

Improving capacity planning in outsourced manufacturing through sales and operations planning: A case study at Axis Communications

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Managing manufacturing capacity in high technology industries is one of the most important aspects to consider for achieving business success. Sales and operations planning (S&OP) is often mentioned as an effective method to manage capacity planning. Yet, there is little research addressing how to achieve it and even fewer considering cases where manufacturing is outsourced.

High-technology industries are characterized by short product life cycles, constant innovation, and rapidly changing customer demands leading to increased difficulties aligning supply and demand. At the same time, outsourcing of manufacturing activities has grown in popularity. The combination of a turbulent business environment and outsourced manufacturing emphasizes effective and efficient practices for managing manufacturing capacity.

In collaboration with Axis Communications AB, a world-leading original equipment manufacturer (OEM) of network cameras, we have conducted a case study addressing the difficulties of planning capacity at electronics manufacturing services (EMS). Through interviews, observations, and extensive archival research at Axis, we have pinpointed how to improve its capacity planning process and establish a link to the existing S&OP process.

Demand uncertainty, collaboration with EMS sites, and management policies seem to be the most significant factors influencing manufacturing capacity planning at Axis. First, capacity planning decisions are ultimately a result of the input gathered from demand forecasts, thus making decisions highly dependent on the quality of the forecast. Axis has an indirect business model and a heavily project-driven demand resulting in demand uncertainty that affects capacity planning. Second, as manufacturing activities are outsourced, collaboration with its EMS partners is critical. We found that an overall lack of visibility and communication between Axis and EMS sites leads to capacity planning inefficiencies. Third, management policies strongly influence Axis' capacity planning in practice. A lack of process ownership and clear

directives in combination with a corporate strategy focused on growth and innovation affects the capacity planning. So how should Axis manage manufacturing capacity planning at their EMS sites given the influencing factors? We believe S&OP is the answer.

Linking capacity planning to S&OP

Manufacturing strategy is dictated by the chosen capacity strategy and three options exist: *lead*, *lag* and *track* capacity strategies. The S&OP process considers two tactical decisions: either you modify the demand, or you can modify the supply. Manufacturing capacity is obviously a decision that concerns modifying supply and three planning strategies exist to achieve this: *level*, *chase* and *mix* planning strategies. By combining the perspectives of manufacturing strategy and S&OP we argue that Axis should pursue a leading capacity strategy to account for demand uncertainty and the strategic fit, while EMS sites should pursue a mix planning strategy to allow for flexibility in manufacturing.

To facilitate the integration of capacity planning with the S&OP process, we suggest assigning ownership of the capacity planning process to an employee and active participation in the S&OP process. The owner of the capacity planning process should establish a process considering demand uncertainty, collaboration with EMS sites and management policies, while actively using the S&OP as a forum for decision-making on capacity related matters. Establishing performance measures, ensuring decisions are aligned with the lead/mix strategy, facilitating communication with EMS sites and taking responsibility for the outcome are critical aspects that is imperative for a successful implementation of this proposition.

Managing manufacturing capacity in high technology industries is critical to achieve business success and outsourcing manufacturing activities requires a new perspective. Demand uncertainty, collaboration with EMS sites and management policies are factors with significant impact on the outcome that needs to be considered. We believe integrating capacity planning decisions into the S&OP process by assigning a process owner to the capacity planning process is one way to address this problem and ensure efficient and effective manufacturing capacity planning leading to business success.