

Learning From Start-Ups – Ideas for Business Developers

[How ABB Entered the Market of Energy Management Solutions]

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Received: October 23, 2017; Accepted: October 30, 2017; Published: November 09, 2017

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Abstract

For any corporation the chain from a business idea to a winning business model is highly challenging – even in high-potential markets. In the following work a mix of scientific methods like lean management, traditional and new established ones is used to investigate the process of business model generation. Therefore a theoretical framework on existing business modelling tools is used to develop a methodology for business model generation. In a case study, this methodology is implemented in the ABB building control product line searching for winning business models in the area of energy management solutions and its feasibility is evaluated afterwards resulting in three business models. Finally, it is shown to what degree even product lines in large corporations can act like innovative and agile start-ups.

Keywords: Business Development, Entrepreneurship, Lean Start-Up, Business Model Canvas, Business Model Generation, Business Model Navigator

Introduction

The economic world is mainly driven by macro-economic trends – formally known as megatrends. They are dramatic and enduring social, economic, political or technological changes which deploy slowly and whose impacts sustain for decades [33]. Megatrends are subdivided into regional or sectional micro-economic sub-trends that can also be seen as a manifestation of the different megatrends. Leading management consultant firms identified four megatrend areas: Technology, society, economy and ecology [10,22,25,40]. Taking a deeper look into the ecologic area shows that the resources running short are the following: Ores, water, energy and food [10,22]. Furthermore, the climate change has its main source in the high CO₂ emissions of the industrial countries [10,40]. Both megatrends result in a sub trend towards green technologies standing for the known keywords like renewable energy and energy efficiency. The megatrends digitalization and urbanization emphasize the importance of this development as the number of electronic devices and energy consuming cities grows significantly. This is why many companies want to take the opportunities of both ecological megatrends in order to grow their business with their

own energy management solutions for the residential and non-residential market [4,5,17,24].

But a megatrend or a strong customer demand does not automatically imply a winning business for a company. In order to create a winning business for all sizes of corporations, the management of the corporation often follows the same procedure described below. Corporations have either a management board or a business development department first identifying the relevant trends and then creating strategic business fields [16]. These fields serve as a basis for more detailed business ideas being validated by market studies, expert interviews or technology demonstrators until they grow into a concept everybody is confident of. That finally serves as a basis for a business plan according to that describes the possibilities and the actions to be taken in order to enter the new business field [5,15,23,32,36]. The step from a megatrend to a business idea and the creation of a business plan on the basis of a well-documented business model are the easiest parts in the chain described above. The challenging part is to generate or even innovate a stable business model within any worldwide segment driven by a megatrend. In this work, a mix of scientific methods like lean management, traditional and new-established ones is used to investigate the problem of business model generation for energy management solutions.

The paper is structured as follows. First, the theoretical framework is shown with approaches for business development in big corporations as well as entrepreneurial approaches. Then a methodology for business model generation in large corporations is developed. The implementation of this methodology is presented in four parts: customer and business seeding, customer creation, business creation and business implementation. Finally, the results are shortly presented, discussed and concluded.

Theoretical Framework

Following, often-relevant business modeling tools and entrepreneurial approaches are presented [14,38]. The authors

use methodologies from start-ups as they can be applied to product responsible units that have the possibility to act independently within a large corporation to some extent. In large corporations innovative and agile groups can be even specifically created to enter new market segments.

Entrepreneurial Approaches

The Four Steps to the Epiphany methodology. Steve Blank's Four Steps to the Epiphany is the literature that initiated the lean start-up revolution. It provides a practical and proven four-step process for start-ups to search for products or services for customers. The approach mainly criticizes the traditional product development model – like the stage-gate process [13,31,32,42]. Predetermined by the waterfall methodology, there is a lack of meaningful sales, marketing and business development milestones during the development phase of a product. By performing a premature scaling, corporations enter a death spiral of getting the product launch wrong and then having high cost losses [6]. The alternative being provided bases strongly on the technology life cycle adoption curve [29]. For start-ups, this curve is a very important basis for sales and marketing planning as the acquisition of early adopters is important to initiate product development [12]. The main message of the technology life cycle adoption curve is the challenge for all types of corporations to overcome the chasm between early and mainstream market with good marketing and sales strategies [29]. The aforementioned product development model is companioned with a customer development model consisting of four steps. The goal of the customer discovery step 1 is to find the customers for the product and to check if the proposed solution is important for them [12]. The so-called earlyvange lists have a problem, are aware of it, have been actively looking for a solution, assembled a solution out of parts and have a budget to solve the problem [6]. The customer validation step is about describing the sales roadmap for the sales and marketing teams as well as the validation of that together with the earlyvange lists. This step is intended to check if the market will react positively to the proposed solution [37]. The customer creation step bases on the success the company has had in its initial sales. Its goal is to create end-user demand and drive that demand into the sales channel of the company [6]. The final step is named company building. It is about creating a running corporation with different departments, strategies, missions and processes [12].

The Lean Start-Up Methodology

The lean start-up methodology mainly promotes the build-measure-learn feedback loop. This loop is included into a hypothesis-driven process based on the customer development model described before. In the first step, the entrepreneur has to envision a problem that the company will solve and also envision a potential solution for it [8,11,18]. In the second step, this vision is translated into verifiable and also falsifiable hypotheses for all business model elements. In the third step, a Minimum Viable Product (MVP) is defined or – built – including tests for it. An MVP is the smallest set of features and/or activities needed

to test a hypothesis. Step four is about prioritizing the tests by running low cost/high value tests first. Afterwards, these tests are run by giving a real product to the customer in order to achieve validated learning – originally called “get out of the building, p” [7]. In this step, the hypothesizes are validated or rejected which is the measuring and learning part of the build-measure-learn feedback loop. In step six, the entrepreneur has to decide whether to persevere, pivot or perish. Persevere means checking if all hypothesizes have been confirmed and, if they do so, the product-market-fit is achieved. A pivot is performed when the vision has to be adjusted in order to meet the customers' requirements. In case that any adaption of the business model will not lead to a product/market fit, the business model is fully rejected, it perishes [37].

The Four Steps to the Epiphany and the Lean Start-Up methodologies rely on the fact that a company is created from scratch – which is very valid for their target users. This is why these methodologies are missing a guideline how large corporations can implement the change within the organization like in a product line. Nevertheless these two methodologies provide a very good basis to rethink how business models can be created within large corporations.

Business Modeling

The St. Gallen Business Model Navigator™

The St. Gallen Business Model Navigator™ is a model that resulted from a corporation between the Business Model Innovation Lab and the University of St. Gallen. The idea behind it is that a business model consists of four dimensions creating a magic triangle with the value in the middle. “Who” is about the customer group and shall answer the question about who the customer is. “What” is about the solution or the product that shall be delivered to the customer. “How” describes which processes and activities have to be taken in order to create the value proposition. Finally, “Value” explains why the business model is a winning one by having a good return on investment [19,20]. In a research on 250 business models, 55 patterns of business models have been identified always serving as a basis for new winning business models. 90% of all new business models have recombined already existing ideas, concepts and technologies. In order to create a winning business model, the St. Gallen Business Model Navigator™ uses the concept of reusing existing winning business model patterns or recombine them with new ideas in a four step approach [19]. In step one, the current business model – if available – is described with its value logic and its interactions with the world outside in order to get experienced with the business model thinking. The second step is to move into new directions by recombining or even confronting the 55 concepts with the existing business model. In the third step, the picture has to be completed by integrating the new generated business model into the organization. To be successful, all four dimensions – Who-What-How-Value – have to be well-defined and finally implemented in the fourth step [20].

Business Model Canvas

Another model is the business model canvas which is a one page overview of a business model consisting of different building blocks. The customer segments building block defines the different groups of people or organizations an enterprise aims to reach and serve. The value propositions building block describes the bundle of products and services creating the value for a specific customer segment. The channels building block describes how a company communicates with its customers and how it reaches its customer segments to deliver a value proposition. The customer relations building block describes the types of relationships a company established with specific customer segments. The revenue streams building block represents the cash a company generates by each customer segment. The key resources building block describes the most important assets required to make a business model work. The key activities building block describes the most important things a company must do to make its business model work. The key partnerships building block describes the network of suppliers and partners making the business model work. The cost structure building block describes all costs incurred to operate a business model [34].

The Lean Canvas

A third model is the lean canvas which is a modified business model canvas and is driven by the lean management principles proposed by the lean production management mainly introduced by Toyota [9]. The idea is to use a modified business model canvas – called lean canvas – to capture the initial business model, annotate it with hypothesizes and verify or falsify them. The customer segments, the (unique) value propositions, the cost structure and the revenue streams are kept the same as for the business model canvas. The key activities are renamed to the key metrics and the key partners and resources. The customer relationships are removed. The problem, the solution and the unfair advantage are new. The problem section describes the problem the customer has as well as the existing alternatives. The solution is briefly described accordingly in order to be able to easily measure the problem/solution fit. The unfair advantage describes something that cannot be easily bought or copied, like for example intellectual property. Together with the lean canvas comes a three stage process takes a subset of actions of the four steps to the epiphany. It consists of the problem/solution fit, the product/market fit and the scaling. Using the build-measure-learn loop of the lean start-up methodology the aforementioned hypothesizes are tested. By using this methodology, the lean canvas is iteratively improved. After having created a stable business model, it is scaled and reassessed until the final business model is created [28].

The methodology of the Business Model Navigator™ works the best if a well-described business model exists, which is not always the case in large corporations. Furthermore it investigates a business model on only four dimensions which can be too abstract for a product responsible unit within a large corporation. In the Business Model Canvas there is a lack in the area of the

problem-solution-fit and the Lean Canvas misses the key partners and key partner's business model. These four areas are a key success factor for product responsible units that act within a large corporation. Fortunately, all three methodologies give very good indicators how to innovate and describe winning business models.

Methodology

The authors can state that neither of the before mentioned methodologies can be used in large corporations one-to-one. This is why in this chapter a newly developed methodology for business model generation in large corporations is presented. Important to mention is that it bases and uses always the best-fitting parts of the methodologies and methods mentioned before.

Assuming that a product responsible unit has the possibility to act like a small or medium-sized enterprise with several different business models, but having the restrictions of a large corporation. Furthermore, the target markets of corporations may be distributed across several dozens of countries worldwide having a different legal situation each. Moreover, large corporations often act in low price, up market and premium segments with also unknown competitors and having potential customers available in dozens of applications. All these variables, factors and uncertainties demonstrate that the creation of winning business models for a new business is a multi-dimensional problem for any type of corporation. This is why an agile/iterative approach of the lean start-up movement is taken for the business model creation and is adapted to the needs of the hosting unit. First, the key component of the approach – the adapted business model canvas / lean canvas / magic triangle – is presented. Second, the proposed business development approach is shown and explained.

The Adapted Business Model Canvas

The St. Gallen Business Model Navigator™, the business model canvas and the lean canvas – each of them – represents an executive summary of a business model. As within large corporations product responsible units have a lot of internal stakeholders having to be informed about the status of the business modelling or the business planning in regular intervals, this executive summary is used as the key component for the business development. The adapted structure is a composition of the abovementioned models and is shown in table 1. As corporations are very customer-focused and the core idea of business development approach emphasizes the product-market evaluation, the lean canvas is the starting point for the adapted canvas [Table 1].

The customer-problem pair marked with number one represents the starting point for the activities. As only the end-customer is the source for any activity in the value chain of the target market, the end-customer's problem is mentioned here. The end-customer, not the stages in between, is the sink of the corporation's sales channel. The solution and unique value proposition are derived by them and represent the value proposition of the magic triangle. Taken of the business model

canvas and added below the end-customer, there is the key partner being the important stakeholder between the corporation and the end-customer. In addition to the end-customer, the key partner takes the decision which product or brand to take in a project. With their preferences they can influence or even dictate to the end-customer. For a corporation, it is very important not to cannibalize the business of its key partners. This is why the key partners and their business model are introduced into the adapted canvas. The channel includes the key partner as well as other sales channels to the customer, like in the original lean canvas. Number four includes the financial view of the adapted canvas, namely the cost structure and the revenue streams both together representing the revenue model of the magic triangle. Finally, numbered with five, there are the key metrics and the unfair advantage. As they are the most difficult ones to be found, they are evaluated the last.

The advantage of this new integrated model summary of a business model is that it is easy to understand and that it is a good tool to quickly inform the relevant stakeholders. Furthermore, it can serve as a good basis for the annotation of hypotheses, the iterative assessment, the business model navigation and the business planning explained later on.

Table 1: Adapted Business Model Canvas

End-Customer Problem 1	Solution 2 Key Metrics	Unique Value Proposition 2	Unfair Advantage 5 Channels	End-Customer Segments 1
Key Partner Business Model 3	Cost Structure 4		Revenue Streams 4	Key Partners 3

The Approach in Brief

As already mentioned, the approach using the adapted canvas is agile and iterative, but also considers the corporate frame conditions. It is an integrated composition of the customer development model, the business model navigator, the lean start-up and the three stages of a start-up. An overview of the proposed business development approach is given in figure 1. The italic labeled boxes are business development blocks – also called “blocks”. The boxes within the blocks are “steps” and are connected via arrows – also called “transitions”. The solid transitions represent the linear process flow within the approach and the dashed ones are pivots [Figure 1].

The customer and business seeding block is the starting point for the other three ones and contains the ideation phase of the lean start-up combined with a part of the first step of the first stage of the customer development model. This step is introduced in order to have a quick and lean ideation phase within the organization as well as to create a starting point for further assessments. Caused by a corporate organization, the customer and business creation is divided as the customer part is mainly done using the existing stage sales channel and the business

creation is mainly performed internally within the product line or corporate organization. The customer creation block contains the main part of the first stage of the customer development model plus the first step of the second stage. The business creation block includes the business model step of the customer development model and, additionally, the business model navigation as well as the generation of a business plan being required by the investors. As, in this case, no organization has to be built up from scratch, the approach is adapted accordingly. This is why the last block is about the implementation of the new business model in the existing organization taking the last two steps of the customer development model into consideration. In difference to a start-up the business development depends on many external stakeholders. This is why a linear processing of the steps would cause a lot of idle time and the three last blocks run in parallel always influencing each other. A transition between the blocks is performed when a stable state is reached. Pivoting is performed when the state is not getting stable – either when a business is not attractive or feasible or when the business cannot be implemented in the organization. The build-measure-learn loop of the lean start-up is a core mindset being represented in all blocks and steps. That means that the adapted canvas, a minimum viable product, a business model or an organizational change is iteratively built, tested or measured and then, the results are included into the learning step.

In the next paragraphs each single block is explained in a clockwise direction with an emphasis on their integrated interaction.

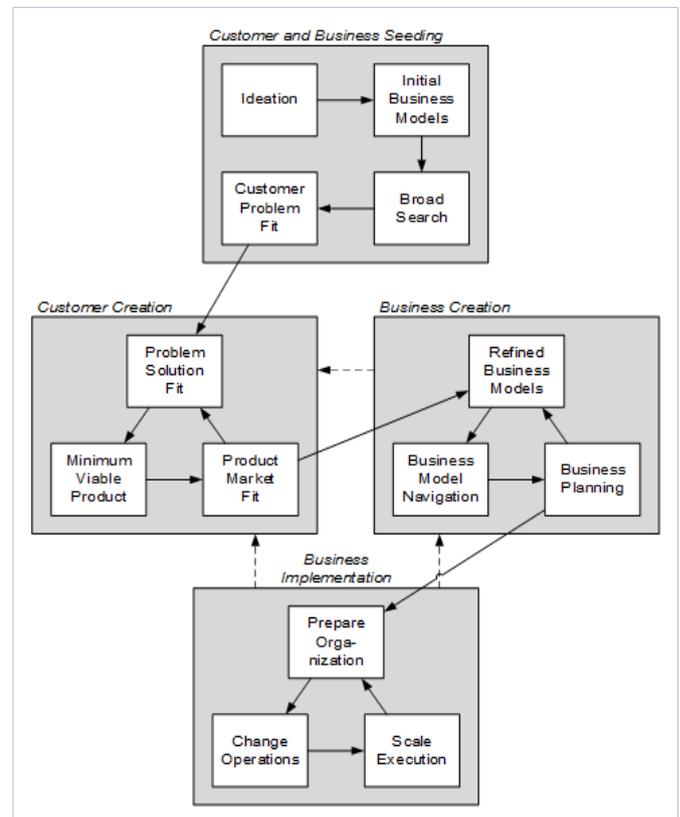


Figure 1: Proposed Business Development Approach

Customer And Business Seeding

As already mentioned, the utilized agile and iterative process needs a starting point to initiate the overall procedure. In order to get this seed, an ideation step is performed within a small expert group being part of the corporation – the “core team”. In this step, only a small group is taken as the process shall be fast, lean and straightforward. With the help of the core team, the first drafts of an adapted canvas shall be created which are later assessed and summarized. As these initial business models have been created without any frame conditions, the next step is to annotate them with hypotheses on the customer field and their potential problems as well as on other fields being already filled. In this step, the first reduction in complexity is performed.

Based on these initial business models, the broad search step is performed. Competitors working in the same market are identified and evaluated with respect to their technological solutions and their market presence. Furthermore, the potential end-customers and key partners are identified and involved in a loose way. In an ideal case, the proposed “getting out of the building” of lean start-up is already performed in this step. In the customer problem fit step, the number of customer segments, countries and potential solutions are further reduced by verifying and falsifying the aforementioned hypotheses. Furthermore, other key aspects of the initial business models are assessed in parallel in order to get the starting models with a stable customer problem fit for the customer creation block. That means that first solutions can be created in this step.

Customer Creation

In the second block of the processual methodology, the ideal step would be to directly involve the earlyvange lists. Predetermined by the often applied non-direct sales model, this is nearly impossible as it would bypass sales units, sales channels and key partners. This is why the problem solution step is done together with the internal stakeholders beginning with the product marketing managers and sales teams – people that work close to key partners or customers. On the one hand, the goal is to validate the problem solution hypotheses in order to refine the potential solutions. On the other hand, the goal is to get feedback on the urgency of the customer problem and to establish an earlyvange list identification within the sales units. In the final iteration, the earlyvange lists shall be ideally involved directly. In addition to that, a further technology and market evaluation should be performed with the help of the sales units. This is the basis to verify the existing unique value propositions or to create new ones.

When having a stable problem solution fit, the next step is to create the Minimum Viable Product (MVP). As, in corporations, the development project starts with a passed gate 2, the MVP consists in the first step of a presentation or minimal feature prototypes of other projects. These prototypes can be built by using the development department, external consultants or a corporate research infrastructure. In this step, the first feasibility assessment is performed for a dedicated market already considering the unique value propositions and shall

be performed together with the abovementioned research and development departments.

In the product market fit stage, the MVP is taken and checked again with the sales units and finally with the earlyvange lists. Again, the goal is to verify and falsify solution and unique value proposition hypotheses. Furthermore, other activities or special market studies can be performed based on these first results. This shall create a market attractiveness evaluation and a unique value proposition assessment. When the product has passed the earlyvange lists, the mainstream market may be involved. Having a stable product market fit would then be the ideal preparation for a gate 0.

Business Creation

At the end of the customer creation step, a refined business model is taken as a basis for the business creation – the next to last block in the model. In the refined business model step, the core team assesses the adapted canvases again in order to find synergies and overlaps that have occurred during the sales unit assessment. The refined business models are the input to the business model navigation according to the St. Gallen Business Model Navigator™ approach. As the current business models have been created independently of any existing winning business model, this step is intended to adapt the business models accordingly. The core team assesses the current business models together with the 55 business model patterns of the St. Gallen Business Model Navigator™ in order to find synergies or overlaps. The goal is to place the created business models within one or several business model patterns. Next, the feasibility of the business model adaptation is checked. Small business model transitions of the business models of the corporation are preferred to the identified ones.

A stable product market fit with a navigated business model is the start for the business planning step. As, at this point, the market, the customers and the potential solutions are reduced to only a few, a detailed analysis of the market attractiveness and refined technical solutions can be started. This step also includes the sales and marketing plan of the customer development model and all required input for a business plan. As the investors within a corporation require a business plan to provide a budget for a project, this step is more complex as in the lean start-up methodologies. The business plan is a required input to pass gate 1 in the stage-gate process.

Business Implementation

The last step in the model is describe as follows. As the lean start-up methodology and the customer development model have mainly been invented for start-ups, in this case, the steps are adapted to the group organization. The prepare organization step is about the initiation of renewal or change within the affected product line as well as in other affected organizations of the group. As this step is very difficult to achieve, it is slowly introduced by involving all internal stakeholders in the aforementioned steps. This shall rise their awareness of new customers, solutions, technologies and markets in order to lower their inhibition

threshold.

In the change operations step, the previously prepared business plan is implemented by passing gate 2 of a development project. This is one of the most critical steps as the organizational change might fail, even when the business model is perfect and the organization is well-prepared. In this case, the business creation or customer creation block would be refined. In order to reduce the risks for pivots or perishes, the previously defined business model shall be as lean as possible. Ideally, it shall only involve a dedicated market with a small product portfolio. A stepwise approach with focus markets, earlyvange lists and also involving mainstream customers is recommended.

Having reached a stable organizational change, the next step is to scale the business model. That means that the end-customer, the key partner, the solution or another part of the adapted canvas is extended. If changes are required in the other blocks, the iterative approach starts from the beginning. According to the customer development model and the lean start-up, premature scaling shall be avoided in order to prohibit an early death of a winning business model.

Case Study

In a case study the applicability of the model is evaluated on the process itself, the duration of the different loops and the resource utilization. The case study is about the generation of a new and winning business model for the building control product line – the hosting unit – of the ABB group in the area of energy management solutions [1]. The hosting unit is a product line within the Enclosures and DIN-Rail Products business unit that develops and sells KNX products. KNX itself is a field bus for switching, controlling and monitoring functions in buildings. It is a worldwide standard in the area of buildings services. The product portfolio of the hosting unit contains approximately 120 devices for various applications like lighting, heating, ventilation, cooling, blinds, shutters, security, energy management, visualization and operation or remote control [39].

Peculiarities of Hosting Unit

As the hosting unit is, as each corporation, ultimately driven by megatrends, it mainly has to take care of demographics and urbanization, energy efficiency and scarcity of resources, technological breakthroughs, globalization and emerging markets. Furthermore, the hosting unit has to take global, regional and local directives and laws into account.

As the hosting unit sells products to the end-customers through a three stage sales channel, the international marketing and sales department as well as the local sales units can be treated as an – at least – internal customer for the hosting unit. Furthermore, the product portfolio is mainly focused on the non-residential commercial buildings and premium residential buildings segments which is a typical focusing strategy [35]. In contrast to the three stage sales channel, there is a very close connection to customers, like system integrators or installers given by the training and service departments which is a bypass through the whole group organization. The hosting unit also

serves as an OEM for different other companies. The organization of the hosting unit has a flat hierarchy, short ways and nearly all departments are used to work very independently within the ABB group up to now whereas production and support functions are outsourced to the group. If there are other topics not being in the core business of the hosting unit, the hosting unit tends to directly outsource related work. In summary, the hosting unit can act like a small or medium-sized enterprise which is an ideal basis to apply the methodology to the hosting unit.

Taking the group perspective of the hosting unit more into account, the local business unit management has to be involved for investment or budgeting processes. That means that there is no opportunity for financing through an external investor. Furthermore, the main sales channels are predetermined by the group organization containing the international marketing and sales team together with all local sales units worldwide. The hosting unit is also member of many different associations (like e.g. the KNX association) [26]. Furthermore, internal suppliers, like the energy meter department, the providers for wiring accessories in Germany and the internal production in Germany always have to be considered when developing new products, entering new market segments or change production workflows. Caused by the size of the ABB group, the hosting unit, as having the ABB brand, is in the scope of other big competitors and cannot act independently in a niche market.

In order to describe the state of the art regarding the current hosting unit's business model, it is analyzed by using the St. Gallen Business Model Navigator™. The hosting unit already covers (sometimes only partly) the pattern "direct selling", "integrator", "lock-in", "orchestrator", "reverse engineering", "white label".

Customer and Business Seeding

Ideation and Initial Business Models

In order to get the initial business models, a creativity session is performed by a small team within the hosting unit. The team consists of one of the authors, a business development manager, a product manager and the head of service. In order to create the first drafts of a business model canvas the methodology of brain writing is chosen as it is a convenient way to develop gross concepts and detailed ideas in a focused way [41]. After this session a set of seven draft business model canvases is generated with an emphasis on the end-customer, the unique value proposition, the solution and the channels.

Broad Search

As the results of the ideation phase base on the experience and the ideas of the core-team, they are surely based on assumptions and guesses. This is why, in the broad search phase, the canvases are annotated with hypotheses which are to be qualitatively falsified or verified with a field study that took place at the Light & Building 2014 fair. In 2014, the fair hosted 211,232 visitors from all five continents with visitors subdivided into different industry segments [2]. A five question questionnaire with open-ended (probing) questions has been developed for different focus groups. The main aim of the questionnaire is qualitative and not

quantitative research. As the sample taken from the field may be small, a generalization of results may not be possible, but gives at least a direction for further research [21]. In total 48 semi-structured interviews with customers as well as additional ones with ABB sales people have been performed in the survey with an additional assessment of 84 competitors [21].

Customer Problem Fit

After having collected the results of the questionnaire and the first competitor analysis, the adapted canvases are reassessed. The previously defined hypotheses are verified or falsified in order to further detail the adapted canvases. The results give a direction within a grey area to estimate how the adapted canvases may look like. With the input of the questionnaire, a list of potential earlyvange lists can be created. This step results in six adapted canvases with additional information on the already filled fields and further input on the key partners and the key partner business model fields.

Customer Creation

The iterative approach aims at further developing the adapted canvases and a first minimum viable product. As it is challenging to explain iterative approaches in a sequential format, a subset of the assessment results is presented in the following section.

Problem Solution Fit

In order to have the first problem solution fit assessment, the relevant first step stakeholders have to be identified which are as follows: the core-team, the head of the hosting unit and the heads of service, technology and product management, the international marketing and sales team and some local sales units. The feedback is collected in meetings discussing the adapted canvases and in order to get the most detailed feedback, the stakeholders are mainly interviewed bi-literally. Finally, this first market feedback sharpens the picture on the adapted canvases so that a first problem solution fit is achieved on the canvas level. That results in an updated adapted canvas assessment having again seven canvases with high value information on the existing blocks.

Minimum Viable Product

In the first stage, the minimum viable product consists of Microsoft Visio™ pictures and later on of a Microsoft Power Point™ presentation describing the system structure. In addition, a prototypic implementation of a user interface is used to further explain the potential functionality of the system to the stakeholders. The first concept is described on a functional level in order to validate the potential solution focusing mainly on the functionality of the system. Microsoft Visio™ pictures are more or less a visual representation of the solution field and the unique value proposition field of the adapted canvas. After many assessments, the concept is further developed and transformed into different potential products with grossly described properties. The goal is to have a starting point for a market requirements specification and to evaluate how this matches to the functionality described before. Furthermore, the

stakeholders may get a first insight into the potential product portfolio. With storytelling the product is exemplified in order to enable customers and stakeholders to give an opinion and valuable feedback [41].

Product Market Fit

The product market fit is performed by using the adapted canvases and the minimum viable product. The duty is to again perform assessments and interviews within the hosting unit, with the representatives of the focus countries and the potential earlyvange lists. The goal is to check if the minimum viable product solves the problem, if it has a real unique value proposition and to validate pricing and positioning.

Business Creation

The input to the block are the refined business models of the previous block that serves as a basis for the business model navigation step using the St. Gallen Business Model Navigator™. The business creation is an iterative approach as well and this is why only a part of the performed steps are explained.

Business Model Navigation

In this step the goal is to consolidate the business models to the number of three. Additionally, they shall be detailed and verified with the business model patterns which has been done in the core-team within two assessments. The business model patterns are first presented and evaluated for the different business cases. Second, selected patterns are evaluated in detail, prioritized and finally consolidated into three business model patterns, namely “Integrator”, “Orchestrator”, “Lock-In”.

Business Planning

As the focus for the business planning is on the integrator pattern, only this particular business planning step is performed in detail in this study. As the details on the business plan is strictly confidential, it is not given here.

Business Implementation

As the first two steps of the business implementation block are mainly about change management, the already performed and planned changes are discussed by using the eight steps approach of John P. Kotter [27]. The preparation step covers the first four steps of Kotter’s model and the change operations step handles the remaining four.

Prepare Organization

The establishment of a sense of urgency has already been performed before the project started. Then the sense of urgency has to be increased within the whole organization by involving the product managers, product marketing managers and sales people in the local sales units which shall lead the change. The vision and strategy is already developed during the business planning step and the core-team of the guiding coalition creates the goal justifying the effort being required to perform the change. By already involving the stakeholders in an early stage, the change vision is already communicated within the organization and also

to some extent to the earlyvange lists.

Change Operations

Broad-based action is empowered by eliminating the first inhibition threshold within the organization. Changes in the people's mindset are performed in order to change the systems or structures within the organization. Organizational changes are prepared, but not performed during this work. Short term wins are generated by early involving the local sales units and also the earlyvange lists that already committed to the minimum viable product. In the next step, the gains can be consolidated and even more change can be produced and the new approaches shall be anchored in the culture of the organization. During this work, these two steps have not been achieved yet, but parts of them are covered in the detailed business plan.

Scale Execution

After having a stable business model – in this case the integrator, an adapted canvas and a valid business planning –, the next step is to scale the execution. That implies that on a market side, the next step is to involve more local sales units in order to identify even more experts and earlyvange lists. On the technical side, the hosting unit and other ABB organizations shall participate in iteratively enhancing the minimum viable product. The scaling shall be executed in order to cover the whole world market for energy management solutions.

Discussion

Within the customer and business seeding block, the ideation phase has been very fast and efficient in order to get the first draft business models. Furthermore, the broad search within the Light & Building 2014 fair has also been a good approach to further investigate the business models in order to assess the previously identified hypotheses. Afterwards, the customer problem fit has already been in a good state having been a really good basis for the next block. The questionnaire at the fair has been hard to realize as the intention of the fair is not to interview customers and the sales people have not supported the interviews at the beginning.

During the customer creation block, a big challenge has been to permanently coordinate the focus market involvement. But when a meeting has taken place, the feedback of the local sales units has been very beneficial. Furthermore, the adapted canvas and the minimum viable product have been the optimal way to get a valuable feedback. As the main aim of the local sales units is to generate revenue, it is hardly impossible to early involve end-customers in the product market fit phase. There is a huge room for improvement in the incentive system of the sales people. The expectation has been that, during the seven months of implementation, at least ten customer interviews may take place within the customer creation block. But finally, only three of them have taken place.

After having the product market fit and the refined business models, the business navigation and the business planning can be performed very quickly in the business creation step. Some of the

customer creation steps are a necessary input for the business planning. Furthermore, the market data and the local competitors have been easily identified together with the local market representatives. Having a strong network within the corporation, the author has been able to also identify the organizational changes having to be performed in order to achieve the goals for the hosting unit.

The business implementation has only been performed to some extent as the persistence of the organization has been underestimated. Many meetings are necessary, until people recognize the benefit of an early customer involvement. A very good approach is to first stabilize the business model and then scale it to other customer segments and regions. The early customer involvement avoids to get bogged down with the non-transparent markets, the customer segments and many local peculiarities.

To generate a tangible and innovative business model for the hosting unit took approximately four months. One business developer worked full-time on the business model generation and has been supported by several people from the hosting unit on a weekly basis. The methodology is mainly applicable for strongly software- or service-based products as a hardware MVP is difficult to be developed in an agile and lean way. Furthermore the methodology can be applied to any size of corporation in which a group can be created that has the possibility and capability to run a project in a start-up manner. As an MVP that bases on a hardware product is more difficult to develop, the recommendation is to use the methodology more in software or service businesses.

Conclusions And Limitations

In this work a methodology for business model generation in large corporations has been derived from various start-up methodologies and business modeling tools. The methodology consists of an adapted business model canvas and a corresponding process. In a case study the methodology has been applied to the building control product line of the ABB group in the area of energy management solutions.

The novel approach enhanced the start-up methodologies and adapted them according to the circumstances of large corporations. In detail, the Four Steps to the Epiphany and the Lean Start-Up methodologies have been reduced to only the business creation steps by eliminating the company creation process. Instead, a business creation procedure has been implemented. Methodologies handling business model overviews (here: the Business Model Navigator™, the Business Model Canvas and the Lean Canvas) have also been combined and adapted to the needs of large corporations. The main adaptations in this case have been taken on the problem-solution-fit, the key partners and their corresponding business model. The reason is that large corporations handling only a part of the value chain strongly depend on their key partners which is therefor reflected in the adapted canvas.

Finally, the novel approach has shown that even in large

corporations a new business model and a corresponding product portfolio can be developed on the basis of adapted (lean) start-up methodologies. The application of the new methodology got a very good feedback from the product line mainly because of the advantages in terms of duration, quality as well as early internal and external customer involvement. In this case the methodology was applied by having a strong management commitment. That enables the user of the methodology to apply it in the corporation with lowered inhibition thresholds. In the author's opinion, this is a key success factor for large corporations to innovate their current organization towards a winning business model.

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