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Business Model Innovation Paths and Tools

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Business Model Innovation Paths and Tools

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Abstract

There is a multitude of tools available for Business Model Innovation (BMI). However, Business models (BM) and supporting tools are not yet widely known by micro, small and medium sized companies (SMEs). In this paper, we build on analysis of 61 cases to present typical BMI paths of European SMEs. Firstly, we constructed two paths for established companies that we named as 'I want to grow' and 'I want to make my business profitable'. We also found one path for start-ups: 'I want to start a new business'. Secondly, we suggest appropriate BM toolsets for the three paths. The identified paths and related tools contribute to BMI research and practise with an aim to boost BMI in SMEs.

Keywords: Business Model Innovation, SME, tooling

1 Introduction

Business Models (BM) have drawn enormous attention in academic literature. A broad array of literature proposes differing definitions, lists of components, taxonomies and evaluation models for BMs (e.g. Timmers, 1998; Amit & Zott, 2001; Gordijn et al., 2000; Osterwalder & Pigneur, 2002; eFactors, 2002; Magretta, 2002; Faber et al., 2003; Osterwalder, 2004; Haaker et al., 2006; Lambert, 2008; DaSilva & Trkman, 2014). However, research on BM and BM Innovation (BMI), based on cases or on cross-

sectional research has been rather limited. Also, the practical importance of BMI has been underlined, for instance by the EU, which has identified BMI, especially by micro, small and medium sized enterprises (SMEs), as a major source for competitive advantage, economic growth and job creation (Empirica, 2014; EASME, 2015). Unfortunately, the concept of BM or the tools to support BMI are not widely known by the SMEs. They are seldom aware that besides product development, they actually are engaged in BMI to achieve increase in performance and innovativeness in their offerings. Furthermore, often they are not aware of available tools, and if they are aware, the tools appear too academic, or too complex for SME use. To serve the 20 million SMEs in Europe in supporting BMI, we are in need of simpler tools with clear relation to the needs of SMEs in their BMI. Our study is motivated by an H2020 research project, where we work on developing an easy-to-use toolkit for SMEs to be readily available on the Internet. The toolkit is built on the basis of analyses of case studies as well as quantitative research on European SMEs' BMI behaviour.

Against this backdrop, this paper presents an empirical case study of 61 cases. The objective of our research is *to identify paths that take SMEs through BMI and to assist them on the way with a limited/minimum set of suitable tools suitable to their specific situation*. We do this by analysing first, what kind of challenges SMEs have regarding BMI. We depict paths, or sequences, of the challenges identified in the cases. Then we suggest suitable combinations of tools for analysing and finding the solution for the challenges. The latter serves also our ultimate goal of creating an easy-to-use, relevant toolkit for SMEs in BMI.

The paper is structured as follows. Section 2 provides a background on BMI theory as well as related work on BMI tooling in academia and practice. Section 3 describes the empirical study and presents the paths, or patterns found in our case companies. In Section 4 we discuss the findings and section 5 concludes the paper.

2 Business Model Innovation and tooling

Schumpeter (1943, p. 132) explained innovation as '*neue Kombinationen*', new combinations, and "*an untried technological possibility for producing a new commodity or producing an old one in a new way, by opening up a new source of supply of materials or a new outlet for products, by reorganizing an industry and so on.*" His characterisation has influenced the research and definitions of innovations. For instance, a joint publication of OECD and Eurostat, '*The Oslo Manual*' (2005, p. 46) defines innovation as: "*An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations*". The requirements for an innovation is that it must be new (or significantly improved) to the firm; it can be a single significant change, or of a series of smaller incremental changes that together constitute a significant change - and - it must have been implemented.

'The Oslo Manual' covers primarily product, process, marketing, and organisational innovations, but it does not define explicitly innovation of BMs. Therefore, we have gathered some definitions of BMI proposed in BM literature to Table 1. Several of these define BMI as an activity, where core elements of a firm and its business logic are deliberately altered.

Table 1 Definitions of Business Model Innovation

Amit & Zott (2012).	"The authors define a company's business model as a system of interconnected and interdependent activities that determines the way the company "does business" with its customers, partners and vendors...Business model innovation can occur in a number of ways: (1) by adding novel activities, for example, through forward or backward integration, (2) by linking activities in novel ways, or (3) by changing one or more parties that perform any of the activities."
Björkdahl & Holmen (2013)	Business model innovation is a new integrated logic of value creation and value capture, which can comprise a new combination of new and old products or services, market position, processes and other types of changes.
Bucherer, Eisert & Gassmann (2012); Bonakdar (2015)	Business model innovation is a process that deliberately changes the core elements of a firm and its business logic.
Giesen, Berman, Bell & Blitz (2007)	Three types of business model innovation are identified, namely, industry models (innovations in industry supply chain), revenue models (innovations in how companies generate value), and enterprise models (innovations in the role the structure of an enterprise plays in new or existing value chains).
Hartmann, Oriani & Bateman (2013)	Modification or introduction of a new set of key components – internally focused or externally engaging – that enable the firm to create and appropriate value."
IBM global CEO study by Pohle & Chapman (2006)	Business model – Innovation in the structure and/or financial model of the business
Lindgardt et al. (2009)	Innovation becomes business model innovation when two or more elements of a business model are reinvented to deliver value in a new way.
Osterwalder, Pigneur & Tucci (2005)	Specifying a set of business model elements and building blocks, as well as their relationships to one another, is like giving a business model designer a box of Lego blocks [Burgi, Victor et al. 2004]. He or she can experiment with these blocks and create completely new business models, limited only by imagination and the pieces supplied.
Taran, Boer & Lindgren (2009)	Specifying a business model innovation typology based on three dimensions: a) radicality (the extent to which and innovation departs from prior products/services, processes or business model); b) the reach of innovation (new to the company, the market or the industry); c) architectural innovation (change in any block of the business model)
Empirica (2014)	"We propose delimiting business model innovation as a composite type of innovation at the intersection of the four types of innovation defined in the Oslo Manual and implemented globally in innovation surveys, product, process, marketing and organisational innovation. In line with the literature, we consider BMI as radical or fundamental innovations rather than incremental changes."
Zott (2013)	"Design and implementation of an activity system that is either new to the market/ industry /world or new to the focal firm - new in terms of content, structure and or governance - for established firms; radical or incremental The more radical the BMI, the more wide-ranging the system-level changes"

Based on the above discussion on innovation in general, and BMI in specific, we define both BM and BMI as follows: *BM is the business logic how a company creates, distribute and captures value, and BMI is the innovation in company's BM that is new to the firm and results in observable changes in the firm's practices towards its customers and partners.*

In practise, BMI has at least following characteristics:

- Business logic describing how a single firm, or a network of firms, collaborates on a strategic (eco-system) and operational (process) level in bringing products and services (or bundles) to the market by making use of a technological platform, or an architecture that adds/captures value for both the (networked) firm(s) as well as the customer.
- BMI can be perceived, or experienced by ecosystems partners, and/or customers/end-users as a change.

Examples of BMI are, but not limited to,

- Service bundling or un-bundling; change from product to service provider (servitisation); moving upwards in the value chain, and so attracting new customer groups, or defining new markets.

- Companies transforming their processes from physical to virtual ones, by making use of capabilities of social media, IT-platforms, cloud computing, and/or big data analytics.
- Out- or insourcing of key resources and capabilities to new, or existing key partners within the constituting ecosystem (or value network). The core business is changed from an in-house producer to an orchestrator in a network.
- Changes in financial models like pricing strategies, (e.g. from pay per product to pay per use, or dynamic pricing) or monetisation and revenue models (combining advertisement with usage fees, or change to a commission model).

Many kinds of methods, frameworks and templates (here referred as *tools*) have been developed to facilitate the BMI and its implementation (Bouwman et al., 2012).

1. The most central tools for BMI are the ones building on BM ontologies like CANVAS (Osterwalder, 2002; Osterwalder et al., 2005), STOF (Bouwman et al., 2008), VISOR (El-Sawy & Pereira, 2013), BM Cube (Lindgren & Rasmussen, 2013), etc.
2. There are more specific tools for BMI, such as *stress-testing* for analysing and managing risks by combining BM ontologies like (lean) CANVAS and STOF with scenario analyses. They help the company to assess the viability of its BM already in a design phase and *road-mapping* for contingency planning and implementation (Bouwman et al., 2012). A *heat map* illustrates, which components of a BM are at risk, or need closer attention. The BMI roadmap is focussed on developing paths of transitions from current as-is BM to a to-be BM. In road-mapping, there are multiple, optional paths in achieving the desired change. These paths can consequently be more or less efficient, depending on the circumstances and the environment (De Reuver et al., 2013).
3. Market analysis and marketing tools: For example PEST-analysis and SWOT-model for analysing the environment. Marketing tools are mainly focused on formulation of a value proposition in combination with product market combinations or marketing mix. With Value proposition Canvas (strategyzer.com) the SME can make explicit how its products answer to the customer needs.
4. Financial tooling can range from simple business plan check-lists to cost-benefit analysis, cash-flow management tools and to advanced financial planning tools that make it possible to carry out value assessments, or to combine marketing research with revenue sharing models.
5. Tools to analyse the value constellation of the interacting parties with processes. VIP tools focus on value and information exchange aligned with processes. It is directed towards networked BMs, where one firm is clearly in the lead but dependent on first tier network partners (Solaimani & Bouwman, 2012; Solaimani et al., 2015; Solaimani et al., forthcoming).
6. Tools for implementing BM designs. There are attempts to directly connect BMI with EA (Fritscher & Pigneur, 2011; Iacob et al., 2012) using CANVAS, or STOF at one side for design and Archimate –notation for mapping the design with existing assets of organizations. Heikkilä et al. (2010) has developed a similar approach to connect BM to EA for boardroom use.

Alternatively, BMI-tools can also be classified along the line of exploring BM stages. Typically in an **explore** phase strategic oriented tools, like Porter's 5-forces, or environment scanning tools, play a role. Also other companies' BM changes, as

examples or benchmarks, can stimulate creativity and propose new ideas for BMs. In the **design** phases the focus is more on the BM ontology tools. The CANVAS is commonly used, while other ontology-based tools emphasize different aspects of BMs (Bouwman et al., 2008). For instance, VISOR can illustrate well human-computer interaction on webstores (El-Sawy & Pereira, 2013), or C-SOFT can deal explicitly with market segmentation issues (Heikkilä et al., 2010), whereas BM Cube on Value Sharing between network partners (Lindgren & Rasmussen, 2013). In the **test** phase the already discussed stress-testing can play a role as well as the use of success factors, as proposed within the STOF approach. In the **implementation** phase tools that deal with process or technical implementation are relevant, but also tools that deal with scalability and agility are useful. Moreover, the tools related to roadmaps and the order in which certain steps have to be followed are relevant. In the **grow** phase specific metrics can be used to analyse the progress and to adjust the BM if required. A repository as offered in Heikkilä et al. (2015) specifies all kind of metrics specific for BMs specific domains, like the Customer Value, Service, Technology, Organizational and Finance, as well as value and information exchange and process related metrics.

Tooling suites and platforms are also abundantly available. There are more than 15 websites that offer support tooling for CANVAS (canvanizer.com; diytoolkit.org, groupmap.com or tuzzit.com, to name a few). But next to websites there are also dedicated tool suites like e-Progress (<http://www.e-progress.fi>) and VDMBee (vdmbee.com). e-Progress offers tooling that requires an advisor, or consultant to be involved. The tool has currently four modules, i.e. (1) strategy, that focus on competitive advantage, (2) BMs focussed on profit generation, (3) business development with a focus on growth and cost effectiveness, and (4) business action planning, mainly concerned with operations management, performance and cash flow. In the web based tool, data on several firms is combined to offer benchmark opportunities. Every e-Progress module provides several tools, such as PEST to make trend analysis in the strategy module, as well as for instance a stakeholder analysis tool. The BM module contains CANVAS and cost benefit analysis. The main limitation of the tool is that it is not a self-service tool. The VDMbee (vdmbee.com) tool is developed on the BM Cube and makes use of Value Delivery Modelling Language to support development of value propositions, business modelling and cases in networked environments. It has specific modules for risk management, decision-making and business planning.

From the above short description of tools, and from experiences from the cases, we can draw a number of conclusions:

- The tools are typically demanding to use. In the SME context it would most often take a Ph.D. degree or a consultant to run through a full BMI-cycle.
- The process leads to many branches and iterations, which calls for persistence and experience in determining ‘the good enough’ –design.
- In most cases, one panacea for business problems is not enough – our early analysis shows that BMI leads to changes in multiple BM elements in parallel.

The above further motivates our study: because of the iterative nature of BMI and the inherent dynamic complexities, we should cut corners for SME BMI. SMEs are typically resource constrained, striving towards agility, instead of perfection in *ex ante* - design. This calls for a contingent, decision tree type of an approach to select most suitable approaches to the situation at hand. Another important issue is how to make tooling available to SMEs in such a way that it is easy to understand, easy to use,

modular and building on familiar tools of an SME entrepreneur (or consultant/advisor serving entrepreneurs).

To summarize, we postulate that simplicity of the BMI process is the key for a successful toolkit for SMEs. Therefore, it is important to recognise the underlying patterns and typical situations that SMEs are struggling with in striving for BMI. This is where our use case analyses can provide insight for toolkit development to match typical patterns.

3 Empirical Study

3.1 Method

In this article we use a multiple case study approach to analyse data from a total of 61 case studies. It is suggested that multiple case studies are well suited to building theory or constructs, because they permit replication and extension among individual cases (Yin, 1984; 2003; Cunningham, 1997; Eisenhardt & Graebner, 2007). Central to building theory from case studies is replication logic (Eisenhardt, 1989): multiple cases serve as replications, contrasts, and extensions to the emerging theory (Yin, 1984) and the researcher develops an understanding of why certain conditions did or did not occur, and then offers interpretations. Instead of relying on in-depth information about the case, there is a more general aim at using cases for illustrating and testing the soundness of concepts (Cunningham, 1997).

Our case study database consists of cases on BMI in SMEs collected by the authors and other consortium partners of our multi-national EU funded ENVISION project. The database follows a case study protocol and reporting format as used in the project. As a result the available data is well structured allowing us to make cross case analysis. The reliability of our analysis was improved by engaging the original researchers of each case study to review our analysis. The protocol is available on request.

The SME cases come from 14 European countries (Austria, Denmark, Estonia, Finland, France, Germany, Italy, Lithuania, the Netherlands, Poland, Slovenia, Spain, Switzerland, and the UK). SMEs' sizes range from micro enterprises (<10 employees, 28 firms), small (11-50, 18) to midsize (51-250, 15). The oldest SME in the sample was founded over three hundred years ago, in 1695, and the youngest are being established during the study. Fifteen, i.e., one fourth of the cases are family businesses. (The list of the cases is provided in the Appendix).

As the first step, we analysed the background, such as the characteristics of SME and its environment, the main challenges or needs described by the SME (labelled as '*I want to*') when innovating its BM. We analysed the data in a systematic way using the qualitative data analysis approach proposed by Miles and Huberman (1994). The data analysis started with open coding of the 'I want to's of 50 SMEs. This task was concerned with naming and categorizing the needs related to BMI (Strauss and Corbin, 1998, p.223). As a result a provisional list of categories was created. The authors went through the coding several times searching for potentially missing codes or miscoded cases using *Atlas.ti* -software. The final categorisation consists of sixteen differing BMI foci.

Next, we analysed the topic more in-depth by using the additional eleven cases. We tried to detect patterns and regularities and inductively formulate tentative hypotheses in the appearance of the needs.

The last step was carried out by a group of experts that suggested suitable tools for each of the BMI foci. The group consisted of 6 persons from the H2020 -project, who all are very familiar with the available tools, and also with the challenges faced by the SMEs. Three of the experts are also authors of this paper. First it jointly listed tools that could be of help for the SMEs with specific business challenge. Then the 'I want to's' were divided between the group members so that each expert studied and analysed 3 of them more thoroughly. After discussions, the group came up with a suggestion, where each 'I want to' connects with specific BMI tool(s) suitable to the situation.

3.2 Results

In the first step, we collected the desires of SMEs concerning BMI ('I want to'). Some companies mentioned multiple areas of innovation: e.g., a 5-year old veterinary clinic in Lithuania, wants both to expand its services and to gain larger market share in local market. A family owned restaurant in the Netherlands, wants to improve its customer relationship management by using social media channels and, in the long term, franchise their BM. Some SMEs want to move their business to web, and use new channels to reach customers. Two SMEs want to improve their offering by changing from product supplier to service provider. Two of the studied 50 SMEs were hesitant to make changes in their BM¹.

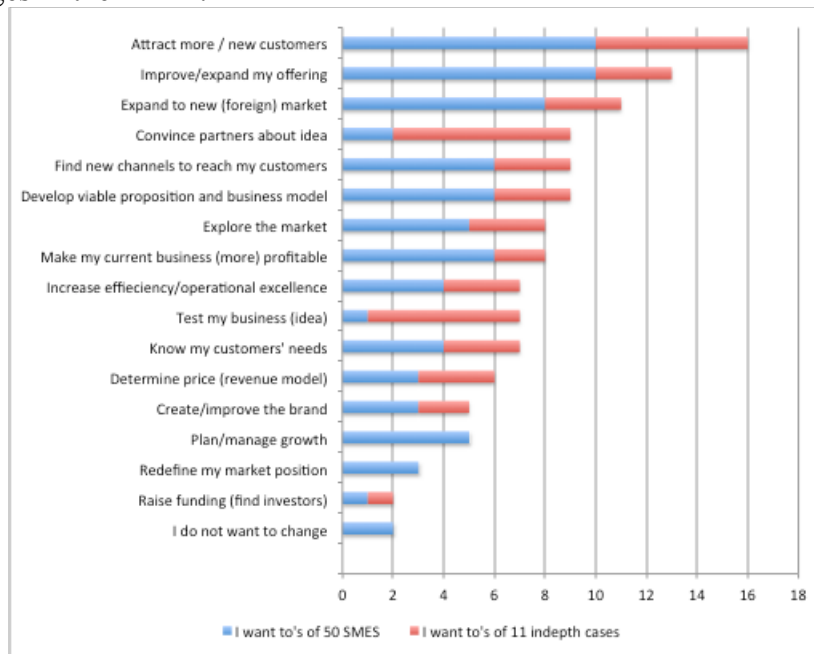


Figure 1. The aspirations of SMEs in improving their BM

¹ The first SME reluctant to change their BM is a medium sized family business owning three restaurants in Spain. The family has not changed its recipes of their main dishes since it first opened in 1980's and would rather not make changes to their BM, although the 'younger' generation explores possibilities to improve the supply chain and use social media. The other case is a micro-sized travel agency in Finland arranging special tours. It is owned by a married couple. In 1991 when the company was founded, the husband drove a mini-bus and the wife was a guide for small groups of tourists. Now they have 3 additional workers. The husband is sometimes pondering whether growth is a plausible option for their firm. However, his wife is reluctant to make the extra effort and therefore they have decided to keep it as it is for the last years before retiring.

Altogether, 16 differing topics were derived from this analysis (Figure 1), in most cases more than one topic per SME. Most often the SMEs said they want to attract new customers (10 out of 50) and improve their offering (10). Many were planning to expand to new or foreign markets (8). Developing a viable value proposition and BM (6), finding new channels (6) and making their current BM more profitable (6) were also among the challenges.

The additional eleven in-depth cases seem to be somewhat different in terms of their 'want to's: They are also keen on attracting new customers (6), but they also expressed the need to convince partners about their business idea (7) as well as testing their business idea (6).

As we had more thorough information to continue our study with the in-depth analysis of 11 cases, we drew paths of each SME, depicting the needs and sequences, and finally grouped them according to the similarity of the paths. We coin them as follows (see also Figures 2-4): 1) I want to make my business profitable, 2) I want to grow, and 3) I want to start a new business. BMI seems to start with a specific question that leads to more related questions and, eventually to different paths for start-ups, and for established companies.

1. ***'I want to make my business profitable'***: Three of the established SMEs wanted to improve the profitability of their business. All three started their improvements by focusing on efficiency of their key activities and use of internal resources [***Increase efficiency/operational excellence***]. A family owned Hardware Store in Finland for instance, analysed its processes and managed to cut its costs first by rearranging holidays of its employees, a critical capacity in seasonal business. Thereafter, it continued harmonising and adjusting the prices of the products in its three stores [***Determine price***], which helped to compete on price without the problem of uncontrolled discounts. A candy manufacturer in Spain wanted to start with improving its machinery and quality assurance processes [***Increase efficiency/operational excellence***]. Also a family owned wine trading SME, which desires to change from importing to manufacturing, wanted to start BMI by reducing its operating costs and product lines [***Increase efficiency/operational excellence***]. Both SMEs considered to obtain more information about their customers' needs [***Know my customers***] as the next step. Based on the knowledge about the demand, the SMEs went to analyse their offering and made adjustments in order to improve the profitability [***Redefine the offering***]. Finally, the candy manufacturer wanted to develop new distribution channels for its products [***Find new channels***], whereas the Hardware store wanted to limit and focus its supplier network [***Select partners***].
2. ***'I want to grow'***: Five SMEs, which wanted to grow their business, stated that their first desire is to attract more customers from their current market [***Attract more customers***]. Thereafter, the growth path divides into three routes: either the SME wanted to improve the offering [***Improve my offering***], to improve the brand [***Improve my brand***] or to explore the market [***Explore market***]. The third step seems to be common to all and involves selection and convincing partners [***Select and convince partners***]. Last, the SMEs expressed a need to expand to foreign markets [***Go to new/foreign markets***] or to find new channels for their products [***Find new channels***]. For example, a micro-sized SME in Austria, specialized in portable solar cells, had previously offered products where the solar panel was incorporated into shoulder bags. Now it wants to grow and extend its offering by finding new items to which solar panels can be attached. It also wants to enrich the

products with services, such as digital add-ons, to tie its customers to the offering of the SME. The production and delivery of these new offerings require that the SME can build a reliable partner network, which has the expertise that the SME does not cover itself.

3. ***'I want to start a new business'***: The path for starting up a new business seems to be more explorative in nature and includes several steps. For example, a start-up company in the Netherlands wanted to start a business with a new matchmaking platform in elderly care. First it wanted to know the market for matchmaking platforms in care [***Explore the market***], before it could develop the business proposition, explore the BM [***Develop viable proposition and BM***] and test it [***Test my BM***]. Afterwards, it wanted to find the right partners and arrangements [***Select and convince partners***], to find investors [***Raise funding***] and to select the right technology [***Analyse technology***]. Next, it wanted to determine which revenue models are viable [***Determine price***]. Finally the SME wanted to know if its BM is future proof [***Test my BM***] and to make revisions accordingly [***Develop viable proposition and BM***]. A start-up entrepreneur in Finland, which wanted to start an e-health service, was following almost exactly the same path, the difference was that he was not aiming to raise funding, mainly because his plan was to share the investment costs with well-established partners. The third start-up case shows how sometimes the SMEs might want only to take some steps in the path: a company that provides lotteries as a service for charity organizations wanted to take the path up till testing phase [***Test my BM***].

The final task in our empirical research was to assign the most useful BM tools to each of the 'I want to' as suggested by the expert group. The resulting tooling paths are depicted in the following figures 2, 3 and 4. For instance, 'I want to make my business more profitable' path consists of total six differing BM tools: cash flow analysis, customer analysis, price calculation, Value proposition Canvas, BM pattern cards and stakeholder analysis. For the paths 'I want to grow' and 'I want to start new business' we suggested several alternative tools from which the SME can choose - the last path consisting of nearly 30 optional tools.

I want to make my business more profitable

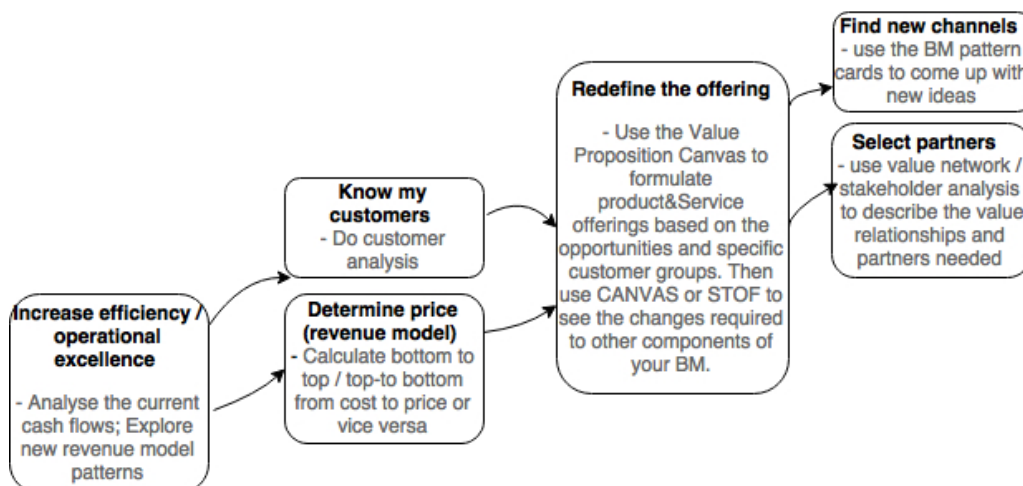


Figure 2 'I want to make my business more profitable' -path and tools for established SMEs

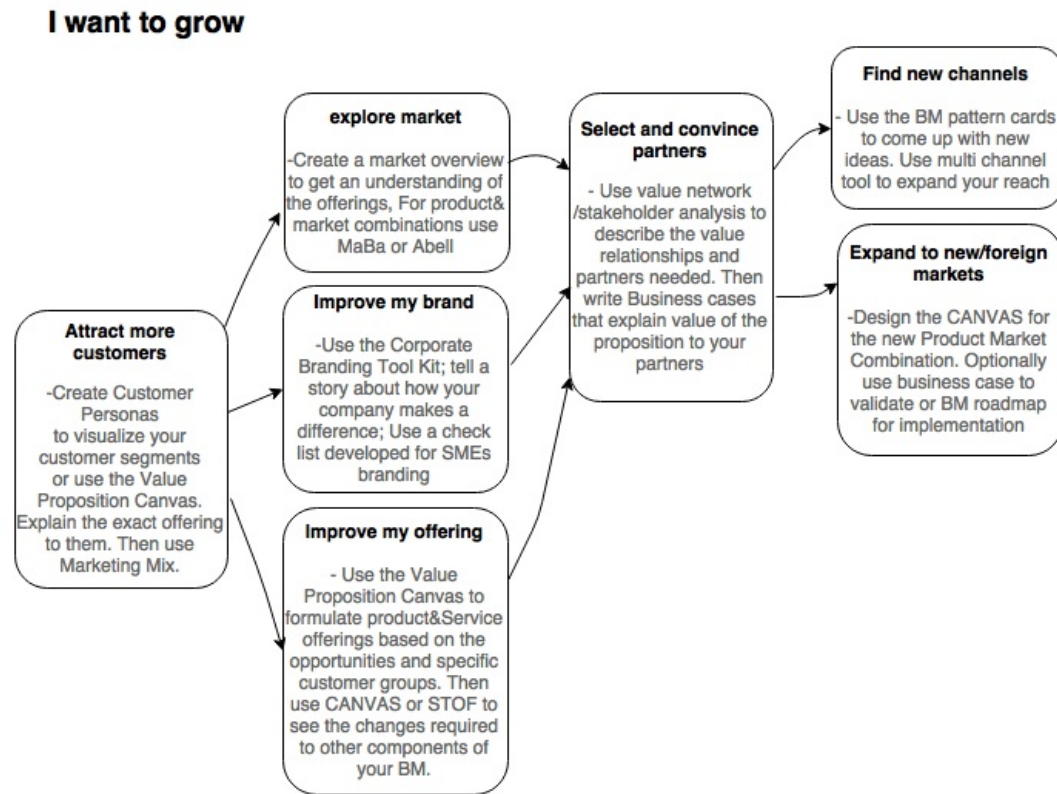


Figure 3 'I want to grow' -path for established SMEs

I want to start new business

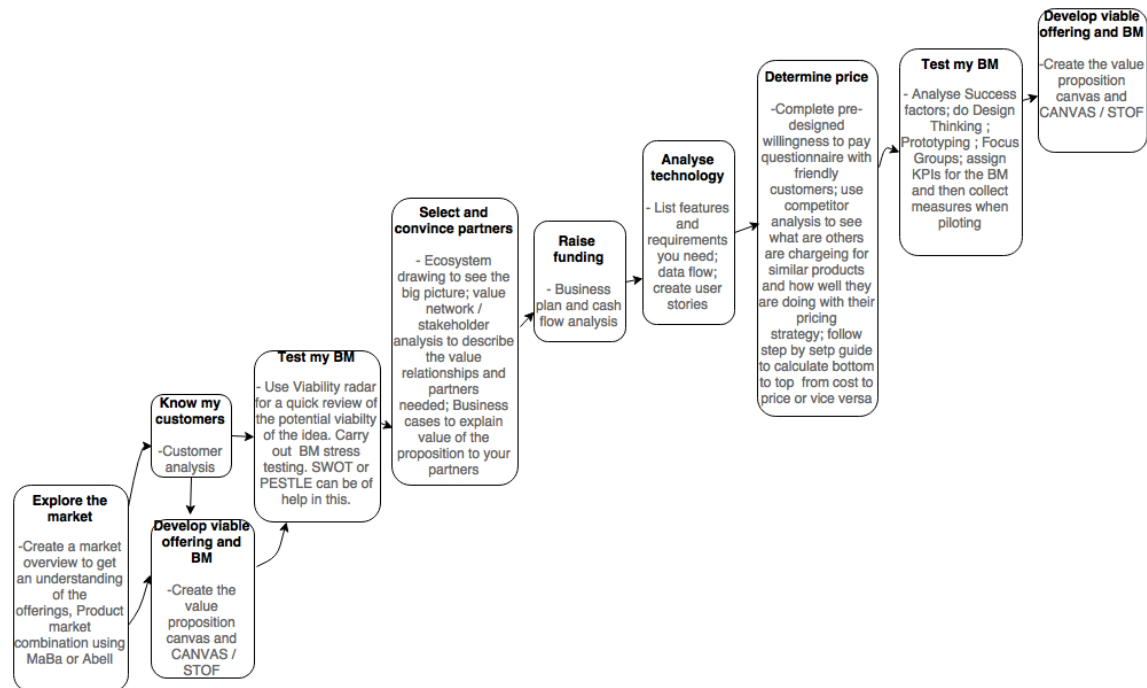


Figure 4 'I want to start new business' -path for start-ups.

4 Discussion

Empirical research on BMI is still sparse in the context of SMEs. Although case studies are available (Empirica, 2014), the focus is seldom on the commonality between cases, or paths of BMs, even less so on suitable BMI tooling for SMEs. In chapter 2 we identified and summarized six types of tools for BMI with different emphasis, and based on our earlier experience in using them primarily in large company settings, we determined most BMI methods too complicated for SMEs internal use. Therefore, we analysed a set of 61 SME business change cases for what the entrepreneurs want to achieve, as some kind of proxy for their strategic intent. Thereafter, we identified the most common aspirations for improving their businesses, and selected 11 in-depth cases for closer elaboration for the paths they have taken in solving their business challenges. We found three broader categories of paths, two for established firms 1) either want to innovate their BM to become more profitable or 2) to achieve growth. The start-up firms, in turn, are naturally searching for ways 3) to build up their BM. Then, we mapped the tools with the stages on the paths. This way we created tentative sets of tools for each of the paths, and we expect these to serve as starting points for creating the context dependent toolsets.

When reflecting upon our toolsets, it seems that the toolsets vary in each of the paths. As a consequence we got a limited collection of tools, where tools are suited at the specific challenges at hand.

The paths of the needs depicted in this paper show how the analysed SMEs are changing multiple elements in their BMs in reality. Their approach is often to tackle the needs sequentially mostly due to lack of resources. This is in contrary to our earlier findings in larger businesses, where the elements are typically changed in parallel. However, it should be remembered that BMI will most probably require changes to multiple elements in BM. In our reasoning this implies, that even though we can reduce the toolsets to solve the specific problems of SMEs, we should have (at least) a baseline BM at hand to show the interdependences of changes in one element on the other elements of BMs. The simple baseline business model with CANVAS, STOF or CSOFT should therefore be included in all paths.

Furthermore, the two common needs for the toolsets in the three paths are 1) the need to identify partners and 2) the need to articulate the offering. The tools for these are typically at the core of the networked business modelling.

The crucial question that we cannot yet answer is how these patterns and paths lead to increased performance, to the realization of set objectives, to next iterations of BMI, or disruptive BMs that lead to total new industries. It will be clear that before we can have more predictive models, more analyses of our rich dataset is required.

5 Conclusions

This is to our knowledge the first paper that focuses on finding patterns in BMI. Our key message in this paper is that, we can reduce the toolset to three basic business challenge paths of the SMEs. However, as an integrative element, we'd always need a BM-baseline, because it is needed to articulate the offering to the customers and to identify the partners in the business change in all the three paths. This is also supported in BM literature, in BMs capacity to map the interdependencies between BM elements and the effects of changing environmental conditions. Furthermore, the differing paths share two common needs: 1) the need to identify partners and 2) the need to articulate

the offering. The tools for these are typically at the core of the networked business modelling. For managers of SMEs our results provide suggestions on what BMI tools they could consider using if they are sharing some of the 'I want to's discovered in our cases. It also helps to anticipate the next steps in their path towards improved BMs.

Our results are based on an extensive database of SME cases collected within Europe, across different industries, including family and non-family businesses, start-up companies, and being in different stage of maturity. We are aware that this leads to heterogeneity. We deliberately strived for this heterogeneity, although we have not been able yet to take all the different background and exploratory variables into account. In combination with pan-European quantitative research we expect to provide deep insights into BMI patterns and paths. Based on these analyses we can help SMEs to get better access to relevant tooling via the platform that we have developed and will be revised based on the insights from our research. In future studies we need to put more focus on finding or creating tools that are not only helping to answer the 'I need to' questions by the SMEs, but also are easy-to-use and comprehend. To encourage the SMEs to start using these tools they should be accompanied with appropriate guidance and examples for instance of how other SMEs have utilised them.

The strength of this paper, the large database with heterogeneous cases, is also its weakness. We are aware that within the EU there still exist large differences in institutional, economic, cultural, and industrial differences that might affect our insights. Further data-analyses, expanding the database as well as more advanced conceptualization is necessary. Moreover BM thinking is embedded in theories from marketing, service innovation and engineering, organizational theory, platform and ecosystem thinking, as well as financial models. Although in grounding of our own model we paid a lot of attention to these theories, BM thinking tends to overlook theories. Making the grounding in theory more explicit in analyses of data is highly relevant and requires researchers' attention.

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7 References

- Al-Debei, M.M., & Avison, D. (2010) Developing a unified framework of the business model concept, *European Journal of Information Systems*, **19**(3), 359–376.
- Amit, R., & Zott, C. (2012). Creating value through business model innovation. *MIT Sloan Management Review*, *53*(3), 41.
- Amit, R., & Zott, C. (2001). Value creation in e-business. *Strategic Management Journal*, *22*, 493-520.
- Björkdahl, J., & Holmén, M. (2013). Editorial: Business model innovation—the challenges ahead. *International Journal of Product Development*, *18*(3/4), 213-225.
- Bonakdar, Amir. "Business Model Innovation" PhD diss., University of St. Gallen, 2015.

- Bouwman, H., de Vos, H., Haaker, T. (2008). Mobile service innovation and business models. Springer (2008).
- Bouwman, H., M. De Reuver, S. Solaimani, D. Daas, T. Haaker, W. Janssen, P. Iske & B. Walenkamp (2012). Business Models, Tooling and Research Agenda. In R. Clark, A. Pucihar * J. Gricar (eds.). The first 25 years of the Bled Conference. Kraj: Moderna organizacija.
- Bucherer, E., Eisert, U., & Gassmann, O. (2012). Towards Systematic Business Model Innovation: Lessons from Product Innovation Management. *Creativity and Innovation Management*, 21(2), 183–198.
- Cunningham, B. (1997). Case Study Principles for Different Types of Cases. *Quality & Quantity*, 31, 401-423.
- DaSilva C.M. and Trkman, P.(2013). Business Model: What It Is and What It Is Not. *Long Range Planning*, Vol. 47, Issue 6, December 2014, p. 379–389
- De Reuver, M., Bouwman, H. & Haaker, T. (2013). Business model roadmapping: A practical approach to come from an existing to a desired business model. *International Journal of Innovation Management*, 17, 1-18.
- EASME (2015). Horizon 2020's SME Instrument. Retrieved from <http://ec.europa.eu/easme/en/horizons-2020-sme-instrument>.
- eFactors (2002). E-business Model Roadmap. Deliverable 3.1. of Information Systems Technologies e-Factors Thematic Network Report, IST-2001
- Eisenhardt, K. (1989). Building theories from case study research. *Academic Management Review*, 14(4), 532 –50.
- Eisenhardt, K., & Graebner, M. (2007). Theory building from cases: Opportunities and challenges. *Academy of Management Journal*, 50(1), 25–32.
- El-Sawy, O. A., & Pereira, F. (2013) *Business Modelling in the dynamic digital space: an ecosystem approach*. Springer Heidelberg New York.
- Empirica (2014). The need for innovation in Business Models. Policy Brief prepared by empirica and FHNW on behalf of the European Commission. European Commission DG Research and Innovation. Version 2.5. 14th May 2014.
- Faber, E., Ballon, P., Bouwman, H., Haaker, T., Rietkerk, O., & Steen, M. (2003). Designing business models for mobile ICT services. Proceedings of the 16th Bled Electronic Commerce Conference eTransformation, Bled, Slovenia.
- Fritscher, B., & Y. Pigneur (2011) Business IT alignment from Business Model to enterprise architecture. In: *Proceedings of the 6th International workshop on Business/IT alignment and Interoperability*. An Ancillary workshop of CAISE. London (June), 4-15.
- Giesen, E., Berman, S. J., Bell, R., & Blitz, A. (2007). Three ways to successfully innovate your business model. *Strategy & Leadership*, 35(6), 27-33.
- Gordijn, J., Akkermans, H., & Vliet H. (2000). Business Modelling is not Process Modelling. In the Proceedings of the 'ECOMO 2000. Springer-Verlag, 40-51.
- Haaker, T., Faber, E., & Bouwman, H. (2006). Balancing customer and network value in business models for mobile services. *International Journal of Mobile Communications*, 4(6), 645- 661.
- Heikkilä, M. , H. Bouwman; J. Heikkilä, S. Solaimani & W. Janssen (2015). Business Model Metrics: an open repository. *Information Systems and e-Business Management*.
- Heikkilä, J., Tyrväinen, P. & Heikkilä, M. (2010). Designing for performance - a technique for business model estimation. Seppä, M., Helander, N. & Ilvonen, I.

- (eds.) Proceedings of EBRF, Research Forum to Understand Business in Knowledge Society.
- Iacob, M. E., Meertens, L. O., Jonkers, H., Quartel, D., Nieuwenhuis, L. J. M., & Van Sinderen, M. J. (2012) From enterprise architecture to Business Models and back. Software and System Modeling, ISSN 1619-1366.
- Lambert, S. (2008). A Conceptual Framework for Business Model Research. Proceedings of the 21st Bled eConference eCollaboration: Overcoming Boundaries through Multi-Channel Interaction, Bled, Slovenia.
- Lindgardt, Z., Reeves, M., Stalk, G., & Deimler, M. S. (2009). Business Model Innovation. *When the Game Gets Tough, Change the Game*, The Boston Consulting Group, Boston, MA.
- Lindgren, P., & O.H. Rasmussen (2013). The Business Model Cube. Journal of Multi Business Model Innovation and Technology, Vol. 1 (3), pp. 135-182.
- Magretta, J. (2002). Why business models matter. Harvard Business
- Miles, M. B., & Huberman, A. M. (1994) Qualitative data analysis: an expanded sourcebook. Sage Publications, 2nd Ed.
- OECD/Eurostat (2005), Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data, 3rd Edition, The Measurement of Scientific and Technological Activities, OECD Publishing, Paris. DOI: <http://dx.doi.org/10.1787/9789264013100-en>
- Osterwalder, A. (2004). The Business Model Ontology: A Proposition in a Design Science Approach (Diss. thesis, l'Ecole des Hautes Etudes Commerciales de l'Université de Lausanne).
- Osterwalder, A., & Pigneur, Y. (2002). An e-Business model ontology for modelling e-Business. In Loebbecke et al. (Eds.), The proceedings of the 15th Bled Conference on E-Commerce, Bled, Slovenia.
- Osterwalder, A., Pigneur, Y., & Tucci, C. L. (2005). Clarifying business models: Origins, present, and future of the concept. *Communications of the association for Information Systems*, 16(1), 1.
- Pohle, G., & Chapman, M. (2006). IBM's global CEO report 2006: business model innovation matters. *Strategy & Leadership*, 34(5), 34-40.
- Schumpeter, J. (1943). Capitalism, Socialism and Democracy. 2003 edition published in the Taylor & Francis e-Library, 2003. Available from <http://digamo.free.fr/capisoc.pdf>.
- Solaimani, S. & Bouwman, H. (2012) A Framework for the Alignment of Business Model and Business Processes: A Generic Model for Trans-Sector Innovation, *Journal of Business Process Management*, 18(4), 1-17.
- Solaimani, S., Itälä, T. & Bouwman, H. (2015) Networked Enterprise Business Model Alignment: a case study on Smart Living. *Information Systems Frontiers*. 17(4), 871-887.
- Solaimani, S., et al. (forthcoming). Business Model Implementation within Networked Enterprises: A case study on a Finnish pharmaceutical project.
- Strauss, A., & Corbin, J. (1998) Basics of qualitative research: techniques and procedures for developing grounded theory, (2nd Ed.) Sage: Thousand Oaks, CA.
- Taran, Y., Boer, H., & Lindgren, P. (2009) Towards an understanding of business model innovation processes, DRUID-DIME Academy Winter 2009 PhD Conference

- Timmers, P. (1998). Business Models for Electronic Markets. *Electronic Commerce in Europe*. *International Journal on Electronic Markets and Business Media*, 8(2), 3-8.
- Yin, R. (1984, 2003). *Case Study Research: Design and Methods*, Sage Publications.
- Zott (2013). *Conceptualizing Business Model Innovation. a critical discussant's view*, A presentation in Expert workshop Friday, 20 October 2013, 9.30 – 16.15 hrs Brussels, Belgium

Appendix: List of SME cases

Case name	Number of cases collected							industry	"I want to"
	Country	Part of Europe	MICRO	SMALL	MEDIUM	Family	Female		
Audio Tours	Poland	East		1				0 N79 Travel agency, tour operator and other reservation service and related activities	I want to increase profitability by using my BM to provide wider array of services
Big Data analytics for SMEs	Netherlands	West		1				0 J63.1 Data processing, hosting and related activities; web portals	to find a feasible model to commercialize our technology (big data platform)
Bus tours	Finland	North	1				1	1 N79 Travel agency, tour operator and other reservation service and related activities	Analyse whether growth is worth the extra effort
Candy manufacturer	Spain	South	1				1	0 10.82-Manufacture of chocolate, cocoa and confectionery products; 10.89-Manufacture of other food products	PATH"I want to survive in a mature sector • I want to develop new distribution channels • I want to expand range of products To reach those objectives
digital marketing agency	UK	West			1			0 M73.11 Advertising agencies	I want to adjust my service offering and resources to the changes in the business domain.
Educational service provider	Netherlands	West			1			0 J58.1 Publishing of books, periodicals and other publishing activities	establish and grow international
Electronic Boot fair	Germany	Central	1					0 J63.1 Data processing, hosting and related activities; web portals	expand to global markets
Electronic medicine dispenser	Netherlands	West			1			0 G47.74 Retail sale of medical and orthopaedic goods in specialised stores	explore the possibilities to make business with my idea
electronic receipts for eRecruitment	Finland	North	1					0 J62.0 Computer programming, consultancy and related activities	Reach my potential customers better to increase sales
eSpice	Germany	Central	1					1 J63.1 Data processing, hosting and related activities; web portals	I want to build a scalable product as our current business model is not that scalable
Event Technology Services	Germany	Central	1					0 G46.36 Wholesale of sugar and chocolate and sugar confectionery	I want to make our brand better known and the enhance our offering to related products.
Everyone deserves plants	Finland	North	1					0 G47.4 Retail sale of information and communication equipment in specialised stores	To keep customers (who are always looking for WOW effects) satisfied , I want to be in the front line with the newest technology and equipment
find eAdvertisement	Netherlands	West		1				1 A01.61 Support activities for crop production	Convince funders and pioneer customers of the product, and to design turn my technical invention into business
FitCity	Italy	South		1				0 M73.11 Advertising agencies	Survive - Modify my BM so that it will be viable even though big competitors
from telco to smart living services	Netherlands	West			1			0 J61 Telecommunications	Redefine my market position and service portfolio
Gourmet Burger	Netherlands	West		1			1	1 I56.1 Restaurants and mobile food service activities	short term: use social media to direct interaction with clients; long term: turn the business into franchise
Hamburger and BBQ	Spain	South				1	1	1 I56.1 Restaurants and mobile food service activities	I do not want to change
Hardware store	Finland	North		1			1	1 G47.5.2 Retail sale of hardware, paints and glass in specialised stores	PATH I want to cut losses and change from 3 separate stores to a chain BM: "I want to cut losses • I want to cut the employment costs (solution: Move holidays to low season) I want to Change from 3 separate stores to a chain BM • I want to harmonize my offering"" & ""I want to harmonize pricing • I want to have better information and understanding what is going on in my business • I want to share know-how within the company • I want to reduce the number of products and the number of suppliers"
Herb&Salad	Finland	North		1			1	1 A01.13 Growing of vegetables and melons, ...	Grow, serve new customer segments
High Performance Computing services	Slovenia	East		1				1 J63.9 Other information service activities	PATH"I want to increase sales • I want to offer new services
Incubator	Germany	Central	1					0 N82 Office administrative, office support and other business support activities	Have my income more balanced and recurring
Indie game developer studio	Finland	North		1				0 J62.01 Computer programming activities	Differentiate from the competing products
Industrial insurances	Germany	Central	1				1	0 J63.1 Data processing, hosting and related activities; web portals	Increase the market penetration and grow a larger customer base, in order to turn profitable
Integrated travel services	Spain	South		1				0 N79 Travel agency, tour operator and other reservation service and related activities	I want to expand to reach more customers and increase income.
IoT platform for elderly care	Netherlands	West	1					0 C28.9 Manufacture of other special-purpose machinery	design BM for my new invention
IT for greenhouses	Netherlands	West			1			0 A1.61 Support activities for crop production	increase value to customers, increase vendor lock-in, increase in revenue and increase in customer loyalty.
IT sourcing intermediary	Netherlands	West	1					0 J63.1 Data processing, hosting and related activities; web portals	deliver new type of IT services to the market. This can open up a new market since there are no or few players that offer this kind of service.
Liquor producer	Netherlands	West			1		1	0 C11.0.1 Distilling, rectifying and blending of spirits	I need to remain flexible and be able to (strategically) react to changes in the environment
Local Hotel	Germany	Central		1			1	0 I55.1 Hotels and similar accommodation	keep my position as the leading hotel in the area
Lottery as a service	Netherlands	West	1					0 Q88 Social work activities without accommodation	PATH"I want to start a new business from a service concept • I want to know there is a need for our service concept for intended customers • I want to know if my business model is future proof • I want to know about future changes in legislation that might affect our BM in a negative way"
Meal delivery service	Lithuania	East			1			1 I56.1 Restaurants and mobile food service activities	PATH "I want to expand my business through replicating business model • I want to identify market (country) for growth • I want to find reliable partners for BM implementation • I want to attract customers (marketing activities) • I want to expand to the new cities I the same market"
mechanical Engineering company	Netherlands	West	1					0 C28.99 Manufacture of other special-purpose machinery n.e.c.	I want to collaborate with other companies to create the most suitable product.
MobiFish	Finland	North	1				1	0 J61.2 Wireless telecommunications activities	move my business to mobile
Online Marketing Services	Germany	Central			1			1 M73.11 Advertising agencies	manage/plan growth
Online printing	Netherlands	West			1			1 C18 Printing and reproduction of recorded media	keep customers satisfied and serve wide variety of customer needs
Online publishing	Netherlands	West			1			0 J58.1 Publishing of books, periodicals and other publishing activities	I want to know how change in our BM impacts our EA

Business Model Innovation Paths and Tools

Online Showroom	Germany	Central	1	0	0 J63.1 Data processing, hosting and related activities; web portals	Short term: reach critical mass of users and establish brand; Medium term: continuous growth and internationalisation; Long term: warehousing and own product creation
OpticalFibre&Tele services	Finland	North	1	0	0 J61 Telecommunications	Refine my service portfolio for new customer segments
Plant in a bottle	Netherlands	West	1	0	0 C23.1 - Manufacture of glass and glass products	I want to move towards more easily shippable products, strengthen online sales.I want to grow my products' retailer network and expand to the United States and Hong Kong retailers.
Platform - Welfare for the elderly	Netherlands	West	1	0	1 Q88 Social work activities without accommodation	PATH "I want to start a business with a new match making platform in care <ul style="list-style-type: none"> I want to know the market for match making platforms in care I want to develop my proposition I want to explore my business model I want to find the right partners and arrangements I want to find investors"
Portable Medical Device	Finland	North	1	0	1 G47.74 Retail sale of medical and orthopaedic goods in specialised stores	Change from product to service provider
Portable Solar Cells	Austria	Central	1	0	0 C14.19 Manufacture of other wearing apparel and accessories	PATH "I want to sustain and grow my business <ul style="list-style-type: none"> I want to identify and attract new customer segments I want to establish my business I want to survive the first 3 years as a Start-up and offer continuous employment and career perspective to my employees. I want to convince partners about my idea I want to grow a reliable partner-network I need partners with expertise I can not cover within my own company I need partners for large project to receive additional funding Change from product to service provider <ul style="list-style-type: none"> I want to enrich my product with services to tie my customers to my offerings I want to address innovation-leaders as customers and need to offer them digital add-ons"
project management application	Finland	North	1	0	0 M70.2 Management consultancy activities	Create a good trusted network of key partners
Rate the club!	Netherlands	West	1	1	0 J63.1 Data processing, hosting and related activities; web portals	expand to foreign countries
Real estate management	Finland	North	1	1	1 J62.0 Computer programming, consultancy and related activities	Redefine my customer segment
Rehabilitation app	Austria	Central	1	0	0 G47.74 Retail sale of medical and orthopaedic goods in specialised stores	To keep the innovative image and stay ahead of competition we need to constantly re-invent our products and services.
SaaS for Health	Netherlands	West	1	0	0 J63.1 Data processing, hosting and related activities; web portals	Explore the market possibilities
SAP consultancy	Germany	Central	1	0	1 J63.9 Other information service activities	find out what the market needs
Sewing services	Lithuania	East	1	0	1 C14.0 Manufacture of wearing apparel	PATH"I want to establish my business
Space saving containers	Netherlands	West	1	0	0 H52.2 Support activities for transportation	PATH "I want to sustain and grow my business <ul style="list-style-type: none"> I want to identify and attract new customer segments I want to know how I can exploit our IPR"
SportEquipment_eStore	Finland	North	1	0	0 G47.64 Retail sale of sporting equipment in specialised stores	expand and reach larger customer base by eShop
Sports prescription	Finland	North	1	1	1 Q86.9 Other human health activities	PATH "I want to convince potential network partners that my business idea is good and profitable to all partners <ul style="list-style-type: none"> I want to design/draw business model for network of companies (Tool: multiple BM CANVASes) I want to analyse risks (tool: tress testing) I want to analyse the IT requirements (tool: use cases, IT specs) I want to make financial calculations (tool: excel) I want to demonstrate my idea in practise (tool: a pilot with minimum viable product) I want to analyse improvement needs (tool: select KPIs and collect measures during the pilot concerning the Business model) I want to revise business model (Tool: multiple BM CANVASes"
Teaching platform	France	West	1	0	1 P85.6 Educational support activities	I need to go to international markets
training planner tool	Estland	East	1	0	0 J63.1 Data processing, hosting and related activities; web portals	I want to have profitable and sustainable business. The short-term goal is increasing the number of customers
Urban 3d planning	Switzerland	Central	1	0	1 M71.1 Architectural and engineering activities and related technical consultancy	roll out my existing product and find new customers and new product offerings
Veterinary clinic	Lithuania	East	1	1	1 M75.0 Veterinary activities	expand and gain large market share in local market
Vintage eMarketplace	Lithuania	East	1	0	1 J63.1 Data processing, hosting and related activities; web portals	I want to shift from free service to paid services (commission from each sale is charged). The strategic objective is to become a world leader (be the first the world) and to be a leading company in each country. The company has chosen the principle of „divide and rule“ and has been developing its activities in Europe and the USA first. The further development of the principle will depend on the market research that is performed in a given area before entering a new market. The companv's targets are to grow continentally Grow (change in pricing strategy, change in IPR)
Web app development environment	Finland	North	1	0	0 J62.01 Computer programming activities	
Wind Energy Technology	Denmark	Central	1	1	1 C28.9 Manufacture of other special-purpose machinery	turn my technical patent into business
Wine trader	Spain	South	1	0	0	PATH "I want to reduce my product portfolio from delicatessen products to wines <ul style="list-style-type: none"> I want to reduce product line breadth I want to reduce operating costs I want to focus on profitable product lines I want to Change my business from importing to manufacturing <ul style="list-style-type: none"> I want to find to find new clients in manufacturing channels I want to establish and promote my own brands I want to identify distribution channel growth I want to find the right partners and arrangements