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EMS Supplier Selection Criteria

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Outsourcing Vs In-House Manufacturing

- The choice of an EMS provider is a crucial task for OEM organizations.
- It is crucial to choose an EMS provider who can serve as your long-term business partner while considering both organizations, overall organizational synergy and product roadmaps.
- Several reasons why OEMs choose to outsource their manufacturing are
 - A. Setting up in-house production requires a significant amount of CAPEX. It is crucial for OEMs to invest in their design capabilities and take advantage of production eco-system available in the market.
 - B. There is a rise in demand, and internal production cannot keep up with it. EMS Suppliers are available to handle the varying capacities.
 - C. Manufacturing companies brings expertise of cost-effective manufacturing techniques and processes. It can be difficult to develop these capabilities at OEMs. However, it is quick and economical to use these capabilities at EMS partners.

Criteria For EMS Partner Selection

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Size of the EMS company

- How big is the EMS organisation under evaluation ?
 - What would be your revenue share in the future with the EMS company. If OEM is <5% of the EMS revenue,
 - They might not get the right attention with the EMS management team.
 - They might not get the best teams at EMS who can run their business.
 - On the other side if OEM is > 50% of the future revenue of the EMS company,
 - EMS Dependency on your business will be too much. If you fails to give them the business, they might not survive as a company.
 - Most of the operational cost will be loaded to your business.
- * *There is no standard guideline for this number and the relevance of it depends on OEM's supply chain strategy.*

Management Team

- *Electronics Manufacturing Services is what EMS stands for.* Being a service-based company, it is essential to understand the management team at EMS Organisation in-depth.
- It is important to have a positive impression about the EMS company's founders and their standing in the industry.
- Knowing the functional managers at the EMS organisation is crucial in addition to the management team. They must be from the relevant industry and have the necessary experience to execute the operations successfully.
- Another consideration when choosing a company is organisational stability. Working with partners when attrition rates (especially for blue-collar jobs) are high relative to market levels is not advised for OEMs.

Experience in the EMS Industry

- It is crucial to understand how much experience the EMS organization has in this field. Since EMS is a very specialized industry with unique challenges, working with a partner who has overcome these difficulties over time is always preferred over working with a new EMS player.
- EMS Businesses that can remain in operation for a long time are able to fulfil changing client expectations.
- Long-standing EMS companies typically have well-established and successful business procedures.
- There is a natural process maturity expected in the experienced EMS partners. Different customers in the past would have worked with that EMS company to improve their processes.

Product Mix, Volume and market Segment

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- Every EMS company has a vision and focus on different volumes and product mix. Big companies like Flextronics, Foxconn are mainly interested in the business where the volumes are high.
- On the other hand, there are companies who always wants to work with low or medium volume products. OEM Needs to understand EMS business volumes and try to find a supplier, who is in line with their business volumes.
- Some EMS companies only wants to do consumer or low-end products with volumes. OEM's from very high reliability market segments cannot work with the organization processes are very different for both segments.

Availability of Latest Equipments

- OEM's needs to select an EMS partner, who is having latest equipments and testing technologies. OEMs cannot work with a partner, having old equipment's and those equipment's are out of warrant or support from manufacturers.
- How is the equipment maintenance process at EMS company ? Is there a robust process to manage health of the equipment so that the production will be running smooth ?
- How open is EMS organization for investing into new equipment's or capabilities as per market and customer demands ?

Industry Standards and Certifications

- The reputed EMS companies usually have all the latest certifications for the key customer market segments.
- Achieving and maintaining certifications requires time, commitment, adherence to defined processes and business controls specially in high reliability product segment certifications. OEM's can thus trust these companies about the process adherences during the manufacturing of the products at these companies.
- Periodic audits for these certifications ensures that there are process compliances for these certifications.

Flexibility and Capacity Availability

- How flexible is EMS organization for meeting your demand fluctuations and peak seasonal requirements ? Do they have spare capacity to meet fluctuating demand ?
- Does EMS company have a process, which provides a visibility on the current capacity utilisation, and they can predict their capacity utilization for the coming months using the process.
- It is usually recommended for HMLV (High Mix Low Volume) EMS companies to invest into capacity for common equipment's (SMT or ICT etc.) once the utilization is in range of 70% or so.
- The margins are very tight in high-volume business-like cell phones etc. At the same time, these volume business doesn't enjoy much flexibility at EMS operations. How is the commercial agreement on underutilization of capacity at EMS partner?

Testing, Debug and Rework Capability



Every product made on the floor needs to be tested before shipping to end customers. In addition to this, there are tests which needs to be done during the manufacturing of the products.

- How is EMS capability to work with OEM and help setting up the test processes ? Can EMS develop testers for your products ? Do they have in house test development capability, or they have strategic alliance with the the suppliers for tester development ?
- In case the products are failed online, can your manufacturing partner have the ability to to debug and repair the products ? Yes, in extreme cases they will need help from product designers. However, majority of the failures (If any) should be addressed by the EMS partner. How is the failure analysis capability of the EMS partner ?
- How is the field repair management process ? All the products shipped to customers needs to be taken for repair if there are issues in the field. How is the EMS process to manage these field repairs ?

NPI Process

- Does the EMS company have a process to launch new products on the shop floor ?
- How mature is the process ? Does it cover all the potential failures which can happen during the new product launch at EMS side ?
- Products launched directly into the EMS partner and products transferred from another EMS partners does have different challenges. Does the NPI address both the scenarios ?
- How quickly the supplier can ramp up production once the samples are qualified ? The NPI process should explain the ramp up targets, and measurable around it.

DFM Capability

- Does the potential EMS company have the DFM capability for your designs ?
EMS Companies are always considered to be experts in manufacturing processes, so there is always an expectation from the EMS companies to provide very details DFM Inputs for improving the product designs.
- Having a software only doesn't mean the EMS company have he DFM capabilities. A supplier with detailed DFM guidelines, software tools and having the DFM experts in the organization can actually bring value during the DFM process.

Quality Systems

- A detailed review of the ISO functional procedures needs to be carried out to assess how the business happens at an EMS organization.
- The review of the ISO procedures reflects the maturity of the organization and how the organization handles the business processes. As a good practice EMS companies need to review their processes periodically, so that those are relevant as per the business requirements.
- Yes, it might happen that some of the procedures at EMS are not as per OEM requirements. These need to be captured and developed while working with the EMS companies.

Component Sourcing

One of the major driver for OEMs to work with EMS organization is to leverage the sourcing capabilities.

- **Standard Components** - How is EMS relationship with manufacturers and distributors while securing the supply chain for the components ? A strong relationship and procurement power helps the OEMs to leverage better prices, smooth supply chain and priority services.
- **Customised Components** - Big electronics manufacturing companies has in house or group companies supplying various customized components. The other EMS companies develop strategic suppliers for PCB, Mechanical , Wire harness and other commodities. This make life easy for OEMs to develop new products with the contract manufacturer and leverages these capabilities.

Component Traceability

- Does the supplier have traceability system. The question is even more relevant if the OEM is dealing with very high reliability products like Defense, Aerospace, Medical, automotive or Industrial applications.
- In case there is a field failure related to a particular component batch, the supplier should be able to trace the product serial numbers on which the specific batch number of the component is being used.
- Depending on product requirements, In some of the cases the batch traceability is also sufficient to manage the field recalls.
- Does the EMS company manage traceability using software or it is a manual process ?

Component Obsolescence Management

- It is important to keep track of the life cycle status of all the components. Missing the PCN alerts can be very expensive for the OEM's. Does the EMS company have a process to keep track of life cycle status of the components ?
- A lot of EMS companies uses third party software (IHS Markit, Silicon Expert or www.eolmanager.com) for keeping a check on the life cycle status of the components. As these are subscription-based solutions, OEM's can leverage a portion of these subscriptions through EMS partner and have information related to life cycle status of the components used in their products.
- EMS Should also have component engineering function to suggest alternates for obsolete components.

Critical Business Processes

- Some of the very basic processes which are expected to be defined very clearly and implemented at EMS are
 - Engineering data management and Engineering change note process.
 - Document control management system.
 - Product revision management.
 - New product introduction (NPI) process.
 - Field return and repair process.
 - Counterfeit component management process.
 - Quality management system.



Do you have more questions on selection of EMS partner ?
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Thank You

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