volcano exploded in 2010 (Mount Eyjafjallajokull) and factories across the world stopped as they ran out of stock of parts used in production processes from car manufacture to fine dining restaurants who operated on JIT inputs in their supply chain which were disrupted as planes could not fly as a result of ash levels in the atmosphere. Of course, the COVID 19 pandemic in 2020 and 2021 has a very diverse and extensive range of negative impacts on availability on global supply chains exposing businesses with a JIT approach to pausing production for lack of input components.

FIFO
A physical inventory management method where the stock received first from suppliers is the first stock sold to customers.

LIFO
A physical inventory management method where the stock received last from suppliers is the first stock sold to customers.

Link L90

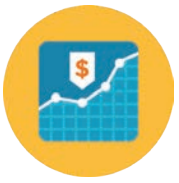
CAUTION
LIFO AND FIFO ARE ALSO INVENTORY VALUATION METHODS
Students need to be careful in relation to FIFO and LIFO, as they operate both as strategies for:

- **physical stock management** for operations management (i.e. moving products in product display so that the oldest products are purchased first by customers), and also
- **inventory valuation strategies** (important for finance addressed in the finance topic).

HSC questions have been asked in the past about both of these different impacts of LIFO and FIFO and the financial aspect is addressed in finance strategies.

FIFO LIFO
note that the method of valuation of inventory is not a choice for businesses. In Australia in accordance with the accounting standards a business **must use the FIFO method** for inventory valuation. (AASB 102)

Metrics to determine if strategy is working
- Reduction in inventory costs (inventory, storage, security, insurance)
  Reduction in inventory outages (where there is no stock to fill customer orders)
- Reduction in inventory obsolescence costs
- Reduction in production time lost as a result of inputs not being available when required



Syllabus
operations strategies

overcoming resistance to change – financial costs, purchasing new equipment, redundancy payments, retraining, reorganising plant layout, inertia

Link
L91

Operations Strategy
Overcoming resistance to change

Problem that strategy addresses/influences causing problem
This strategy is not so much a strategy in itself, but is something that will need to be considered when any of the **other strategies** are being implemented by the operations manager.

Remember the overall context of operations and why strategies are needed:

- an operations manager has processes running
- something changes in the internal (strengths & weaknesses) or external environment (opportunities & threats) which requires a response from the operations manager
- in selecting a strategy to respond (i.e. outsourcing), changes will be made to either transformed resources (materials, information and customers) or transforming resources (facilities and human resources) or transformation processes
- and here it is -> **RESISTANCE** will be encountered from people in the business in making those changes
- if the change is not managed properly, the change will not succeed as a result of resistance to the change and the benefits that were to be obtained will not be obtained

So, moral of the story, managing resistance to change is a very important competency and skill for operations managers, which must be practiced when changes are being made as a result of the implementation of any of the operations strategies. It is extraordinary, however, that the research (Kotter, 1996, repeated by McKinsey) indicates that 70% of change programs fail - that is the business and the operations manager has invested time, effort and money to make a change in the business and it was resisted by the people in the business and did not work. This is an enormous failure rate.

WHY DO PEOPLE RESIST CHANGES IN OPERATIONS PROCESSES AND RESOURCES?
The syllabus indicates that resistance to change in the context of operations arises from:

- **financial costs:** this will include the cost of new equipment, redundancy payments and retraining expenses
- **purchasing new equipment:** this will take time to select the best new equipment, and disruption when it is installed, and encountering teething problems
- **reorganising plant layout:** if changes are required to the layout and processes within the plant, this will take time and effort to plan, and will be a disruption to production during the process of installation and commissioning
- if the above wasn't enough, **inertia** is where the people in the operations function resist the change simply because human beings psychologically do not particularly like change.

This is a powerful list of reasons, and management should use a change management model to plan and execute the change in a manner which will increase the chances of success of the change, and the buy in of the involved personnel.

FIGURE 6.4: Overcoming resistance to change

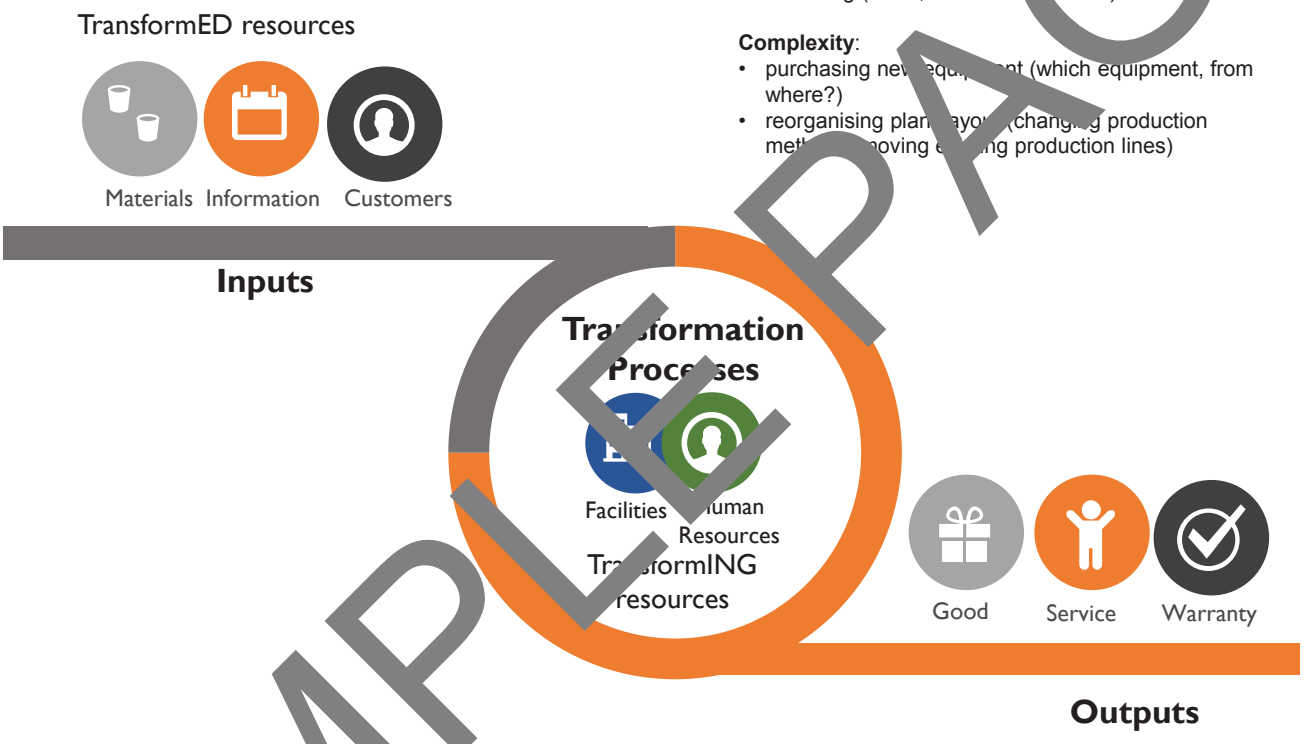
OPERATIONS STRATEGIES

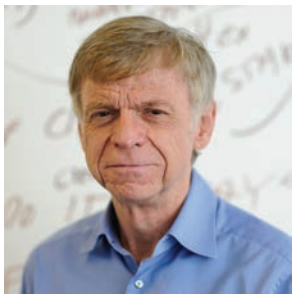
STRATEGIES TO RESPOND TO INFLUENCES ON OPERATIONS

When implementing any strategy in operatio
resistance will be encountered because of **ine** nd:

Cost issues:
- financial costs of equipmer
- redundancy payment cost
- retraining (costs, loss of sk /status)

Complexity:
- purchasing ne t (which equipment, from where?)
- reorganising plan ayo (chang g production met oving g production lines)





JOHN KOTTER'S CHANGE MANAGEMENT MODEL

In order to maximise the chance of success of the change, managers can use the research of John Kotter, a Harvard Business School professor who researched successful, and unsuccessful, change attempts in business, and then documented the eight step model which was followed by the successful, and absent in the unsuccessful. The model is very famous, widely used in business, and is below:

Step	Description
Step 1	**Establish a sense of urgency.** Using evidence, demonstrate to workers that change is not optional having regard to the strengths, weaknesses, opportunities and threats being faced by the business. Also referred to as establishing a burning platform.
Step 2	**Form a guiding coalition.** (group of people to lead the change) This team will work together, often cross functionally, to lead the change. Care needs to be given to the people on the group, to ensure leverage of social networks and trust within the organisation. It is not uncommon for leading opponents to be appointed to this group.
Step 3	**Create a vision.** The group leading the change needs to develop, and continually share widely, a clear, concise and communicable vision for the change that encompasses the burning platform and the desired future state.
Step 4	**Communicate the vision.** This step is often insufficiently done in change in business. It requires widespread, continuous and consistent communication of the vision.
Step 5	**Empower individuals and teams to take action.** Having communicated the vision, it is important to then empower people to be able to fulfill that vision - to meet the challenge and change in the desired way. This step not only achieves the change, but also creates greater buy-in as the success is achieved by those outside the guiding coalition for the change project.
Step 6	**Generate and celebrate early wins.** With empowered action, aligned with the vision, the guiding coalition need to foster, and then recognise and publish/celebrate, these early wins. Not only does this encourage continuing change amongst rewarded teams, it signals importance and alignment to the rest of the organisation which will encourage more widespread engagement.
Step 7	**Sustain acceleration.** With change emerging, those modified behaviours and processes need to be documented within internal processes and consolidated to embed the change, and to continue with further change initiatives in order to achieve the vision. In an operations context, this may require changes to everything from quality assurance manuals, signage, induction programs and reward systems. As these changes occur, again consistent, congruent communications is required.
Step 8	**Institutionalise the changes.** Continue to widely communicate the successes that have been achieved, and how they contribute to achieving the vision. Embed the change in every aspect of how the business and its processes operate. Values and standards within the business shift to be aligned with and reflect the vision in an observable, not aspirational sense.

Link L93

The impact of poor change management - a global international merger falls apart

Walter Chrysler built the Chrysler Corporation in 1925 growing it into one of Detroit's big three automakers becoming one of the founding fathers of the early automobile. Gottlieb Daimler, one of the first pioneers of the internal combustible engine began the company in the 1890s which later merged with the Benz company in 1926. Daimler-Benz was the main German automaker and noted luxury car throughout the twentieth century.

In May of 1998 Chrysler and Daimler-Benz merged to become DaimlerChrysler AG. The merger was designed to create a new giant automaker that could stretch across Europe and the Americas with a projected annual sale of over $150 Billion. The belief was that this combination would address the full consumer auto market and capitalize on economies of scale maximizing German efficiency & American innovation.

The merger kicked off with rough beginnings with significant cultural differences. Chrysler had a reputation as an agile, action-oriented Company with a flat management hierarchy. On the opposite, Daimler was renowned for being methodical, analytical, and had a management structure that was vertically organized. Compounding these differences was that the merger was discovered to be a takeover where Chrysler didn't have a board seat of the new corporation and had reduced influence on how to become one company (Lewis, 2016). Quickly the push was to adopt Daimler's management, standard operations, and culture instead of creating a new work model.

Over the following years, organizational disaster ensued with leadership misalignment. Leadership infighting became the norm followed by multiple reorganizations and layoffs which led to industry declared poor designs and lagging manufacturing practices. Eventually, this led to the board to run the companies as separate entities in order to not negatively degrade the Daimler-Benz brand.

By 2007 the gas crisis had swung to full effect and Chrysler could not survive. With a prime excuse, Daimler, sold Chrysler to Cerberus Capital Management to bring it back to life while Daimler could wash its hands-free of one of the greatest change management failures.

While on a massive scale, this takeover demonstrates the same behaviors of many change management failures. Ignoring environmental differences, not engaging the stakeholders of who will be impacted, and forcing behavioral changes upon an embedded organizational culture. While the fact that this was a corporate takeover cannot have been changed, the execution of their change management could have made this a success rather than an abject disaster.

Source: https://www.consulting.com/newsletter/daimler-chrysler-change-management-experience/

DAIMLERCHRYSLER

Syllabus
operations strategies

global factors – global sourcing, economies of scale, scanning and learning, research and development

Operations Strategy

Global factors

Problem that strategy addresses/influences causing problem

Before the last syllabus rewrite by NESA (then called BOSTES), the Business Studies course actually had five topics - the four key business functions and a fifth topic called Global. With the new syllabus written in June 2010, the material from the Global topic was split apart into each of the four key business functions. Indeed, if you have a look at the current syllabus, in strategies in each of the four key business functions you will see that there is a component of global added at the end of strategies in each key business function operations that is here in "global factors". In marketing, you will see it as "global marketing", in finance, "global financial management" and finally in HR in "global – costs, skills, supply".

What is significant is that there is often overlap between these and the other strategies - for example, if one outsources a process to the Philippines it is both outsourcing **AND** global sourcing. Moral of the story, do not expect these global strategies to be somehow isolated from the others.

The influences the global factors respond to include globalisation, technology, outsourcing, quality expectations and cost based competition.

Description of strategy

Global factors is not actually a strategy, but a collection of four strategies that relate to opportunities in the global external environment to improve operations' contribution to the business. The strategies within global factors are:

- global sourcing,
- economies of scale,
- scanning and learning, and
- research and development

Link
L95

Global sourcing

Before globalisation, an operations manager would typically source inputs locally - the furniture maker would buy timber, handles, paint and other transformed resources locally. It was too difficult, and too expensive to even know that there were options available from other suppliers.

Global sourcing
sourcing transformed resources (materials or partly completed or finished goods via offshoring, international outsourcing, in order to reduce costs and increase quality.

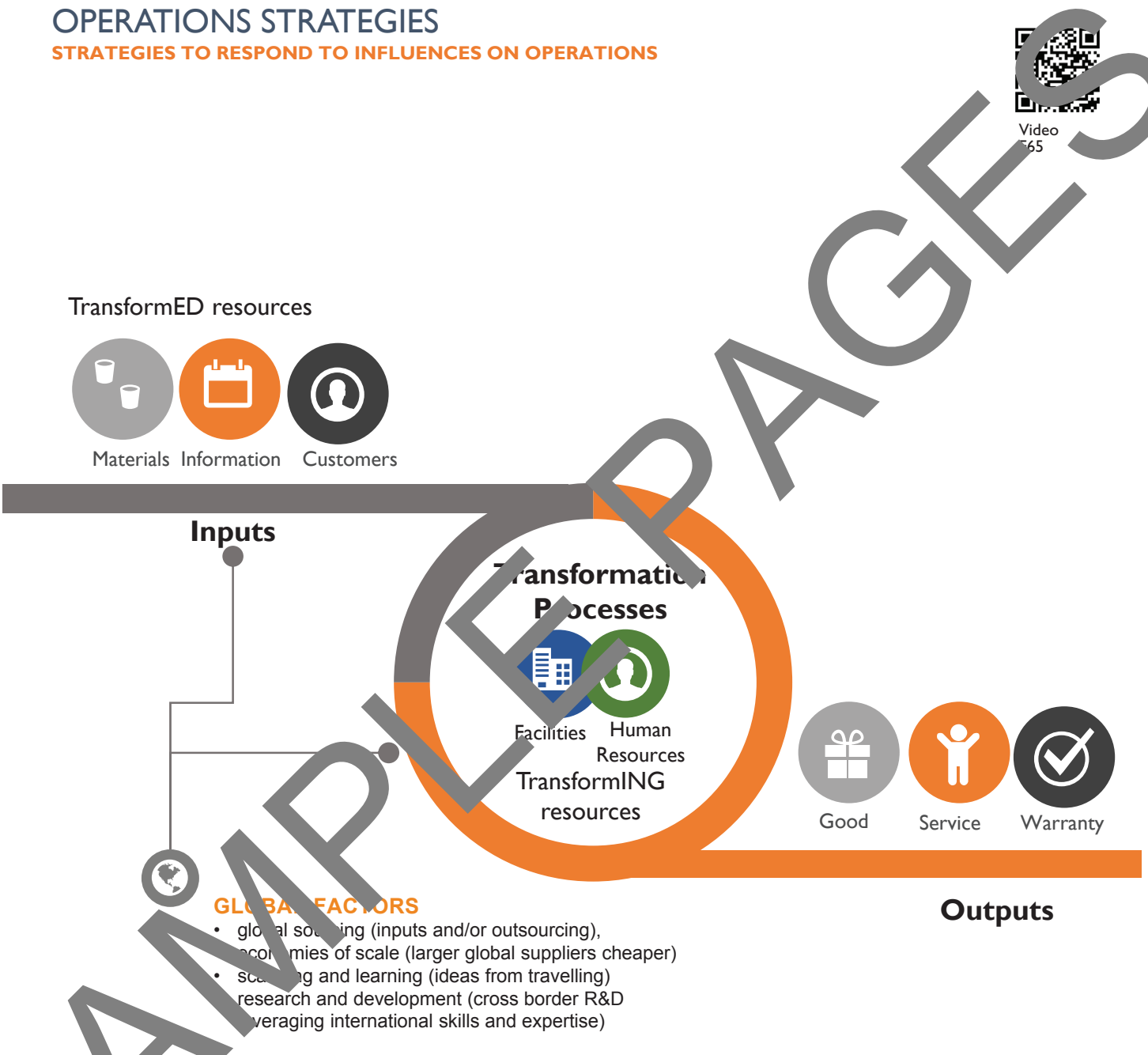
With increased transportation, technology, and communication, it has increasingly become a global market for the operations manager, able to source a very wide variety of components internationally, often at lower prices. Whereas before globalisation, an operations manager would only have very local supplier relationships to manage, in a globalised business environment, the operations manager must actively be aware of, and leverage, opportunities for global sourcing in order to lower production costs and increase quality. Global sourcing can include physical inputs, services, and also include offshoring and outsourcing business activities previously conducted within Australia by businesses.

Economies of scale

Economies of scale
the reduction in average cost of production which occurs as volume of production increases within a business.

Economies of scale is the principle that as the volume of production (or purchasing of inputs) increases, then the average cost of production decreases. Consider if LEGO only made one LEGO set. The average cost of production would be very high, and they would not be able to purchase the very automated equipment and robotics that they use. As volume increases, and LEGO makes millions of bricks per day, they can purchase and use advanced equipment that reduces the average cost of production.

FIGURE 6.5: GLOBAL OPERATIONS STRATEGY



In the context of globalisation and operations, this means two things:

- the operations manager can purchase inputs from businesses that are producing large, global scale of the components, which decreases input costs
- the business may have found global markets for its products, meaning that scale increases in the business (as the volume of production increases), and the operations manager can now purchase supplies in larger quantities (obtaining supplier discounts) and also purchase higher volume, lower average cost, manufacturing equipment

Both of these implications will require change in the operations process, in terms of the identification and management of supplier relationships and also in relation to the purchase of new machinery, and changes within the operations environment of physical plant layout which will have to be managed with a change management process.

Scanning and learning

Scanning and learning the operations manager, when moving outside the business, scans the external environment to learn how other businesses are addressing the same or similar issues as the operations manager may be facing within their context. The objective is to use scanning and learning to change some operations process in order to achieve an increase in one or more of the operations performance objectives.

In a globalised world, with cheap travel and communications technology, and the internet, operations managers are much better placed to be able to see and consider operations processes in the same industry, or similar industries, to get ideas on performance improvement.

For example, Australian food retailers (Woolworths and Coles) regularly travel to the United States, the UK and Europe to look at how operations processes are managed in similar business there. They consider how distribution is managed, what change management programs are happening, changes to checkout processes (for example self checkout was in the US around 10 years prior to introduction to Australia). This enables business to get ideas about the future shape of their market.

Scanning and learning is also done in dissimilar business and an idea can be sparked. For example, a plastics manufacturer at a conference in the US happened to see an exhibit of a cake making machine, which solved a problem he was currently having in a manufacturing process. Upon return to Australia, he fashioned a new machine using the approach he had seen, which in turn led to securing a multi million dollar government contract which could then be delivered within the cost and quality parameters.

Link
L97

The language of scanning simply means looking - keeping one's eye out. Indeed, if you are an operations manager in another business whenever you stay in a hotel you cannot help yourself looking at the operations processes - how did check in work, how many people do they have around, how do they manage breakfast, what do they do differently to your hotel etc. Good operations managers are always learning when they are out and about!

Research and development

Even before globalisation, operations managers would invest significant funds in research and development efforts, to improve quality, reduce cost, and to support new product design by marketing. This is in fact covered within the new product design and development operations strategy in the syllabus.

So, what is new here, in the global factors, is that that research and development effort can now be done in a globalised, interconnected world. So, LEGO, in doing research and development can connect with universities and research being conducted in leading universities in the United States, Europe, Japan, Israel or whichever location around the world has the best research work going on. Their efforts are much more productive in the research and development area as a result of globalisation. The other thing that globalisation makes easier is working together with others, in joint venture, in conducting research and development, the results of which are then shared among the members of the research joint venture. For example, in spending a billion Danish Kroner on research and development of a new plastic substitute for brick production, LEGO is actively collaborating globally with other businesses and research institutions around the world.

Changes to processes (transformed and transforming resources)
Where any of the four global strategies are used, that is global sourcing, economies of scale, scanning and learning or research and development there will necessarily be changes to transformed and transforming resources. In all cases the objective of the changes to transformed and transforming resources is to reduce cost, increase quality, or improve other metrics that relate to the strategic role of operations in the business.

For some businesses, outsourcing production to other countries (global sourcing) has resulted in significant reduction in average cost of production, however has adverse employment and brand implications as a number of workers are made redundant and production facilities close which can have very large adverse impacts on the local economy. This occurred in Australia in relation to labour intensive industries including the production of textiles, clothing and footwear and passenger motor vehicles as a result of globalisation and the response of operations managers to the opportunities and threats presented by a global business environment.

Metrics to determine if strategy is working
- Reduction in average cost of production
- Increase in quality of good or service produced
- Access to technology
- Improvement in processes as a result of observing similar or different business around the world resulting in decreases in average production cost, increase in quality, or new product or service development in conjunction with marketing
- Increase in return on capital employed in the business as a result of selling facilities that are no longer required
- Reduction in waste as a result of using techniques identified through scanning and learning processes or through research and development activities.

Operations strategies
are approaches to addressing **opportunities** or **threats** to the operations processes presented by **influences**. Operations strategies will result in changes to transformed resources and/or transforming resources and transformation processes in the business.

Performance objectives
Set performance objectives (and control against them) for operations processes – quality, speed, dependability, flexibility (of operations processes), customisation (of product) and cost

New product or service design and development
Operations manager can work with marketing to change the design of the product to address difficulties encountered in operations with the current product design (wastage, failure rates) or to assist develop new or improved products to address problems

Supply chain management
Operations manager works to reduce cost and increase efficiencies with
- logistics (coordinating and moving resources from one location to storage and desired destination)
- e-commerce (using the internet for ordering of inputs and selling of outputs)
- global sourcing (purchasing transformed resources from around the world from most cost effective suppliers, offshoring and/or outsourcing operations processes)

Outsourcing
Operations manager contracts third party business to take over performance of a process that was previously performed by operations within the business. Advantages include cost reduction, increased flexibility, improved company focus and access to specialist skills. Disadvantages include loss of jobs within the business and redundancy costs, quality issues, customer resistance, ethical concerns and security for intellectual property and data.

Technology
Using leading edge (advanced, novel, more expensive, less reliable) or established (customary, common) technology in transforming resources and transforming resources to increase efficiency and quality.

Inventory management (physical management of stock)
- advantages and disadvantages of holding stock (serve customers, cost, obsolescence),
- LIFO (last-in-first-out) goods received last at the business are sold first to customers)
- FIFO (first-in-first-out) goods received first at the business are sold first to customers - must be used for perishable products)
- JIT (just-in-time: inputs and finished goods are received just in time)

Quality management
- control (inspections against standard target measures and corrective action)
- assurance (detailed documented processes for all operations processes to reduce defects)
- improvement (continuous improvement - improving quality and working to continue to reduce the level of defects in operations processes - total quality management)

Overcoming resistance to change
Operations manager should use a change management approach to address resistance on the basis of financial costs, purchasing new equipment, redundancy payments, retraining, reorganising plant layout and inertia.

Global factors
Operations manager can take advantage of global sourcing, economies of scale (increase volume in global markets), scanning and learning and research and development.

OPERATIONS STRATEGIES

1. Outline the best method for managing the stock of cheese in a supermarket.
2. Discuss outsourcing the printing of packaging as an operations strategy for a food manufacturer.
3. How can just in time inventory management adversely impact a business?
4. Outline three different performance objectives a clothing manufacturer could set in operations to improve performance.
5. Explain how global sourcing and economies of scale can impact operations.
6. Why might operations managers and their staff be resistant to change?
7. How can e-commerce be used to increase efficiency in operations processes?
8. Explain how supply chain management can impact cost and efficiency in a business.
9. Distinguish between logistics and distribution centres.
10. How could scanning and learning be used by the operations manager at a gym to improve performance?
11. Outline the role of operations in new product or service design and development.
12. Distinguish between quality control, quality assurance and continuous improvement as quality management strategies.
13. Discuss leading edge technology as a strategy to improve operations performance.
14. How could an operations manager overcome resistance to change in implementing new transforming resources?

Chapter C6

Answers
Videos
Revision
HSC Analysis

PAST HSC EXAM QUESTIONS

Locate the last five years' HSC exams on NESA's website.

1. Identify each multiple choice question, and short answer question, that relates to the Operations Strategies in each paper. Make a list.
2. Answer the identified multiple choice questions, and then the short answer questions. Mark your multiple choice and short answer questions against the marking guidelines provided by NESA for each of those exam papers (also published on the NESA website).
3. For any content which you are unsure of, review the material in the chapter, or ask your teacher to close any knowledge gaps.
4. Tactically consider the types of questions which were asked in multiple choice and short answer for the content - what areas are commonly addressed, how are questions structured? Write 4 multiple choice questions and 4 short answer questions for the Operations Strategies using the same language, constructs and approach as past HSC questions and share with another student.

Extension
Do the same approach for all HSC exams commencing in 2012 (which was the first year the syllabus was examined)