Productization Levels towards Whole Product in SaaS Business

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ABSTRACT

The software business is moving from product business to Software-as-a-Service (SaaS). In addition to business changes, this also changes how productization should be done. This paper explores the required levels of productization in different phases of SaaS business. The research is based on a case study in a company and in a context of enterprise software and B2B business. This study focuses on how to build an enterprise SaaS solution, with excellent viable product–market fit, and concurrently, before larger productization investments, must be sure that demand exists. As a result of the study a productization model including three productization levels is presented.

In this study we refer to products as software products and services.

CCS CONCEPTS

• Information systems~Information systems applications • Information systems~Enterprise applications

KEYWORDS

Productization, Product launch, Product management, Software-as-a-Service from on-premise to Software-as-a-Service, Software intensive business

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1 INTRODUCTION

The transfer from products to services has been an ongoing process more than a decade. It can be seen e.g. in consumer business such as in game business. Among the software business applications Microsoft 365 is a good example of moving from product business to Software-as-a-Service (SaaS).

The trend in consumer-oriented software business is from owning to pay per usage. The business customers will follow the same behavior as they do as a private person. Simultaneously, the business firms do not want to increase the value of fixed capital or balance sheet by committing to high-priced software licenses.

Bosch [2] uses term "enterprise's consumerization" in this context. The movement from technology-driven to customer-driven innovation will be a driving force to SaaS software demand. The rapid adoption of new technologies, solutions and products is according to Bosch [2] multiplying. Speed is the today's key word. Newcomers are winning old dinosaurs on price, performance and user experience. Rapid redeployment enabled by SaaS allows faster adoption new technologies.

Productization is one of the key operations for software intensive firms in transferring their product and service range from project deliveries to product business. An adequate productization ensures a sellable and deliverable product from the beginning.

While moving to SaaS business, the productization processes should change, too. This paper explores the required levels of productization in different phases of SaaS business. The main research question is: "which productization tasks are necessary for gaining the first customers and what can be postponed to later phases. The research is based on a case study in a company and the context of enterprise software and B2B business.

Investing too much too early and on wrong issues before the real customer commitment and feature set is frozen, seems to a headache of growing firms. The full-scale productization does not make sense before a group of first customers has proven the viability of the product.

The viewpoint of SaaS of this research is a new product launch and its impacts to productization tasks in enterprise software industry. Transformation towards SaaS will require changes to product operations and business model. A good definition about cloud technologies is done by NIST [14], cloud computing refers to "enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction".

Software vendors can monetize the R&D investment by an effective productization. The same technical modules can be used in creation of several commercial views to product portfolio. One excellent description of productization is given by Cooper[4] "Productization means standardization of the elements in the offering. The term productization includes several technological elements from the very early stages of designing a product (i.e., managing requirements, selection of technological platforms, design of product architecture etc.) to the commercial elements of selling and distributing the product (i.e., delivery channels, positioning of the product and the company, and after sales activities). Some of the key elements influencing the degree of productization are product market, concepts, benefits, positioning, requirements, features, specifications, delivery channel, marketing, selling, and packaging".

According to Giardino et al.[7] finding of the first paying customer and the problem-solution fit are the main challenges of early stage firms. According to the first author's own experience there are very little or no differences between start-up companies and new product launch from an already established company regarding productization. In both cases excellent match between the functionality and customer demand is required. Comparing startups and established companies is justified because there are plenty of investigation of early stage firms especially in SaaS business such as [3,1,16] but not much about existing on-premise firms transferring their product range to SaaS.

As summary, there is a research gap on productization in companied that move to SaaS business. The aim of this paper is to via a case study to take the first steps towards a definition of the productization levels in SaaS business and to describe which steps has to be taken to get the first paying customers. The research is based on one case company.

The remaining of this paper is organized as follows. Section 2 defines the role of product management and the complex concept of productization process. Section 3 presents the company case, case environment, the productization model and findings. The fourth section discusses about the directions of further research and the fifth final section concludes the study.

2 BACKGROUND

In the following we first present the nature of SaaS business. Then the discussion follows with a description of productization. Later product management will be in focus and finally we present the ISPMA [10] framework of product management.

2.1 NATURE of SaaS MARKET

Easy discovery and access through internet enable worldwide market for SaaS product vendors. Simultaneously, all players have same playground and competition is open and global. According to Bosh [2] SaaS customers expect new technologies, systems and applications and faster reactions from their software vendors than customers of traditional software.

The increased speed multiplies the risks. When the product launching goes well the global market is open for the vendor. However, if the first product launch is not good enough, the reputation may be ruined. Enterprise software vendors are not so much depending full scale and complete product launch as mobile app manufacturers and game vendors, since the new customers can be added incrementally. In such incremental approach the vendor can learn from case to case.

Dissimilarities between (video) games and utility software has been analyzed by Hyrynsalmi et al. [9]. The following results were found in that research. At first the lifecycle of business software is remarkably longer. The business software can be used many years without major changes compared to games whose lifecycle on the market could vary from one week to a few years. Second the target of business software is making the users work more efficient while the purpose of games is mainly to entertain. Thirdly, the minor failures, shortage of functionalities and usability mistakes can stand in business software even for years.

Many researchers have given definition of the productization. For example, Suominen et al. [15] define productization as follows: "a standardized process which aims to produce a high quality commercial good or service viable in the market from produced information". In the other hand productization process, transition customer-specific software from to product software consist according to Artz et al. [1] of the following phases: awareness of the problem, suggestion, development, evaluation and conclusion. Artz et al. [1] have descripted 6 stages of productization 1) reuse across projects, 2) product recognition, 3) product platform, 4) standardizing product platform 5) customizable software platform and 6) standard software platform.

Especially in the early stage, when the idea is conceptualized, the firms require high level productization. According to Bosch [3] in startups business environment neither the problem nor the solution is understood. The developers should not only concentrate on the technical solution in addition to that business strategies, target markets and customer relationship will rise their importance. Secondly, the following problem areas have been identified by Giardino et al.[7]:

- product-related problems such as technology uncertainty and feature prioritization (some features liked by the customer are put aside as "nice to have features"),
- market related challenges like getting the first paying customer and understanding of the customer needs,
- financial goals as reaching the break-even point, and
- team-related challenges like teamwork capabilities and motivation.

In addition to early stage companies, also the companies with existing product range will require productization when launching new products and services to existing or new markets. Without tight product manager / director and even tighter product management and productization process the offering starts to be unclear and product portfolio will be speared and unharmonized.

Figure 1 shows degrees of productization for a traditional (= installed) software. Software companies have seldom started directly with a mass-market product. Usually they have started with professional services such as technology advisors, project management, consultancy in addition to small customer-specific software development.

During the years the customer-tailored solutions are further developed to fulfill the needs of wider customer range. Depending the company and the case. either more software products or more services are added to product portfolio. Further development is partly done by R&D and partly created by product management.

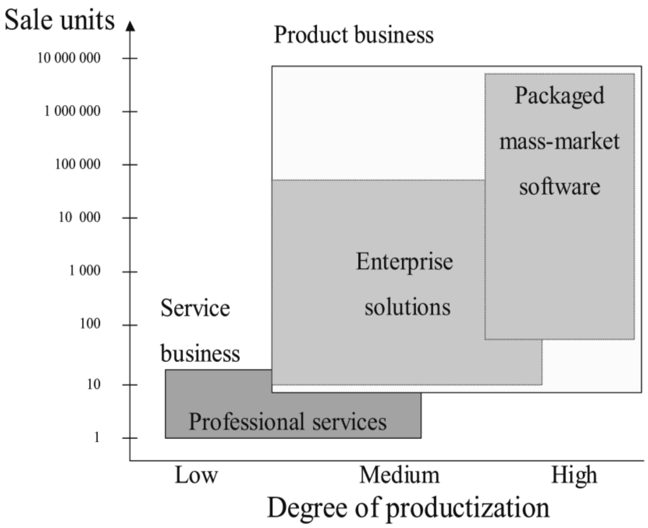

Figure 1 Software Product and Service Business [8]

Even though the Figure 1 visualizes an old school (installed) software business, to-days enterprise software firms tend to operate similarly even in SaaS world. The first versions are offered as customer-specific services and in the second phase parts of the service are productized as re-usable software modules that are used to extend functionalities or to gain new customers. In third phase the product and service range are extended to be suitable for mass markets. In the final, mass market phase the product includes all necessary element such as, manuals, installation software, API:s, marketing material, customer stories, price lists etc.

2.2 PRODUCT MANAGEMENT

Harder competition, shorter product lifecycles and thread of substitution products have done Product management's role in software product companies crucial. The powerful product management, as Ebert et al. [6] noted, improves the product management process by shorter project time, better quality, and the success rate. According to Ebert et al.[6] at least following business processes should be covered by product management: Portfolio Management, Strategy Definition, Product Marketing and Product Development.

Artz el al. [1] and Kittlaus et.al[13] propose exactly the same classification regarding product management. The four main functions are: Portfolio Management, Product Roadmapping, Requirements Management and Release Planning.

Ebert et al.[6] emphasized the difference between project and product management. The project management is more or less focused to deliver one delivery in time in agreed time and quality frame in contrast to product manager whose responsibility is the whole product market success and lifecycle with its releases and related services.

According to Wang et al.[16] the typical challenged faced by early stage software companies as listed follows: Thriving technology uncertainty, initial funding, acquiring first paying customers, delivering customer value, managing multiple tasks, defining minimum viable product, building entrepreneurial team, targeting a niche market, staying focused and disciplined, reaching break-even level.

The Customer development process has been descripted by Wang et al.[16] as follows: Problem definition, Problem evaluation, Solution definition and Solution evaluation.

All the models descripted above are methods to characterize process from idea to first paying customer.

Generally spoken the world is not just a start up and first paying customer. Serious software companies require continuous product management process: firstly, to produce additional software modules based on existing software package secondly, new products to existing markets thirdly, existing products to new markets and fourthly, rather seldom, new products to new markets. Companies with lacking product management process will lose the competition or the reachable goals which with an excellent product management is achievable stays unattainable.

In this research we have used, as reference for components and content, a framework developed by International Software Product Management Association (ISPMA). The framework has been built within several years together with world class scientists and world class product management gurus. The product management processes are divided in major lifecycle phases in ISPMA framework. According to ISPMA[10][https://community.ispma.org/wp-content/uploads/2018/01/ISPMA-SPM-Framework-V.1.3.png], the product management is divided seven processes such as 1) Strategic management, 2) Product Strategy, 3) Product Planning, 4) Development, 5) Marketing, 6) Sales and Distribution and 7) Service and Support. Each of those 7 processes has several requirements and tasks for product management operations. Operations are divided to product managements core area and the rest are more a less optional depending on organization resources and organization structures f.eg. amount of product lines or scope of different business units.

3 RESULTS

3.1 The CASE DESCRIPTION

The case firm has over 20 years history in enterprise software business which includes 3 years history of SaaS. The operations started by selling workstations and CAD software licenses. Due to rising demand by customers, professional services such as project management, training and consultancy were added into the product offering. After some year the professional services were replaced with software business. The business of hardware and CAD licenses was stopped mainly because of the firm's target was set to be a software company. In that time the software license sale was 70% and services 30% of business turnover. Later on, the market was a little bit saturated and the turnover split has turned 40% in software licenses and 60% professional services. The result was decreased profit. In that time the produced software was sold as installed (on-premise) licenses. The project contract with customer included software licenses and implementation services with a value of several hundred thousand euros. 30% drop of license sales by market change created a crisis. The turnover drop was not possible be covered by selling more workhours. Concurrently, SaaS solutions were rising their popularity even in enterprise software segment. Big players such as SAP (Cloud platform), Oracle (Netsuite) and Microsoft (Office 365) were forerunners. From the technical point of view the main drivers were reliable internet connection and mature browser technologies.

After market investigation the management decided that the firm needs to move to business. The case company, a midsize software firm, was running good enough profit level but there were not millions investment capital in development of a new product family beside to existing on-premise product family. The work should be done in phases minimizing the risks. Three main question had to be answered:

1. How it is possible build a SaaS solution, with excellent product – market fit?
2. Because lack of investment capital the firm must be sure that product market fit is viable before larger investments and the demand exists. Thus, the firm had to find out how to make progress step by step?
3. The coming new product should not ruin the existing business. The incomes from the running business will be needed for running on going businesses as well as guarantee the investments for future business.

The third question is left out from this report since it concentrates on productization. The project was started under tight follow up with management. The first target was how to find a first paying customer.

3.2 The MODEL

A model is created for enabling a step by step process for the product launch and concurrent capability build-up procedure for launching SaaS products.

The company has chosen 6 main processes to follow the new product portfolio development and progress. The chosen processes are selected by the importance for the operational daily work. Processes are 1) marketing, 2) sales, 3) delivery, 4) product, 5) invoicing, and 6) end of usage. Productization requirements and tasks of each processes are descripted in Table 1. The table is organized according to the productization level of the company.

The developed model has three productization levels. A dedicated meeting is organized to approve the move to a next level. Decision makers in this meeting represent management, product management, marketing, sales and R&D. The exact criteria are not predefined but, the factors are: sales prognose, market view, customer feedback, need of features and technical liability. This policy requires tight productization management. The productization levels are:

1. **Proof of concept**
2. **Individual sales from 1st to 10th customer**
3. **Mass distribution**

Table 1: Productization levels, processes and tasks

Productization levels	Processes Marketing	Sales	Delivery	Product	Invoicing	End of usage
Level 1 Proof of concept	Protype / slideware	Hand picked prospects	The best man in the town support	Pilot / test product (no installation material etc.)	Case by case/ Manual	Manual process for deleting , storing data,
	Preliminary competitor analysis	Direct selling		3 party licenses case by case		
	Preliminary Product / Market fit	Preliminary Pricing Model		Features / functionality, listen to customers feedback		
	White paper (concept level)	Preliminary License Model		The best man in the town support		
Level 2 Individual sales cases, customers from 1st to 10th	WHY customers need the solution- reasonings	Hand picked customers, customized demos mainly to existing customers or	The first level service operation model in production	Delivery ready product to fulfill the first customer's needs	At first case by case/ manual, later (after several customers)	Manual process for deleting , storing data, deleting user right /
	Better product / market fit, listen to customers feedback	Direct selling / on line demos		Installation software	Invoicing process exists for ned products	
	Animations etc. To convince customers that there will be real product	Preliminary module & option list	Training material, limited contents	Better product / market fit		
	Material fo Demo	Price list version 1	Manuals, limited content	Manual product updates		
	Coming soon info for www pages, Brochure	The first License model	Manual delivery / installation	Preliminary Technical module chart & option list		
Level 3 Mass distribution	WWW pages & material for uploading	Price list (complete)	Training material, full content	Product ready for mass distribution	Automated	Automated process for deleting , storing data, deleting user right /
	Youtube videos	Try me! version available	Known bugs	Customer evaluated market / product fit	Monthly invoicing, fixed prices & modules	
	Product launching	Sales module chart & option list	End user license agreement	Technical module chart & option list		
	White paper / Concept description	Order forms	Manuals full content	Product version management		
	Market & competitor analysis	Sales argumentation	License	Automated installation software		
	What's new /Data sheets		Service operation model in production	Product update process		

The first level is proof of concept, where as an idea or concept is presented via a PowerPoint presentation or as a demo software to the best thinkable customer prospects. The outcome of several discussions with prospects is a list of improvement needs. The main target is to get the first paying customer by all legal possible means. The best commitment of viable product is a customer who is willing to pay. In this phase the marketing is promiseware and all operations are manual.

The second level, named individual sales, assumes handpicked customers and delivery-ready product to fulfill the first customer's needs. The product management in this phase covers all operations that are needed to get the number of customers up to 10th. In this level the aim is getting direct customer feedback of the solution, e.g. pricing, features, operational model. Continuous product improvement with tight customer contacts and R&D involvement makes this phase successful. Simultaneously, marketing starts with videos and other marketing material, initial price list and module chart are created by sales, and some of operations such as invoicing and installation of software are semi automatized. In the individual sales phase, the firm starts building up organization, processes and product ready for scaling up sales. The success in level 2 either leads to controlled ramp-down or to a path.

In the third level, mass distribution, the proven product is delivered to mass markets. Processes are automated, operations are in place, multitenant product is viable.

The partition to levels is based on typical set of productization tasks needed in different phases of the product life cycle.

3.3 FINDINGS

In the level 1 named Proof of concept, the marketing started with a small proto and slideware. In addition to that a preliminary product-market fit analysis was done. Simultaneously sales were operating with 3-5 pcs handpicked prospects, all of them were known and had bought earlier something from the company. In the early phase the prospects wanted to know an initial estimate of the price and rough specification of the features. The discussion with customers took 6 months before there were 2 prospects who wanted to pay a slump sum of the first version of the product running on private cloud. After two customers gave a financial commitment the management decided to jump to the next level of productization. In level 2, named Individual sales, the marketing started to operate more actively. YouTube videos and demo material were done, and Web pages were created. Sales extended target prospect list to 15 known firms. The goal was set to gain 3 more customers in addition to those 2 who had already given their commitment. 5 active customers with new SaaS solution supports analysis of needed features and improved productization e.g. pricing, module chart, training material, installation software and internal processes such as invoicing. R&D was tightly integrated with customer operations enabling direct feedback and iterative development. Product development was first customer specific, but cloud based, and after the third customer, the customer-specific private cloud solution was replaced with a single multitenant cloud. Those 5 first customers were selected already beginning so that they are suitable for references. Four months SaaS usage with 5 customers convinced management that there will enough demand for next level investment.

In Level 3, named Mass distribution, the marketing did the official product launch in a trade show and concurrently initiated a Web campaign. Required marketing material was now also ready. On sales side a trial version was available, and the price list was ready. In this mass distribution phase, the sales process was transferred from personal sales towards internet demos supported by personal sales meetings. Product was multitenant and version management together with installation software was built. Invoicing process was automated.

As a conclusion the productization model supported the new product launch by improving the quality, increasing customer satisfaction and decreasing to market entry risks. After one year after product launch the firm has about 25 enterprise customers for new SaaS solution compared to 120 existing customers acquired within 20 years.

4 DISCUSSION

The aim of this case research was creation of a product management model for a company that start a new SaaS business. The model defines the steps what have to be taken to make stairs to success and to avoid over-investment before a viable product market fit exists.

ISMPA software product management framework lists the product management processes and functions. Each process has several tasks. ISMPA model has 7 phases such as strategic management, product strategy, product planning, development, marketing, sales and distribution, service and support. The model used in the case firm consisted of 6 processes: sales, delivery, product, invoicing and end of usage. These models are rather similar.

Wang [16] listed challenges of early phase companies. These include acquiring the first paying customer, delivering customer value, defining a minimum viable product, managing multiple tasks and reaching the break-even point. Compared to the case company's model it has three productization levels, each of those phases includes the paying customer, delivering customer value and viable product before the step forward. In the model 6 processes compared to Wang's multiple tasks. Concurrently Bosch et al.[3] advise developers to concentrate business strategies, target markets and customer relationship, not just development. The case study model and Bosch et al. are pointing same features.

Artz el al. [1] and Kittlaus et.al[13] described elements of product management such as Portfolio Management, Product Roadmapping, Requirements Management and Release Planning. The model in the case study differs, since portfolio management is totally missing, product roadmapping and requirement management are more customer drive, release planning is missing from the model.

In the other hand Järvinen et al. [11] have compared startups and well-established firms. They use a term Mercury Business about firms that are actively searching extend to their today's businesses and keen to find new business areas. Similarly, the case study model aim was finding new business areas.

A few years old company has its structures in place. These structures include e.g. organization, number of active customers, internal processes, offices, sales, marketing and R&D. According to Giardino [7], 60 per cent of the startups fail during the first 5 years. An existing firm has a little more time, but because of technology disruption or competitor's new solutions, so they also must react fast. Both for startup and an established company, in front of new product launch, acquiring of the first paying customer is one of the top challenges.

5 CONCLUSION

This case study was focused on SaaS companies and their capability to build and develop new products to market. Productization, the timing and phases, are critical for business software firms developing new product to markets. As the result shows a huge number of different tasks should be done in SaaS companies before the products and services are ready for mass production. Thus, the productization is split to 3 level and the product management task are added gradually as the product life cycle moves to new levels. The analyzed firm has chosen their 6 main processes what to follow.

The validity of results has some limitations. Until now just one case company has been analyzed. Further research will be needed to test this phase-based productization model with several enterprise software vendors and compare results in different company cases. Another further research topic may be how to prevent the coming new product from ruining the existing business.

How to build a complete product market fit without destroying personnel, market and customers with a hassle. By analyzing different researchers, the following outcomes around productization and product management is possible to be seen. The usage of the developed model shall reduce mistakes, wrong decisions, too early investments and improve customer satisfaction before viable and complete product market fit exists.

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