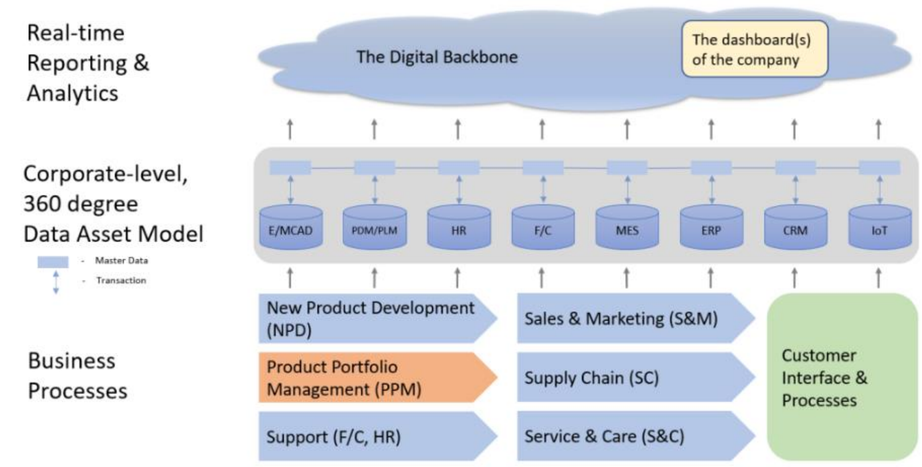
HSLU Hochschule Luzern

Technik & Architektur
Master Thesis Business Engineering

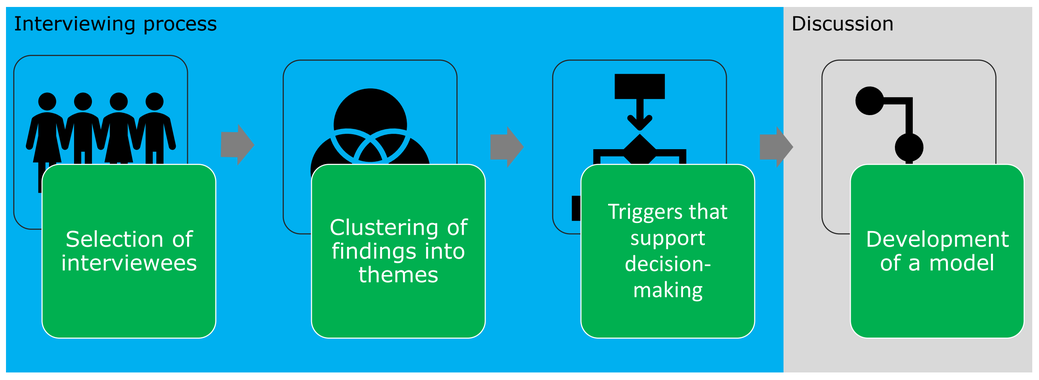
Master Thesis Business Engineering

Service lifecycle management of product-service systems

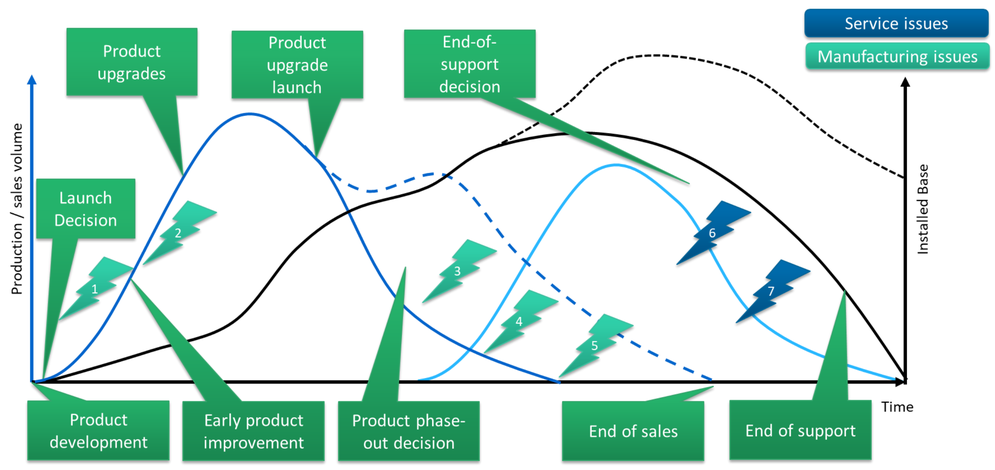
in complex product-service systems



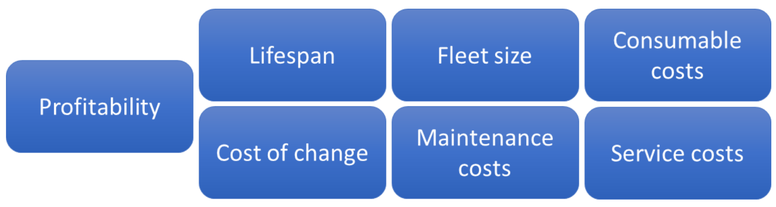
Portfolio data management concept by Hanilla et al. (2020)



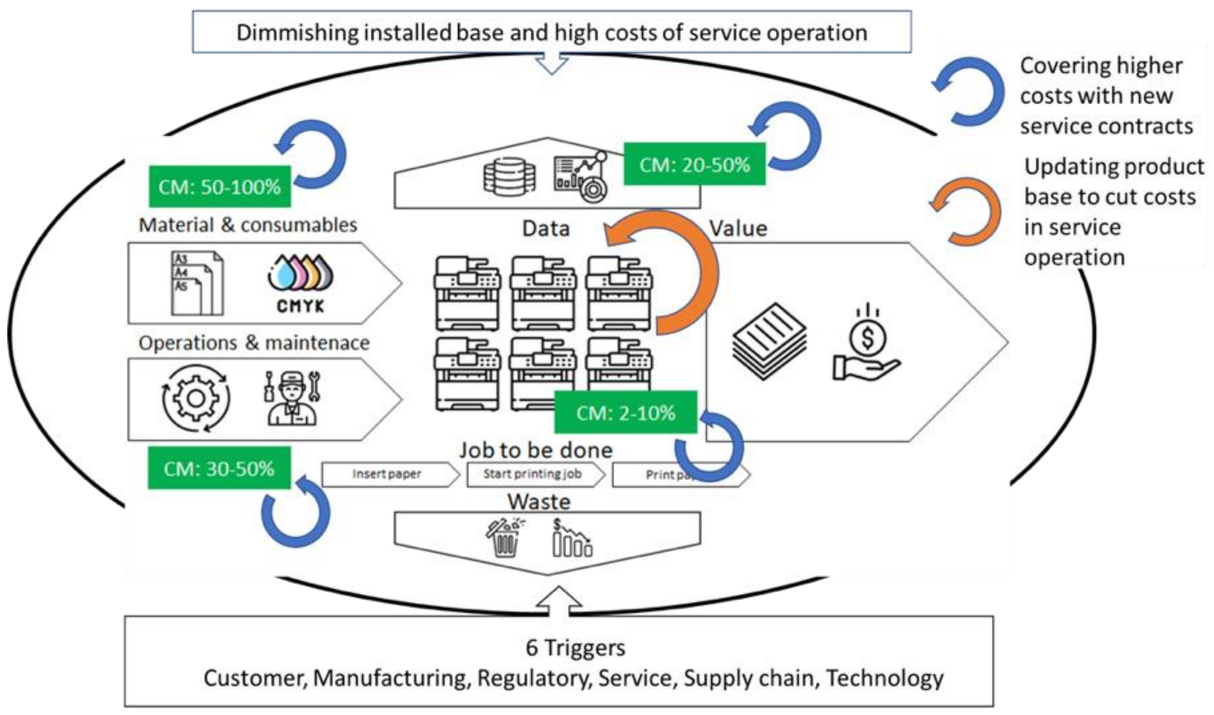
Methodology



OEM decision journey model



Decision drivers for service withdrawal



Decision-making model for service phase-out

Context

This study was conducted in the environment of industrial original equipment manufacturers (OEM) and service provider conglomerates. Strategic resource allocation is key to stay on the competitive edge, hence competitors need to be aware of their product portfolio, capabilities, market expectations and leverage this knowledge to structure portfolios in alignment with the business strategy. As OEMs portfolios oftentimes contain complex emerging product-service-systems (PSS), a clear structure is required to manage such portfolios.

Traditional product lifecycle management (PLM) focuses mainly on managing products with their associated product metrics, whereas services are managed under service lifecycle management (SLM). Emerging PSSs require a new, integrated management approach that enables collaboration between PLM and SLM. The study aimed to find a solution to determine the timing of the service withdrawal for the installed base.

Methodology

The methodology involved leveraging primary and secondary research within the company. A comprehensive questionnaire was created to understand how other companies address similar issues. The data collected was analyzed, and a model was developed and tested for effectiveness.

Results

Decision-making was ad hoc and varied across departments. Data was aggregated at a higher organizational level, and consistency was affected by varying internal alignments, leading to misaligned stakeholder actions and questionable product lifecycle extensions. Nine interviews were conducted with OEM/service company leaders. The data informed model construction, which was tested against a generic company and existing literature, revealing that literature addresses product or service elimination but not PSS phase-out.

Key triggers include profitability, fleet size, and various costs. This model manages a PSS's service portfolio and plans for withdrawal. Establishing data-driven decision-making and standardising through modularisation, extending equipment lifespan with upgrades increases profitability by enabling more services.

Peter Dober

Prof. Dr. Shaun West

Prof. Paolo Gaiardelli

Roche Diagnostics International AG

Roche

FH Zentralschweiz

MSE | MASTER OF SCIENCE IN ENGINEERING