Aligning operations and scm with other functional strategies

1. Discuss the importance of aligning operations and SCM with other functional strategies (e. g. Design, Marketing and Finance) in creating a viable business strategy.

Skinner gives us a broad picture of how we look at the business as a whole moving away from sub optimization which he has criticised it and making choices that are sensible and how will compete on the market. Skinner's work introduced the importance of the concept of trade-offs and the need to align the delivery systems to what market really require therefore the sub-functional trade-off choices are strategically aligned with key manufacturing tasks.

Hill come with the concept of OWC and qualifying criteria and highlights the fact that focus should be on what important to the customer and a system require a common objective and everyone on the system is focus on common objective.

Rumack Pharmaceuticals is an example of marketing strategy where they produce lots of variants of that ingredient, different pills, different potions, different bottle sizes, different packages because they little way of exploiting market opportunity. The cost of manufacturing is small compare to the value of the product because of the paten and the manufacturing was bottlenecked in this situation. In this case manufacturing means to be subordinate to the opportunity of the business and the nature of the product should be supporting the market opportunity.

They end up with capacity problems and long setup times as they did not understood the implications of higher variety on that capacity. Higher variety

means to go either for large batches but also inventory or smaller batches and where capacity is more absorbed thru setup.

Tyndall B is another example where marketing influenced where company went. Manufacturing invested a lot of effort in chair and their process choice was to go for standard high volume but the demand was more than they would coop with. So marketing made them look at case goods but case goods would not give them so much return. They were not good in manufacturing producing case goods so the profits was declining. But why they did not invested more in tables and chairs rather than spending on galleries where marketing driven to produce a full range of products causing variety to go up and profits down. They was not paying attention of what manufacturing is capable of delivering. They weren’t aligned. Compare to Rumack there is no paten but there is capability which can be exploited. For both companies idea of alignment strategy was to be for volume and variety. Referring to Babcock Wilcox case study they mix up trade-offs choices because what is good for high volume is not good for low volume and choices needs to be aligned.

Regarding Finance operation strategy from Skinner point of view was all about avoiding local cost and local efficiency. Focus operations on delivery, speed, price and everyone work together to align themselves. Also he argue that quite often in factories every department try to optimise local cost and efficiency which encourage push and pull thinking. Local optimisation is not aligning with the system and we can see evidence of that at Rumack Pharmaceutical where basically in manufacturing you need to be align with the strategy that’s being adopted which is all introducing new products

resulting in new product capacity which should not happen as will require more capacity in the system. Going for higher variety will put more pressure on capacity because of the setups. Tyndall they had really good arrangements in terms of producing tables and chair colonial style lots of demand for them but they won’t exploit it because they said that there is no capacity for that so they went for case goods. Problem was that case goods was providing throughput but no revenue. They were doing everything rather then bringing throughput per bottleneck/minute. There was no alignment to improve throughput per limiting factor or to understand what constraints are and if is a market or resource constraint.

Coming to Design from an operation point of view we would like standardisation. From market point of view they want customization. So product have to be standardised as much as we can and have the ability to customise later in other words to postpone it and reduce variability and introduce the buffering options as late as possible. Postponement is used to achieve customisation and efficiency within one operating system.

2 Critically discuss how developing operational excellence can support and lead a business strategy.

Porter argue that operational effectiveness is not a strategy and also Lean and TOC are not strategies because they can be copied. Lean, TQM, TOC are all about managing flow in organisation with the idea of cost, push and pull. The main question is how can we improve performance and rid away of trade-offs or how can we break them.

Slack et al. (2004) argue that there are five operations performance objectives: cost, quality, speed, dependability and flexibility. The law of trade-offs states that no single plant can provide high performance in all dimensions simultaneously. We would expect to find support for this law if all competitors use similar technologies and are operating near the asset frontier. If all plants are far from the asset frontier, however, one plant can simultaneously provide higher levels of product quality, flexibility, and delivery at a lower manufactured cost if, through betterment, its management approaches create an operating frontier which is superior to its competitors. The theory of performance frontiers clarifies the impacts that assets and operating practices have on competitive advantage. However, the resource-based view took this thinking a step further through positing that competitive advantage can be sustained only if the capabilities creating the advantage are supported by resources that are not easily duplicated by competitors. Both the asset and the operating frontier can be the source of competitive advantage but they are based on resources of different nature.

Armed with an understanding of a firm’s operating position relative to both competitors and the performance frontiers, strategic planners are better equipped to evaluate and plan manufacturing initiatives. For example, a quality improvement initiative may well be more attractive than a new technology initiative to a firm that considers itself far from its asset frontier.

Can operation not just follow business strategy and lead business strategy? Hayes and Wheelwright stage 4 evidence that. In 80s quality and lean was a paradigm shift. Operation capability can actually win the orders. Porter(96) argue that Japanese don’t have a strategy as they have operational

effectiveness which wins on short term but actually Toyota production system is still difficult to copy on long term. Thus, the process of strategy development should be based on a sound understanding of current operational capabilities and an analysis of how these could be developed in the future. This can then provide the basis for decisions about which markets are likely to be the best in which to deploy current and future capabilities, which competitors are likely to be most vulnerable and how attacks from competitors might best be countered (Hayes et al., 2005).

organization fits with the resource-based view (RBV) . toc lean etc

3 Practically evaluate the means of enabling pull (e. g. production, project and distribution) referring to the design of a specific planning and control system.

Lead time requirements of the customers tend to drive the OPP towards the customer whereas product variability and demand uncertainty drive it away from customer. The more product variables, less likely it is economically sustainable to keep every variable in stock. Therefore, often large and steady volume products are kept in stock whereas products with a lot of variance are either assembled- or made-to order. Thus, companies have often multiple OPPs depending on the product characteristics.

MTS method of production reduces before demand is realise or before orders come in. This are some goods or builds based on capacity or forecast which more often are greater than current demand. This is the reason that stocks are made only to be stored or sold at some future date.

MTO builds according to actual demand. This system wont produce stock as all outputs are consumed or sold immediately. MTO is a pull system since every station doesn’t start processing unless pull by demand or next process. Therefore we can talk about a pull line or JIT line. This is a type of MTO system in which all working stations are strictly produce according to the takt time. JIT is also known as a lean system or Kanban system. Kanban system control the flow thru a form of electronic or physical signal which tell to start producing or deliver the next part. In the case of MTO the overall approach is termed Drum – Buffer – Rope (DBR).

Pull means small batches and we try get as required by the system. JLR is a pull system because everyone is working at the pace of the system. They relishing car or raw material into the system at the plant rate and everyone is working at the management prescribed rate called takt time.

Ohno didn’t had physical restriction of space but he had this rule to do something only if you have a Kanban instruction, the signal. Fords moving assembly line physical space was the control, the signal. Kanban was the idea of inventory in the system and TOC BM was another signal: what do I do next? When do I expedite? When do I interfere with the process? Ford had pretty much a lean system that why Ohno quoted from fords book. There is a more complex environment but the principles are the same. “ planning of stock or raw materials or finished stock in excess is a waste”(ford 1926, p99). Ford understood the importance of the flow. He forced everyone to work on the same pace and had the idea of flow line. Ford was applying principles of flow to an environment where it was not so much variety.

Ohno had variety and apply principles of flow thru JIT and C. I. linked to law of variability and variability buffering and theory Theory of Swift and Even Flow. He put a lot of effort in minimizing the fluctuations, stabilizing the demand and reduce variability. Ford didn't had Jidoka but he had teams which responded fast. C. I. challenged the traditional trade-offs model. Batch size reduction was the key for lean (Schronburger 1982). Right from the beginning was all about how to reduce batch quantities and setup time which is interpreted like a source of variability in the process. Batches will be reduced till will create a bottleneck again. Reducing setup times will reduce variability. Kanban represents inventory but also time and they are interrelated. In JLR they have a fast response and they doing first order which is coming compare to buffer management. In the case of MTO the overall approach is termed Drum – Buffer – Rope (DBR) introduced by Goldratt(1990) to reduce variation and improve activity. In the next case study SDBR was used with time being the rope and drum the market demand. The drum previously was the roasting and char grill departments which were considered constraints.

In the case of Freshcut Foods when it was to manage the flow they was releasing work in the system to early and cause quality issues and wastages. They had late demands but they were uncertain if they have the capacity to produce. So they needed a system to tell them if they have capacity to take the orders. Finally a system which can tell them how to prioritise what they should produce next and when to release the working to the system was put in practice. If is in the red zone they need to expedite if the red zone is

growing means that they have a problem and they need to escalate it.. So Kanban is like an automatic system where everyone knows how to use it.

4 Critically evaluate the circumstances best suited to Kanban and Buffer Management pull systems.

Benton (2014, 2) describe that the main objective of manufacturing planning and control function: “ is to ensure that the desired products are manufactured at the right time, in the right quantities, and meeting quality specifications in the most cost-effective manner”.

To illustrate the significance of BM in TOC, the functions of BM in TOC is compared with Kanban in TPS. Firstly, both BM and Kanban prioritise work orders albeit with different assumptions and mechanisms. For Kanban, there is a pre-planned quantity or WIP in buffers designed in between every work center. In addition, there is also a specific routing sequences or dedicated production line required for each product, which results in rigidity in responding to market requirements. In BM however, the priority of work is triggered by the percentage buffer penetration of ‘ completion time’. As it is time-based, it allows each work center to have flexibility to react (or catch-up with time) to disruptions when Murphy strikes. Other than the function of prioritisation, both BM and Kanban have their own mechanism to monitor and control their production throughput. In Kanban, the deployment of distributed buffers in between work centers enables problems to be immediately surfaced and dealt without passing the problem to the subsequent work centers (Ohno, 1989: 30). In TOC, aggregated buffer is deployed and thus has a certain ‘ delay’ as problems are only ‘ escalated’

and ‘ expedited’ for attention after entering into the ‘ Red’ zone of BM. However, as highlighted by Stratton and Knight (2010), though Kanban is more sensitive, the problems highlighted are mainly related to quality and process, whereas in BM, it also includes issues such as product volume and mix changes. In spite of these differences, both BM and Kanban advocates continuous improvement. This is seen in the final steps of both TPS: ‘ Pursue Perfection’ (Womack and Jones, 1996: 90) and TOC: not to allow inertia to cause a system’s constraint (Goldratt and Cox, 2004: 307). In Kanban, continuous improvement is encouraged through reducing inventory to expose problems which then can be targeted; whereas in BM, causes of delay (‘ Red’ zone penetration) are being targeted.

5. Critically evaluate the use of MTA and dynamic buffer management as a means of practically enabling a pull distribution system.

VMI say communicate demand and stock levels thru the system and replenish them on the regular basis. Replenish on the stock target MTA is similar with VMI but give a priority code in terms of buffer penetration.

DBM is less common as the buffer status signals whether the target level is too large or too small and this can be used to signal automatic adjustments. By monitoring how we are performing in terms of green, yellow and red we can determine whether we need to increase or decrease the stock target For example if we are in the green zone reduce stock target and if is in the red zone increase the stock target. It is the means of getting the system to work at the pace of the consumption where drum is the consumer so is signalling

down to distribution system what we need to replenish and how fast which resulting in an idea of pull.

In the case of Frozen Meals they replenish based on consumption on the 3 rd party distributer so is very straight forward till the stock time. MTA will say if there are multiple orders in the system will give an indication what the priority is. If the consumption was high and replenishing the full quantity in the distribution depot will be less stock. This stock will have to be replenish very quickly so VMI will communicate consumption across the whole supply normally replenishing it within a day or couple of days. So all the demand in the distribution depot will go in the red zone. So VMI says communicate demand and stock level always thru the system and replenishing to the stock target.

The problem come when Frozen Meals tried to replenish and couldn’t because the warehouse was full. Analysing demands and orders there is obviously that demands are pretty stable and orders are more volatile in demand represented by the consumption of consumer in Weatherspoon. This difference was caused by 3 rd party distributer which has his own warehouse and has more stock that he needed and fluctuating and planning orders ad hoc. Because placing order in ad hoc manors caused Frozen Meals to ask for 7 days delay of supply. The ordering system from 3 rd party distributer was ad hoc. There was a stock target so why not just replenish this stock automatically communicate down the supply chain what’s required.

The solution was to go for VMI rather than 3 rd party distributer placing orders on Frozen Meals. A pull system was created when the supplier is responsible for maintaining agreed target stock levels.

6 Discuss the strategic importance of postponement through configuration, packaging and distribution, making reference to the concept of an Order Penetration Point (OPP).

In the first part I was discussing about focus factory and separating different orders. This can be also separate by postponing which means that will be 2 strategies. one at the first part of the supply chain which is looking to stabilise and standardise and a different strategy at the later stages with a decupling point. How can we design the supply chain to postpone the impact of variation and uncertainty? This can be done in the manufacturing process but distribution side as well.

Skinner strategy is about how we take the system perspective and how we meet the needs of the market reducing variability in the process. With TQM the reason why ends up with variability in the process is that no-one consider how to reduce variation. This is what SPC done: to focus on variation which will bring the cost down. Unless will do that then the variability tend to be there which make the trade-off choices about quality and cost. So all of them are about reducing variability.

Agility is about dealing with demand uncertainty and demand variability. Stability is associated with lean and uncertainty demand with agility. This table is similar with line vs jobbing looking for two extremes such as delivery

speed and low cost. Skinner will argue that this should be two different factories because the owc are different

Fisher model talking in the idea of Skinner operation trade-offs in terms of a supply chain. If we have variability in demand we need to buffer like any variation. The ideal efficient model will have flow, minimum variation in demand and process, minimum buffering. In contrast the responsive model demand varies and also product changes in the same time and we got demand uncertainty and we ll buffer with inventory capacity.

Talking about lean and agile supply viewed in terms of dependency, fluctuation, buffer capacity and buffer inventory we can refer to law of variability, law of variability buffering, law of variability pooling.

Talking about service it represents the customer input which can be put on MTS which can be a date, a forecast. MTA say that the priority of the order all depends on what stock level is, if the stock level goes down rapidly the priority goes up, if the stock level is not priority (demand is low) the priority goes down.

In Lego case they was doing bad because they grow over the years resulting in too much variety as increasing number of elements, to many colours and they diversified to do other things(low of focus)

As a start-up they cut the number of colours and elements (no elements to be unique to one product stated by the law of variability pooling). In manufacturing they segmented some of the machines as all machines should be able to do everything. They organised and streamlined how they

going to manufacture elements. They rationalized the suppliers which is a lean thing. The distribution changed to a pull system and the they supply to one distribution centre in Europe in 3-4 days which is consider closer to the customer. In terms of packaging machines and capacity. By reducing the range of colours and elements setup process variability all this helped to reduce variation and uncertainty. Buffering packaging they postponed rather than holding stock in packets they opted for a centralized distribution centre and more frequent distributions. All this system was about flow.

“ Production is lean if is accomplished with minimal waste due to unneeded operations, inefficient operations, or excessive buffering in operations.” Production is agile if it efficiently changes operating states in response to uncertain and changing demands placed upon it” (Narasimban et al.., 2006)

References

Benton, W. C. Jr. 2014. Supply Chain Focused Manufacturing Planning and Control. Stamford, Connecticut: Cengage Learning