

Critical Supply Chain Factors for Scaling a Startup – A Case Study in the Industry of Semiconductors

Popular Scientific Summary **Pontus Landgren**

About 90% of the startups fail to become successful, mainly because of incorrect scaleup. This thesis investigate the unexplored condistions in the unstable environment that startups' faces. A framework for esablishing a supply chain strategy along with critical factors for success are presented.

Today many high-tech startups are founded based on innovative design and new technology breakthroughs that improves the way of solving problems in the society. The common case is that the startup knows its technology very well and maybe they have an idea of which problems that can be solved. However, the majority of this startups don't have the knowledge about how to set up their supply chain and how to get their product out on the market, in other words, how to produce the product and how to commercialize the idea. New successful companies can contribute to the development of our world and society and towards a sustainable production as well as the evolvment of a sustainable economical environment, if they successfully growth their startup to a large company.

This project explore the difficulties with scaling a supply chain and preparing the startup for rapid sales increase. Critical success factors that are needed is identified along with a guiding framework that can be used

to identify a suitable supply chain strategy. The supply chain strategy is not a new problem, instead it has been a subject for research during several decades. However, the conducted models and research usually focus on larger companies with a stable environment. Conditions that aren't applicable for a startup. In this project, three companies in the industry of electronics were interviewed to identify problems and solutions on how to scale a supply chain. Based on the outcome and the theoretical models the framework was constructed. Three major areas was identified as essential; *product characteristics*, *industry characteristics* and *internal organization*. Firstly, product characteristics is about knowing the product and what's unique compared to other available alternatives on the market. Secondly, industry characteristics is about how the industry is managed and how relationship to suppliers affect the supply chain. Lastly, internal organization refers to the internal processes and the internal com-

munication within the startup. The result of this project shows that all three areas plays an crucial role that must be managed appropriately.

The purpose of the project was to identify critical success factors and describe how to establish a supply chain strategy, in order to prepare the supply chain for future growth for a high-tech startup. To fulfill this purpose three research questions were formulated:

- RQ1: How could a supply chain strategy be applied for a startup within the semiconductor industry?
- RQ2: Which factors in the supply chain are critical to succeed with in order to enable growth?
- RQ3: Which key performance indicators (KPIs) are relevant to track in order to measure the performance of a startup's supply chain during growth?

Where the first research question was formulated in a broader way to allow insights in a wider spectrum. Meanwhile, the second and third research questions were more point on to gain concrete information. Presented in the report, the answer to the first question is a strategic framework that guides a startup throughout the process of establish a strategy for its supply chain. The critical success factors and key performance indicators that were found to have the greatest importance are also presented in the report.

The focus for this project has been the industry of electronics, more specific, the industry of semiconductors. Materials that have the resistance levels between those of a con-

ductor and an insulator are referred to as semiconductors. They are quite common, found in almost all electronic devices and plays an essential role in the concept of Internet of Things where everything should be connected to the cloud and share its information. In the semiconductor industry the lead time for manufacture is several months which cause difficulties when to plan for production and estimate the sales volumes. The objective for this project was to investigate how this specific conditions affected the supply chain. To gain insights, it was crucial that the selected case companies were active in the industry of semiconductors and not only an electronics company.

The project was preformed as a qualitative multiple case study, meaning that a few number of companies were interviewed deeply in order to understand their respectively situation. This approach is commonly used when the objective is to explore and form new theory of existing phenomenon. In the optimal world it would have been beneficial to apply both a qualitative and a quantitative approach to investigate both deeply and widely. For future research this project can serve as a foundation and the identified factors can be investigated and tested on a deeper level. A new research project could verify this project and maybe also reveal additional critical factors using a quantitative research approach. Through the quantitative approach, it's possible to gather a lot of data and then mathematically analyse the data to gain insights about the importance of each individual factor.