

High-Tech is for Everyone:

A Case Study of Commercialization to the Restaurant Industry

By Benjamin Johansson

To get the bad customs of a country changed and new ones, though better, introduced, it is necessary first to remove the prejudices of the people, enlighten their ignorance, and convince them that their interests will be promoted by the proposed changes; and this is not the work of a day.

– Benjamin Franklin (1787)

Introduction

To realize the potential of an invention, it has to be commercialized – sold at the marketplace or by other means made available to its prospective users. This is by no means an easy task. Many ideas or inventions with obvious benefits have gone unadopted due to failed commercialization, and some consider it the least well-managed stage of the entire innovation process. (Chiesa & Frattini, 2011; Rogers, 1995)

The purpose of the study was to explore commercialization in a business context characterized by three factors:

- 1) First, the case company was an early startup rather than an established corporation.
- 2) Second, the innovation was radical – it essentially did not replace any predecessors on the market and required a behavior change among adopters.
- 3) Third, the prospective market was atypical for high-tech products.

The focal point of the study was the business case of a high-tech startup company. The business case was used as an illustrative example of a genuine commercialization context. In this article, the company is referred to with the fictitious name “Precognitio”. Precognitio was based in Sweden with the author personally involved as a co-founder.

Precognitio was founded in 2021 with a vision of using machine learning to reinvent how restaurants plan their operations. From the start, the rationale was that since restaurant sales fluctuate over time, optimal efficiency cannot be achieved with a fixed capacity. Instead, staff and inventory must be regulated to match the variations in demand. Precognitio's working assumption was that a machine learning model could predict future sales better than the standard industry practices. If this could be achieved, the expectation was that restaurants could improve their efficiency by implementing sales forecasts in their capacity planning.

In early 2022, having reached successful results in both basic technology development and market validation,

Precognitio concluded that proof of concept has been achieved. In essence, the company recognized that the invention could bring

benefits to the prospective users and that a sustainable business model could be built around it. Naturally, commercialization was the next step ahead.

Based on the business case, the study focused on two central research questions.

RQ1) *What key challenges are associated with the ambition of the business case company to commercialize its invention?*

RQ2) *How could a commercialization strategy be formulated to effectively address the key challenges identified in RQ1?*

Methodology

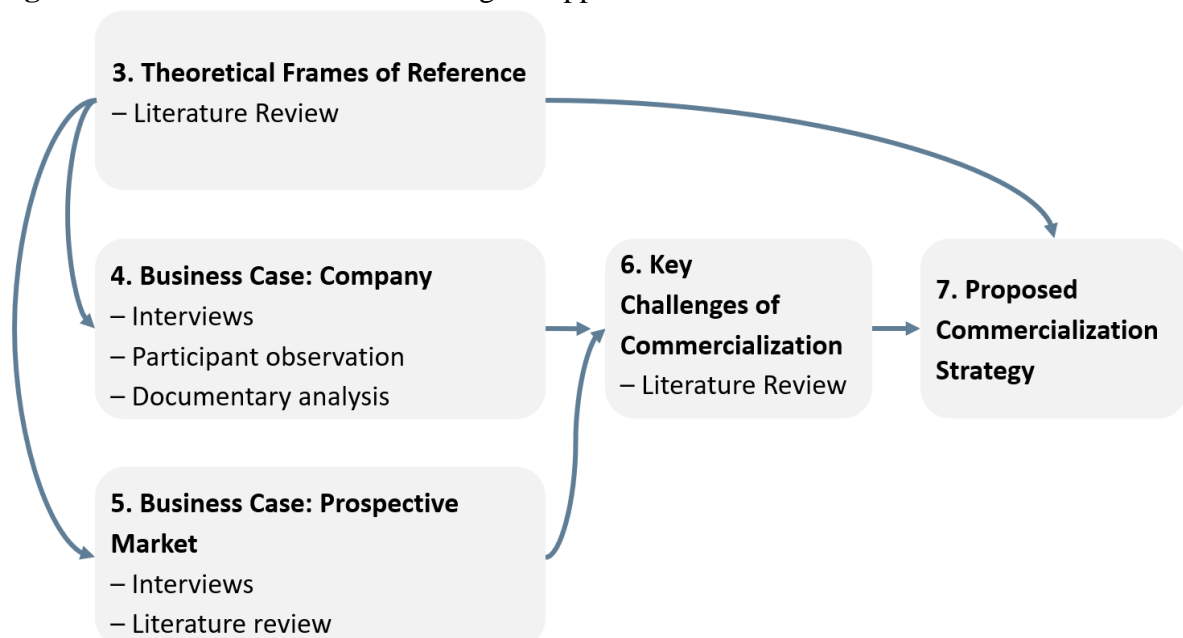
The purpose of the study was to explore the commercialization challenges of a unique business context and to suggest a strategy for overcoming these. The approach generally followed three parallel tracks:

- 1) Understanding the concept of commercialization in theory and practice.

- 2) Understanding the case company.
- 3) Understanding the prospective market of the case company.

Conclusions from the three tracks were synthesized to identify the key challenges for commercialization. In the end, these key challenges constituted the foundation for a proposed strategy. The overall approach is visualized in Figure 1.

Figure 1. Overview of the methodological approach.



The literature review had multiple functions. First, the mapping of previous research allowed the study to focus on an area of high interest, where findings would contribute significantly to prior knowledge. Second, the review provided several frameworks for analysis, most of which are presented in chapter 3. Third, the literature review enabled the absorption of domain-specific conventions. By identifying the terminology and practices of related literature, it could be ensured that this report aligned with these. Finally, findings from the literature review were integrated to support the analysis throughout the study as a whole.

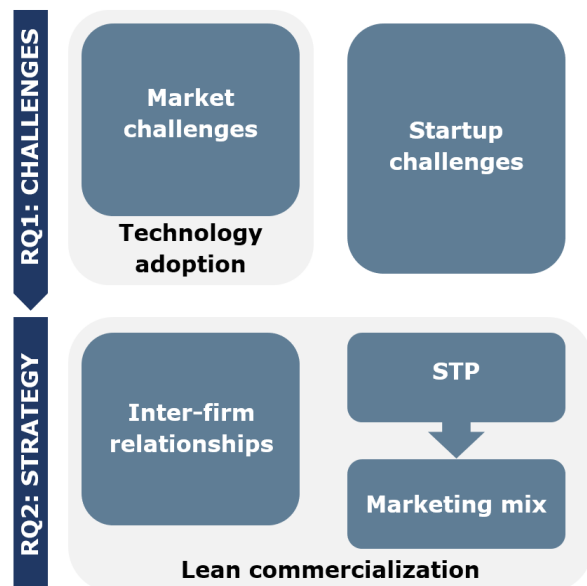
The investigation of Precognitio served as the starting point for the business case study. By recognizing the product concept of the startup, the subsequent market analysis could effectively pinpoint the

features that were relevant for the specific case. Furthermore, some commercialization challenges were directly derived from company-specific characteristics. The methods for data collection with regards to the company were interviews, participant observation, and documentary analysis.

Following the company description, the market investigation continued the case study. Commercialization is a customer-oriented activity and the challenges associated with it cannot be assessed without an understanding of the prospective market. For that reason, the industry context was central to the aims of the study and the market analysis was a major component of the business case. The methods for data collection with regards to the prospective market were interviews and literature reviews.

Theoretical Frame of Reference

Figure 2. Visualization of the theoretical frame of reference and its relation to the research questions.



The theoretical frame of reference is visualized in Figure 2, including its relation to the research questions.

The theory around technology adoption focuses on how and why potential users of a technology decide to adopt it or not. In this study, it is used as a theoretical base for investigating the market conditions for commercialization. By applying the lens of technology adoption theory to the investigation of the Swedish restaurant industry, the features that matter for a company aiming to launch a new technology there could be identified. Mainly three frameworks were used. First, the technology acceptance model describes adoption from the perspective of a single individual. Second, the diffusion of inno-

vations theory describes how technologies spread through groups of individuals in a population. Finally, the crossing the chasm theory identifies a phase of diffusion, the chasm between the early adopters and the early majority, that is theorized to be of particular importance.

While the frameworks above focus on the perspective of the user that accepts or rejects a new invention, commercialization theory views the phenomenon from the perspective of the company. In this study, it is understood by the definition of Gbadegeshin (2018:50), saying that it refers to the process through which an innovation is transformed to a “final product or service from which economic benefit can be derived”. In other words, the purpose of the process is to realize the potential benefits of ideas by building business models around them that deliver value to customers in a profitable way for the commercializing company.

Key Challenges of Commercialization

The empirical market investigation showed that the way restaurants currently approach scheduling and inventory planning could be questionable. Inaccurate planning seemed to be causing problems in multiple ways, and there were indications that the industry was ready for a transformation in this area. Even considering this assumption and the favorable circumstances above, commercialization was not necessarily straightforward. On the contrary, the investigation could identify several distinct challenges.

A number of market features relating to industry mindsets were suggested to deserve particular attention from the

There is great variation in literature with regards to the boundaries of commercialization. Some have included processes all the way back to idea generation, while others have included marketing activities even after sustainable market acceptance has been achieved (Pellikka & Virtanen, 2009). In this study, product development and post-launch marketing were generally regarded as semantically separate from commercialization. Still, commercialization is a diverse concept related to many strategic aspects and activities.

In this study, the general strategic considerations for commercialization were analyzed through the segmentation, targeting, and positioning framework (STP), while the tactical considerations were analyzed through the marketing mix. Adding to those, the lean commercialization framework, which is specifically tailored for startups, guides the overall approach.

perspective of commercializing companies. For example, restaurant managers tended to be operations-focused and risk-averse. Adding to the industry mindsets, it was recognized that the decision making of Swedish restaurant managers was guided by social influence from local cooperative networks. A commercialization strategy that fails to consider those is unlikely to be successful. In addition, a couple of notable company-related challenges were also identified in terms of credibility and opportunities for integrations and bundling. Startups are not smaller versions of large companies, but operate under fundamentally different conditions.

Proposed Commercialization Strategy

On the strategy side, several approaches with the potential to overcome the commercialization challenges were proposed. In short, these aimed to promote adoption among lead customers by emphasizing product benefits while minimizing the resistance caused by risk aversion and hesitance toward behavior change. Lean commercialization was found

to be a useful framework to allow iterative strategic improvements. No commercialization strategy planned from start to finish in advance is likely to be flawless, but iteration is even more important in the startup case where the objective is to search for a business model rather than to sustain one.

References

Chiesa, V., & Frattini, F. 2011. *Commercializing technological innovation: Learning from failures in high-tech markets*. The Journal of Product Innovation Management, 28(4): 437–454.

Gbadegeshin, S. 2018. *Lean Commercialization: A New Framework for Commercializing High Technologies*. Technology Innovation Management Review.

Pelikka, J., & Virtanen, M. 2009. *Problems of commercialisation in Small Technology-based Firms*. International Journal of Entrepreneurship and Innovation Management, 9(3): 267–284.

Popovic, D. R., & Fahrni, F. 2004. *Launching the first mass product of a high-tech start-up company*. 2004 IEEE International Engineering Management Conference (IEEE Cat. No.04CH37574), 3: 929–933 Vol.3.

Rogers, E. 1995. *Diffusion of innovations*. 4. ed. Free Press.

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