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Outsourcing Vs In-House Manufacturing

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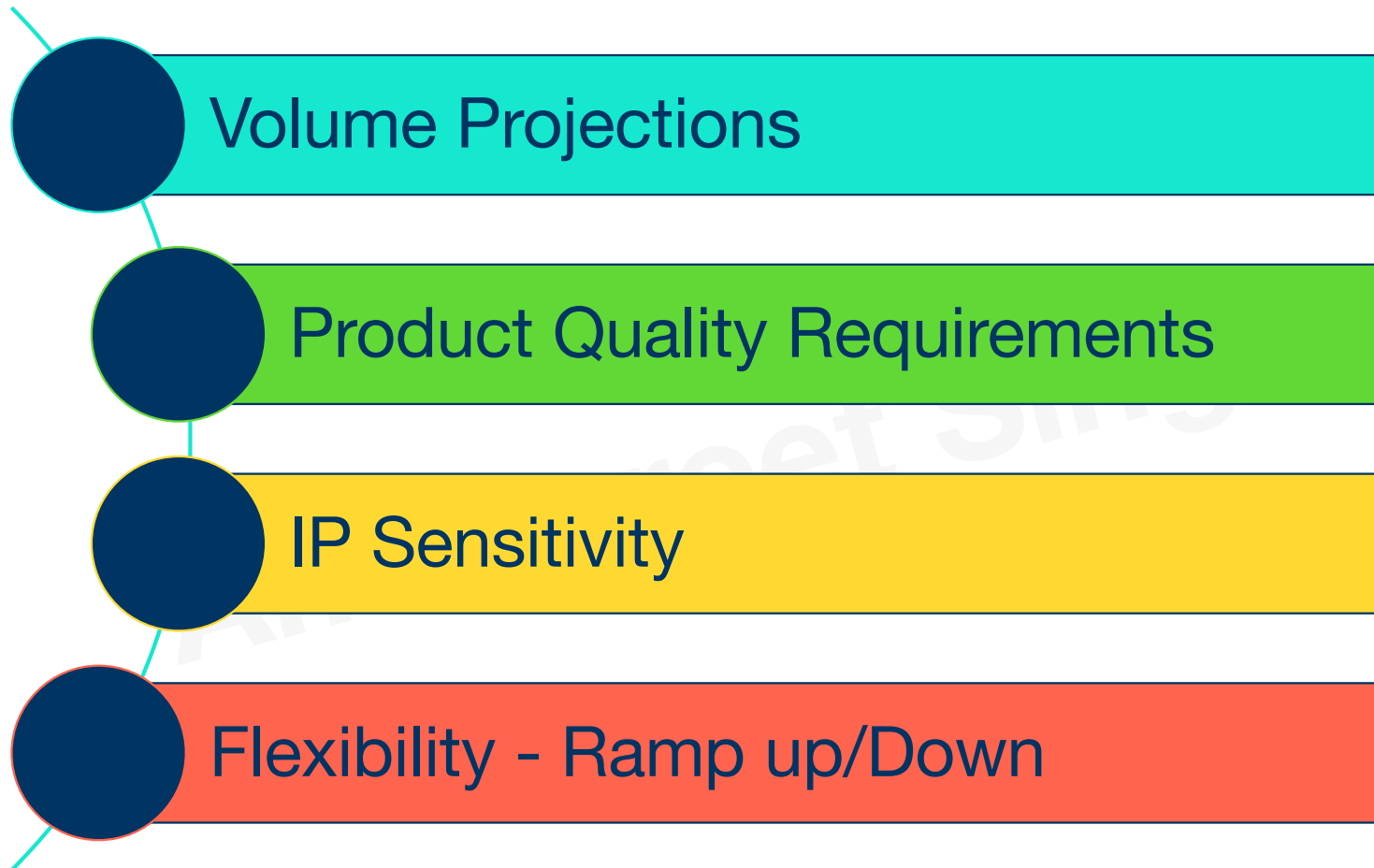
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Purpose

“The purpose of this document is to guide and assist OEMs in the decision-making process for scaling up hardware production “

Decision Factors



Product Ramp Up

Inhouse Manufacturing

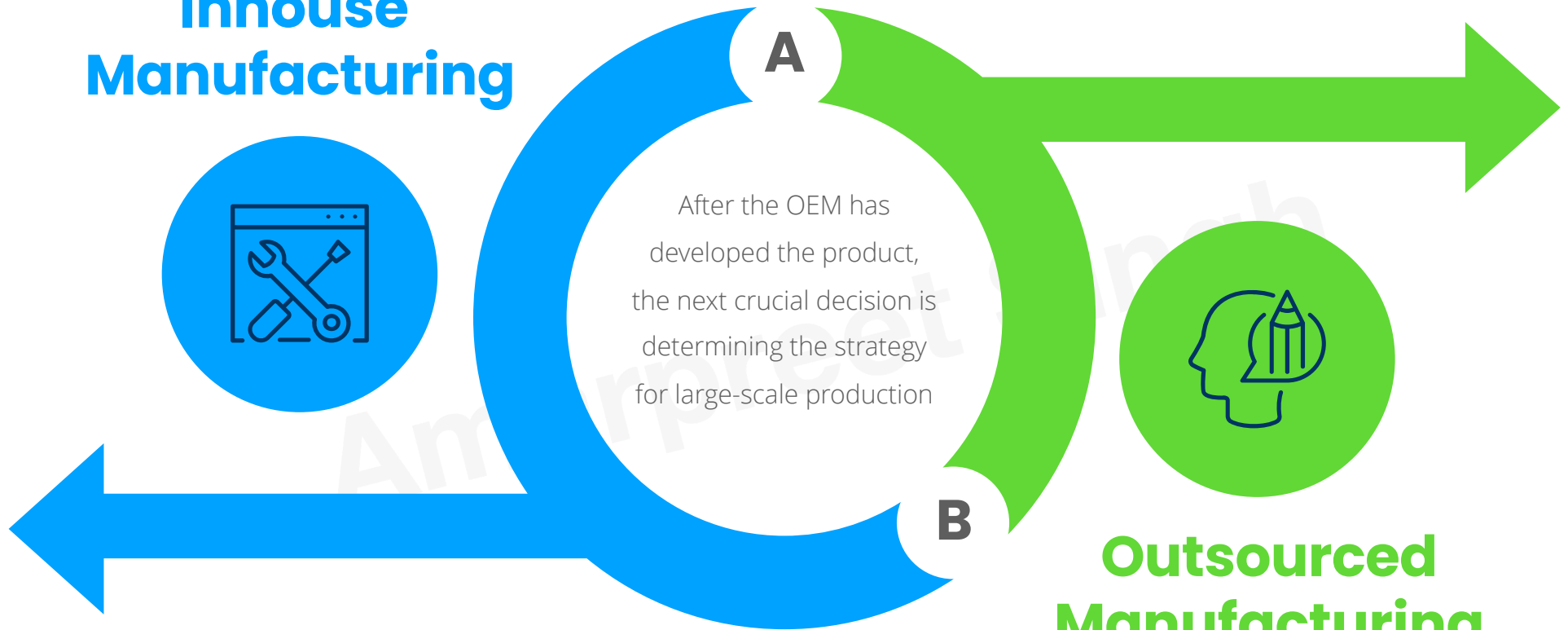


A

After the OEM has developed the product, the next crucial decision is determining the strategy for large-scale production

B

Outsourced Manufacturing



Ramp Up Options

1

In House Manufacturing

OEM quality the products in house and build a factory or multiple factories to ramp up the production.

2

Outsources Manufacturing

OEM Outsource all the manufacturing of the products to 3rd party suppliers and focus on core areas like design, marketing, sales etc.



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Option 1 Internal Manufacturing

In House Manufacturing Advantages

- ✓ **Direct control over the production shop floor** - When you set up in house manufacturing, it allows you to have complete control on the shop floor, through the entire manufacturing process.
- ✓ **Quick Iterations** - The product iterations can be executed fast, and you have options to change the process in the middle of the execution. Outsourcing of the manufacturing processes relinquishes much of that control, as all the changes needs to be formally communicated to the outsourcing partner and it takes time to implement those changes at the production process.
- ✓ **Clearer communication** - Constant communication between various internal teams, helps everyone to have a better understanding of the product & production status. In some scenarios helps to cut down the delays and it leads to quick brainstorming and improvements in the production processes.

In House Manufacturing Advantages

- ✓ **Faster turnaround Time** - As the changes are communicated on real time and problems can be solved while working with internal teams more efficiently, the turnaround times are usually faster during in house manufacturing. This is a very important criteria for the prototyping and design validation builds.
- ✓ **IP (Intellectual property) protection** - For in-house manufacturing, there is no information or only a limited information is shared with suppliers the IP is better protected compared to outsourced manufacturing. All the learnings and development over the years stays within the organization as there is no obligation to share those learnings with the third-party manufacturing partners.



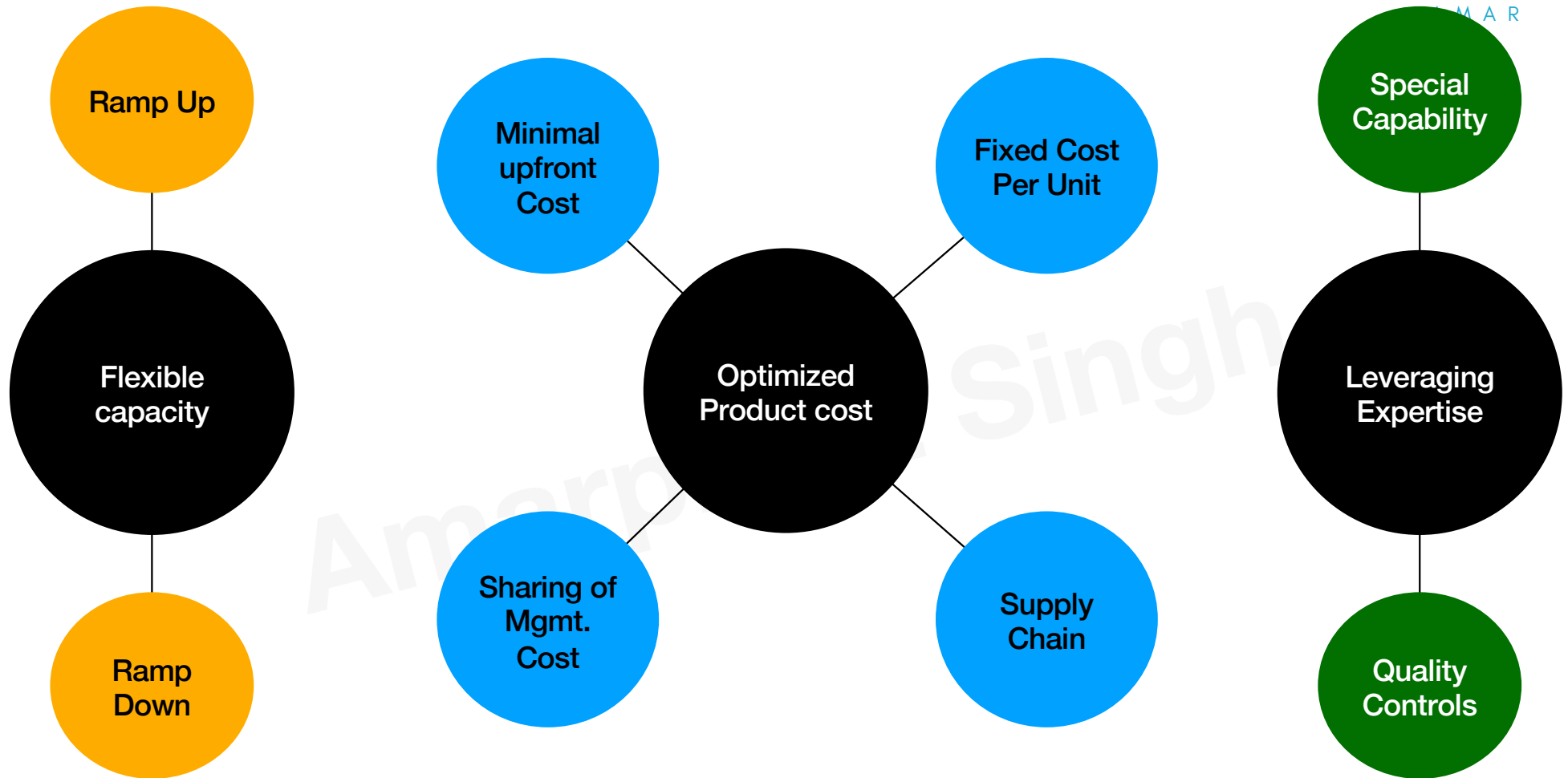
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Option 2

Outsourced Manufacturing

Advantages of Outsourced Manufacturing



Capacity – Ramp Up

- *Speed of Execution* - The contract manufacturer already did all the investments into the building, facility, people etc and it is certainly not an easy task for an OEM to set up the same. It takes time to set up and mature a manufacturing facility.
- *Access to Market Capacity* - Once OEMs outsource their production to EMS partners, they immediately got access to the capacity which is available in the market. In case there is a shortage of capacity at one EMS supplier, an alternate supplier can also be qualified and ramped up.
- *Access to Market Capability* - The EMS companies have enough experience in ramping up the production volumes, so the ramp ups are usually smooth and are in line with the expectations of the OEM's.

Capacity - Ramp Down

- *Flexibility* - EMS Companies can support volume fluctuations, as they can switch capacities between different customers if the volumes are down from some of their customers.
- *Pay Per Use* - OEM's only pay for the capacity which is used for manufacturing their products, so it helps to keep the product costs at optimum levels during ramp down.
- *Focus on Recovery* – In case of ramp up down situations, there is no or minimum optimization of resources at OEM's. This keep the overall environment neutral during these conditions and OEM's can continue their focus on the product design and business recovery efforts.

Optimal Upfront Cost

- *Low Initial Investment* - If an OEM build an in-house facility, they need to invest into the building, infrastructure, people etc. However, once OEMs engage with the right contract manufacturer, they must pay only for the products manufactured from the factory.
- *Low Upfront Cost* - OEM's might have to invest into inventory and set up cost for their products, but that is very minimal compared to building an in-house manufacturing facility.
- *Better Cash Flow* - While keeping the initial investments minimum for manufacturing setup, OEM's can invest more into product development, marketing and sales of their products.

Cost Sharing

- [CAPEX Sharing](#) - There cost of capital equipment and capabilities can be shared across various customers by the EMS partners. As an example, cost of expensive SMT machines can be shared by EMS partners across various customers.
- [Management Cost Sharing](#) - Various customer accounts can be managed by the senior management at EMS companies. Depending upon the financial agreements fraction of the overall management cost is loaded to the OEM.
- [Improvement Projects](#) – Being experts in manufacturing operation, EMS companies does cost reduction and improvements projects on the shop floor. Some of these cost benefits shared with customers over a period.

Fixed Product Cost

- Low Volumes Prices - If OEM want to earn a good return on your investments, the in-house facility needs to hit certain production volumes every month. In case those minimum volumes doesn't happen, OEM will lose money invested on factory, people etc.
 - Volume Fluctuations - case the volume drastically goes down; OEM's will not be able to reduce capacity without layoffs. Incase of outsourcing the additional capacity will be allocated to other customers in these scenarios.
 - Flexibility - Contract manufacturing offers a lot more flexibility. Depending upon how the quote is, the EMS companies might ask for a minimum production run size. OEM can always negotiate MOQ's and place the orders without losing too much on manufacturing cost.
- * For High volumes dedicated lines (Mobile phone etc.), customers must pay the line depreciations cost, in case the volumes are down. However, this cost is usually lower than managing the in-house facility by the customers.*

Supply Chain Advantages

- *Optimal Capital Cost* – For in-house manufacturing OEM need to invest into warehouse, ERP, professional resources etc. While outsourcing all the cost is shared between various customers at EMS facility.
- *Leverage EMS Expertise* – An established EMS provider has a database of qualified suppliers and have a very strong negotiations power in place for component development. EMS Companies invests into developing and managing suppliers, which can be leveraged by OEM customers.
- *Leverage EMS Negotiation Power* - The EMS provider also have a consolidated negotiation power with the authorized distributors for various components as they use the same distributors across various customers accounts.

Quality Systems

- *Experienced Team* - Teams of highly skilled quality professionals are dedicated for manufacturing at EMS companies. OEM's can count on great product quality from EMS partners that is at par or better than what an OEM can produce internally.
- *Diversified Experience* - The EMS Companies are usually experienced in managing customers from various Industry segments. Experience from various customers and industry segments helps the EMS companies to produce great quality products.
- *Matured Quality Systems* - The quality systems at EMS companies are matured considering they are regularly audited by the certification authorities and various customers. It takes a lot of effort for an OEM to achieve the similar level of maturity while doing in house manufacturing, considering they will be dealing with only a limited variety of products.

Special Capabilities

- [Traceability](#) - It is important to have an end-to-end traceability system in place for tracking the components used on the product. EMS Companies offers these services as part of the overall offerings and OEM's can leverage that too.
- [Component Engineering](#) - EMS companies offers component engineering as a service, which OEM's can leverage rather than building the in-house capabilities for the same.
- [Product Certifications](#) - Having certifications are necessary to market products, such as having CE certifications is a mandatory requirement for European Union. This is quite a complex process and EMS providers are able to effectively support OEMs' during UL, TUV , ETL or other compliant audits and preparation of the documentations required for certifications.
- [Reliability Testing](#) – EMS Companies either have inhouse reliability testing facilities or they have strategic partners, providing reliability testing services. OEM's can leverage these capabilities with their EMS partners.

Summary

- The decision to keep the manufacturing in house or outsource depends on the organization needs and priorities in terms of
 - ***Volume flexibility requirements***
 - ***Intellectual property protection***
 - ***Scale of Business***
 - ***Product volumes and fluctuations***
 - ***Product complexity***
 - ***Product maturity levels***
 - ***Overall manufacturing strategy***

Do you have more questions on Manufacturing Strategy ?

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Thank You

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