OPERATIONS MANAGEMENT

Research Analysis. Lean Operations Management (OM)

Analysis Report:
Case 2: Soap Luxury Brand Company (Manufacturing Company) Vs Operations Management (Supply & Demand) Dilemma

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CASE-SCENARIO.
TO BULLWHIP, OR NOT TO BULLWHIP – That Is The Question!

Research Report Analysis Case-Scenario & concerning Luxury Brand Soap Manufacturing *("The Company"),* currently deemed and reported as enjoying a stable and predictable demand throughout the year, with minimal fluctuations (plus a long product shelf life), now being faced with the dilemma of deciding as to whether to:
(i) Focus on producing inventory only when it's needed (Referred to as Decision A**) or**
(ii) Maintaining a large inventory buffer, to ensure that goods are always available, when needed (Referred to as Decision B**).**

INTRODUCTION

The Operations Management (OM) topic, that one has chosen for the purpose of this research paper and analysis is: Lean Operations, as Lean Operations forms an important philosophy and integral part in the discipline area of Operations Management and in particular, in approaching how decisions are made, towards driving 'Customer Value', as with Lean Operations, one only needs to reduce the operational process flow, in order to be able to identify the main issues at hand and more importantly, just about for any case scenario example being analysed, due to the concept of a 'Lean Synchronisation Approach' being applied to that of any, Operations Management situation.

Accordingly, one is also able to deduce that Lean Operations is clearly at the heart of all Operations Management issues & decisions, due to the aspect of 'Customer Value' being the primary determinant for all the desired Operations Management decisions & outcomes being based on: Planning, Controlling & Improvement Process, which surrounds the key operations in the (supply & demand) process flow.

The above derived assumptions on the topic of Lean Operations are well supported across all industries due to key concepts, theories & findings, which govern that the crux of all Operations Management issues, are identified during congestion, where the main types of waste in OM includes:
Over Production, Waiting Time (Idle Time), Transport, Inventory, Input Wasted Time, Defectiveness, Misuse of People Talent & lastly, Process Inefficiencies.

The main conceptual aim with Lean Operations is that this model works on signals that are programmed with the aim to improve all OM performance measures by basically delivering perfect quality goods, in exact quantities when needed, as required & at the lowest possible cost to customers (Slack et al, 2022).

Most importantly, Lean Operations are embodied in three (3) key-main function areas for delivering exceptional value to customers and all via the concept of: (a) Customer Value; (b) Flow Management (Value Stream Management); and (c) Minimising Process (Related) Waste, that does not convert to 'Customer Value' (refer back to a).

LEAN CONCEPTS vs LITERARY REVIEWS

In examining the current dilemma surrounding the case scenario for the Luxury Soap Brand Company, the decision as to whether to produce inventory en-mass so as to ensure the supply of the Luxury Brand of Soap at all times versus the production of inventory only as it's needed, is certainly plausible to facilitate either or situation, especially given the long-shelf-life for this Brand of Luxury Soap and also, due to the fact that this Luxury Brand of Soap has been doing so well, given minimal fluctuations surrounding the supply of this soap, to date.

However, the dilemma surrounding the adoption of either decision A and or B towards this case scenario, can be seen to be conducive of a combination of resultant findings, from various researchers to date.

According to an article published in the **Harvard Business Review Journal** titled: **The Biggest Challenges of Data-Driven Manufacturing Operations and Supply Chain Management** (Willy C, Shlh and Helmuth Ludwig, May 2016), this article states that Analytics and big Data are the fundamental drivers for the future of **Manufacturing** and especially, with respect to the **Internet of Things (IoT)**, for influencing the main operations management competitive variables concerning: Productivity, Supply Chain, Distribution Optimisation and also, new types of After-Sales Services.
Not-withstanding this, it is also deemed by many industry optimists that Data driven Manufacturing will take several years until Data gets accurately generated, to be able to observe the productivity gains and all performance driver results, across all areas in **Operations Management**.

More importantly, this Harvard Review Journal Article suggests that there exist four (4) main themed areas surrounding the successful **Integration of Data & Analytics - Model** (i.e. Companies using & migrating Data and in terms of like-for-like-software-compatible-systems, for minimising the associated risks around Data Analytics (Sharing & Exchange of Data) resultant errors, into the future and especially for reporting purposes (regulatory-compliance means and measures – and in particular, with every nation's each and own Regulators like ASIC, APRA for example, et cetera) being:

a) Time Triggered Control Model, for Event Triggered Control Systems – *Planning systems moving to event triggered production, being made on time triggers and thus, events leading to a paradigm SHIFT, where inventory gets supplied on demand & the system becoming more efficient, due to the minimisation of waste (materials, time and also, staff inputs).*
The only key issues with this factor is mainly around ensuring system stability with time delays in: Communications, Congestion and some other variants along the supply-demand (OM) process, as this tends to create a state of 'Disillusionment' in terms of the gaps arising from the failed realisation of promised outcomes in (IoT), with the connected systems and all the way to the, shop floor.

b) Unified Data Model, for Data Sharing & Exchange – *Investments over the last decade have resulted in the Integration of Virtual Prototyping /Manufacturing Execution Systems, which also includes Automation & Robotic-Design Systems. Unfortunately, this Data sharing model is not available to all participants across the Design, Production, Distribution & Selling Process in (OM), which means that some companies have been resorted to simply using the Product Life Cycle Management (PLM) in order to accomplish all Data Exchange measures.*
Once again, the only key issue concerning this model is around the systems-model still requiring improvements as the system hasn't been quite fully revolutionised to date and, for all the stages in the (OM) process.

c) Integration of Lean Systems (Industrial Automation) – *The Automation Systems Model is also currently in a state of idle, due to the concerns around Software Engineers becoming widely scarce and so, this model has resulted in little or no advancements over the last decade, with respect to the topic of Operations Management (OM).*

d) Security Challenges & Breaches – *Unauthorised access by hackers to a company's Internet Distribution Control Systems is currently at the helm of all concerns (front and back) with all the latest breaches by hackers with companies like: Medibank, Latitude Finance, OPTUS, Twitter, to name a few. However, even with the maturity of traditional Cloud IT Services, this is still not the case for all over-arching Industrial Control Systems (ICS) pertaining to Operations Management (OM) but, when this system becomes revolutionised, it could potentially account for a fifty (50) per cent reduction of time to market, enabling a further projected productivity in the area of Operations Management (OM).*

In relation to an alternate article published in the **Production and Operations Management Journal** titled: **Inventory and Supply Chain Management With Auto-Delivery Subscription - Model** (Shi Chen, Lunfei Lei, Kamran Moinzadeh, September 2023), this article states that the **Auto-Delivery Subscription Model (Pay-Per-Use)** is widely used today, where suppliers deliver products to buyers in conjunction with some constant shipping quantity & at various pre-scheduled dates.

The benefit of using this model is that more often than not, the model tends to yield benefits to buyers, such as: Pre discounts, No Commitments, No Obligation Fees, Flexible Cancellations et cetera. As a result, the Supply-Chain benefits under this kind of model yield a reduction of the 'Bull-Whip Effect', resulting in the main benefit of this Model being that conglomerates such as: Amazon, Telecommunications companies, Online Retailers, use this model to enable better discounts to be passed onto their customers.

Alternatively, another article published in the **Harvard Business Review Journal** titled: **Welfare Implications of Congestion Pricing - Model** (Cachon and Pnina Feldman,2011) also suggests that the concept of congestion pricing forms a great solution in (OM) towards parking all issues in the chain of management decisions, where this model utilises charging various rates based on congestion levels, which then further causes a SHIFT in the allocation of resources & increases the accessibility of products with customers, who value them more.

On the flipside, this model can actually lead to an increase in consumer welfare in product-populist areas and also, hurt other consumers in less congested areas, which essentially acts as a limitation to this model-type. However, this model has become most useful to companies like Start-ups, where the issue of growth and survival is at the forefront, of all business operations.

Interestingly, Feldman et al (2016) did a study of this model in San Francisco and proved true all welfare implications of this model and is subsequently the reason why, companies like Airlines tend to now use this system for online ticketing/bookings and is also why there exist price discrimination, around the cost associated with various airline tickets. In summary, the advantages of this model-type method is that:

a) It helps with the structuring of jobs, with overlapping responsibilities.
b) It rewards can be based on Industry performance.
c) Procedures can be designed for better collaborations.
d) It enables more agile jobs, reducing work silos.
e) It enables faster cycle times, for process driven (OM) tasks, means 'Better-Efficiencies'.

Upon review of the **Californian Management Review Journal** and in particular, an article titled: **Designing Intelligent Organizations: Six Principles for Human AI Collaboration**, this article amplified the fact there now exists six (6) principles for organisations successfully growing the intelligence in company's by using staff & Artificial Intelligence (AI) for solving problems & hence,

better adapting to any emerging challenges, in the constantly evolving marketplace. These six principles are noted as: Addition, Relevance, Substitution, Diversity, Collaboration & Explanation, with the view to greater market and competitor leadership, due to the use of the new AI synchronised & operational advances.

Given the latest developments with AI, this modern means of OM is increasingly becoming overrun by large-scale-automation-implementations for routine work and for the customisation of products/services & with both realms being available in real time.

The article also states that the latest large-scale advances are also shaping global market forces using issues like: Internal forces, Trade wars, Tech. Innovation, Competition wars, Pandemic wars, which demands the growing need for companies to adjust to the new Artificial Intelligence (AI) 'Playing Field' with urgency, or risk not being able to stay ahead of the 'Performance Curve in the marketplace, which can ultimately result in business irrelevance (Failure & Non-Competitiveness) in the short & long-term.

CASE vs LEAN CONCEPTS vs LITERATURE

In analysing the way forward for this Luxury Soap company, the main factors to be considered for reaching the most ideal 'Lean Operations Management' solution for effectively scaling operations (as growth plus scaling & profits, being the main key economic drivers for many businesses) the idea of either utilising the Production & Supply of (Bulk) Inventory vs Inventory (as needed), poses some critical questions around the concept of waste minimisation, along the process, towards making the ideal decision with respect to this Luxury Soap Brand company's (OM) Case Dilemma.

In considering the minimisation of waste, one must ask the following targeted questions, geared for reaching the most ideal solution (i.e.):

1. *Over Production – Are soap products perishable? Does your product/s have a long-shelf-life?*
2. *Waiting Times (Time in Idle) – What if Production delays occur due to Out-Of-Stock issues & there is no Inventory available to supply to customers, during such periods?*
3. *Transport – What if there's a Union Strike & Inventory gets delayed & or, doesn't arrive?*
4. *Inventory – Is there adequate Inventory stocks in-store, to be able to meet future customer demands?*
5. *Input Wasted Time – Does your OM process entail online ordering measures, to be able to assist with the proposal of - On demand inventory production & supply measures?*
   Will you factor-in additional costs for online customers, to compensate for lost time in OM process?
6. *Defectiveness – What happens when Inventory orders are done under an Inventory as required system, which contain stock defects?*
   Will this increase Production plus Inventory costs associated with re-ordering, more Inventory?
7. *Misuse of People Talent (Staff Inputs) – How much Staff members would be required under a Bulk Inventory system vs Inventory (as required) measure?*
8. *Process Inefficiencies – What other operations or processes will need to be factored into OM to better enable either or method, for the efficiency with all OM process measures?*
   Who will be checking for inefficiencies at the various stages for each method, for Quality Control?

As a general overview, *("The Company")* situation can be summarised in terms of the **SWOT** Analysis, as per the following:

Strengths (Current)

a. Given the Luxury Soap Brand is not perishable & has a long shelf-life – This makes it suitable for the option of, bulk production and supply in OM and also, storage.

b. As there have been no fluctuations with the production & supply of this product to date, forms a good indication that this product enjoys a constant, supply and demand in OM, which can potentially help buffer disruptions, if any.

c. Due to the constant supply & demand flow situation for this product & due to there being no issues with the transportation & delivery of this product to date (even if there were to be an issue),and given the product isn't perishable, such transportation & delivery issues would not result in product waste.

Weaknesses (Current)

a. **Inefficiency & Continuous Improvements** - *Staff Input waste from not ordering stock inventory quantities en-masse, means that even though the Luxury Soap company is enjoying minimal fluctuations in terms of its production & supply, the idea of placing fewer orders due to buying in bulk simply entails that the current Inventory system, is not as efficient, as it can be, as there is always room for improvements in any scenario and or even, with any business.*

b. **CRM & Business Development** – *Staff Input waste more often that not, tends to create further sustainability issues for most businesses, where some company's don't have enough Staff Input resources, to be able to further develop and grow their companies, which can ultimately affect the long-term sustainability of a company, just like this Luxury Soap Brand company.*

Opportunities (For Ordering Bulk vs As Required)

a. **Minimisation of Costs** - *Any input wasted time for this product (like the double-handling of stock), can be overcome by simply buying in bulk (en-masse) due to the product having a long shelf-life, as staff can unload stock as it arrives to the store (less frequently), which saves on costs like: Transportation, Staff Input Hours.*

b. **Re-Deployment Staff Talent (Staff Inputs) -** *By ordering Bulk & reducing staff hours, ("The Company") has an opportunity to reinvest Staff Inputs into more sophisticated & technical driven areas of business, like: Online Orders, Data Analytics, Sales, Marketing, Customer Relationship Management (CRM) etc.*

c. **Override Risks in Product Shortages** – *By ordering & storing Inventory in Bulk, this further enables ("The Company") to effectively have a bill of guaranteed protection, in the event of any product shortages, like during transport strikes.*

d. **Positive Lead Times** - *By ordering & storing Bulk Inventory, it enables ("The Company") to have a bill of guaranteed protection in the event of any damaged products presenting, as an ample supply of Inventory means that despite any damaged products, ("The Company") has adequate positive lead times, to be able to replace the damaged Inventory, without the experiencing any fluctuations in the OM process, like congestion along the demand and supply chain.*

e. **Abolishment of The Bullwhip Effect** - *By ordering & storing Bulk Inventory, this further enables ("The Company") to effectively have a bill of guaranteed protection in the event of any congestion along the demand and supply chain in OM, as positive lead times eliminate the concept of the 'Bullwhip Effect'.*

f. **Opportunity Presents for Customer Discount/Rewards** - *By ordering & storing Bulk Inventory, this enables ("The Company") to have a bill of guaranteed protection, and further pass on periodic price*

discounts to customers, which would yield greater competitive edge & for this Luxury Soap Brand.

g. **Opportunity for Increases in Company Profits -** *By ordering & storing Bulk Inventory, it enables ("The Company") to have a bill of guaranteed protection, to be able to increase profits in OM, by decreasing OM costs. Thus, there is more incentives associated with producing & supplying Bulk Inventory, as opposed to Inventory (as required), especially when products aren't perishable.*

a. **Easy Error Traceability under a (Bulk Inventory) Lean OM -** *Even if staff make errors in their new intelligence job roles, or in Lean Operations using Bulk Inventory systems, the advantage of having such Lean Operations is that any process can be slowed down, so as to easily detect any errors of product failures and, with the least amount of disruptions, to ("The Company") & further, would not constitute in the undesired "Bullwhip Effect" bumping up prices in the supply chain (If a Bulk Inventory System was to be used).*

Threats (For Ordering En-Masse vs Only As Required)

b. **Lack of Storage Infrastructure for (Bulk) Inventory Storage Solutions** - *The issue of storage space arises when ("The Company") may or may not have adequate storage/infrastructure, to be able to store large quantities of the Luxury Brand Soap – Which consequently may require further investments & funding by ("The Company") to be directed into the cost of installing necessary infrastructure, for appropriately scaling the business to cater for bulk Inventory ordering (i.e. en-masse).*

c. **The Bullwhip Effect in Congestion Periods** - *By not ordering & storing Inventory (Bulk), this may constitute in periods where ("The Company") experiences the 'Bullwhip Effect' along the supply chain (due to congestion issues), which potentially can lead to further increases in costs of the product, as any company would more often than not, need to pass on the associated Bullwhip costs to the customer, so as to not drive ("The Company") out of business.*

d. Increased in Human (Staff) Forced Errors – *When ("The Company") doesn't utilise Inventory (Bulk), then this potentially may give rise to greater human error, due to more handling of stock being associated with the product, when orders are placed more frequently (especially during highly busy periods, due to increases in the levels of demand).*

RECOMMENDATIONS (Desired Solution)

After evaluating all pros & cons of the SWOT analysis surrounding this Luxury Soap Brand company, the pros for producing & supplying Bulk Inventory outweigh the cons (as soap is non-perishable) and so it is anticipated that there would be greater competitive edge associated in dealing with Inventory in Bulk.

The reason for this is due to the perceived value of this outcome, where less staff being required for the handling of soap products, means less frequent orders under bulk Inventory operations, enabling ("The Company") to better divert Staff Talent (Inputs) into other job areas, like E-Commerce: Online: Orders, Sales, Marketing, Accounts Receivables, Payables, as such jobs are more organised & intelligence based & constitute in greater opportunities for scaled operations & profits, due to the (IoT) & AI for keeping all industries viable & competitive, using Data Analytics (i.e. Data Sharing & Data Exchange).

The Bulk Inventory & e-online business are trending models, which now also allow staff to be able to work from home (WFH) and so, this Bulk Inventory – Lean Business Model would therefore enable any business in becoming agile and more triggered in its synchronisation & organisation, especially now given the availability of additional storage space arising from WFH arrangements, which entails a Bulk

Inventory – Lean Business Model System as being more accommodating of a system, as also supported by the opinions of authors (Willy C, Shlh and Helmuth Ludwig, May 2016). These authors also claim that the future is trending with better scaled options, when company's use Intelligence, Data Analytics & Robotics functionalities in business, as this yields more refined-targeted business operations.

The other pros which are supportive of the move towards a more Bulk Inventory System – Lean Operations Business Model can be seen in terms of the differential views shared in articles from both the: Production and Operations Management Journal plus, the Harvard Business Review Journal, as both articles project that modern businesses tend to be moving towards more sophisticated retailing methods, based on either a: Subscription Model (supplying cheaper pricing those customers, who engage in scheduled more scheduled ordering of products i.e. Pay-per-use) and or, Welfare Pricing Congestion Model (supplying cheaper pricing to your populist customers where there is less congestion). The reason for this is clearly due to all the new jobs surrounding intelligence in OM and using the (IoT), towards providing different pricing options for customers, based on different types of customer needs & expectations, which constitutes in greater customer value (in terms of what that means to each customer), upon the consideration to engage in purchasing (i.e. Luxury Soap Brand products, for example).

Lastly, in considering the opinions of the authors from the Californian Management Review Journal article, all key opinions here lean towards the support for using a more Lean Operations type Model (i.e.) Bulk Inventory System, especially due to the large-scale advances that are currently shaping global markets (via various forces), as this drives an urgent need for companies to utilse more intelligence business operatives, with the least amount of congestion & disruptions, for the purpose of remaining viable and competitive and importantly, for staying ahead of the 'Performance Curve, in today's continuously changing & revolving – volatile marketplace.

CONCLUSION

In summary, in light of the desired outcome-solution for utilising a Bulk Inventory – Lean Operations Business Model system being fully supported by all literary case findings, the only challenges identified, that would need to be addressed & prior to streamlining to Lean Operations (Business Model) & making it a success, would be for the soap company to make some further provisions under the new Lean OM by:
(a) Ensuring protection, monitoring software be installed across all company electronic systems & staff input devices, to prevent security breaches, as staff inputs can also make tech. errors, which then gives rise to the growing need for employing more suited staff & with OM & Data Analytics skills too;

(b) Choosing collaborative & compatible software that communicates with customers & reaches the shop floor, is most useful when minimising risks with Data errors & great for enabling Data-Sharing with key Stakeholders, involved in the OM (demand & supply) process.

(c) Choosing an appropriate pricing strategy dependent on whether the company is either in its startup stages (to enable growth) or using a more populist pricing strategy (focusses on looking after key & loyal customers first & foremost) or, whether both pricing strategies are to be used during different business cycle periods (i.e.) Slow Inventory turnover, better suited to Subscription Pricing Model;

(d) Incorporating Artificial Intelligence (AI) in the Lean Operations Model, is a guaranteed means to ensure the Luxury Soap company remains competitive & viable, regardless of any emerging market forces. (i.e. A) Utilising AI Chat Bots to increase the services provided to customers for the purpose of diversity and customisation, with respect to all customer needs.
(i.e. B) Utilising AI Marketing Research Surveys with customers, for continually streamlining your business due to changing customer expectations, which are conducive to the various emerging market forces & also, into the future.

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