STARTUP COMPANY BUSINESS CONCEPT VALIDATION METHODOLOGY

by

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Abstract

Many technology startups begin with what appears to be a brilliant idea or a business concept that could be commercialized and successfully taken to market. However, new business fields and products are characterized by a multi-dimensional uncertainty that results in several planning questions that need to be answered in order to make the right decision about whether to bring it to market at all, and how to bring it to market if there is a validated opportunity. Accordingly, new entrepreneurs can benefit from a simple, easy-to-use methodology that will guide them through the concept screening process and provide them with practical tools to test-drive their concept and make a decision about how to proceed forward. The Startup Business Concept Validation Methodology (SBCVM) is designed to be used by startup teams with limited business experience as a self-guided method that will provide them with an organized approach to evaluate and validate their business concept.

Executive Summary

One of the main challenges new entrepreneurs usually face at an early stage of their startup venture is the ability to measure and validate all the external and internal factors that will potentially lead to the success or failure of their concept within a reasonable timeline. They also struggle to set their analytical priorities and figure out which areas to touch lightly and which to spend more effort and time in analyzing while trying to decide whether their new business concept will succeed or fail.

 In this work, we introduce a Startup Business Concept Validation Methodology (SBCVM) that will help technology startups to avoid some of the common pitfalls new entrepreneurs usually fall into, and will enable them to speed their concept validation process and go through a fast decision-making cycle while they are able to discover, validate, learn, and share their experiences. The SBCVM is about establishing a mindset or a way of thinking rather than establishing a comprehensive 360 frame. However without a proper methodology and a roadmap in place to act as a guiding compass that offers new entrepreneurs a sense of direction, they may be uncertain about the best tools, priorities, activities they should do at the concept phase.

The SBCVM is meant to be used as a self guided tool by new entrepreneurs to provide them with a well-organized approach to evaluate and validate their business concept and create a development and growth strategy from day one. It is based on a three-step process to validate new business concepts. The three steps are:- identify, validate, and screen. Startup teams begin by identifying the list of business concepts they are considering for their startup venture. Then they work on validating each business concept through the validation methodology. Finally, they use and map the validation data to help them in screening the different business concepts and make a decision about whether to proceed forward with the concept as it is, pivot, or terminate the concept and focus in a new idea. The methodology is built around the following four dimensions: Customer, Market, Product, and Business dimension. New entrepreneurs should consider the SBCVM as a tool that will allow them to chase real opportunities only where the concept validation methodology shows positive indicators and will help them to understand if their concept is underperforming in one or more dimensions.

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Glossary

App	Internet, Software or Mobile Application
B2B	Business-to-Business includes businesses that sell products or provide services to other businesses
B2C	Business-to-Consumer includes businesses that sell products or provide services to end-user consumers
KPI	Key Performance Indicator is a type of measurement commonly used by an organization to evaluate its success or the success of a particular activity (1)
Low Fidelity Product	Is a prototype that has some characteristics of the target product but with very simple architecture and design and usually incomplete in order to quickly be produced and test broad concepts
MVP	Minimal Viable Product is a product prototype with the fewest set of features needed to achieve a specific objective
P&L	Profit and Loss
Pivot	Pivoting is usually about making the required course corrections, to improve the odds for success
SAM	Served Available Market
SBCVM	Startup Business Concept Validation Methodology
TAM	Total Accessible Market
TM	Target Market
VC	Venture capital is financial capital provided to early-stage, high-potential, high risk, growth startup companies (2)
VOIP	Voice Over IP
WTP	Willingness To Pay is the maximum amount a person will be willing to pay to receive a good or a service (3)

1: Introduction

1.1 Problem Statement / Challenge

In today's world if you are a new entrepreneur who has a great idea for a technology startup, you will most likely face different types of challenges. While some of the challenges might be due to the planning and the execution of the idea, others might be due to the nature of the idea itself. As an entrepreneur, you will be responsible for validating your business idea at an early stage of your business in order to avoid future challenges that might result from selecting the wrong business idea. One of the major challenges new entrepreneurs will face during the early phases of their startup is not due to lack of information, but most probably is going to be due to an overflow of overwhelming information coming from the different sources around them. Most technology entrepreneurs have access to dozens of well developed online and offline resources that they use to educate themselves about the necessary steps, tasks, and tools they need to properly plan for, build, and grow their startup. However without a proper methodology and a roadmap in place to act as a guiding compass that offers new entrepreneurs a sense of direction, they may end up lost and puzzled with selecting the type of tools, priorities, activities they should utilize at each phase of their business maturity development. Based on my personal experience at Wavefront[1], one of the most common questions we receive from new startups that are at an early stage, which we incubate at our wireless technology accelerator space, is "What should I do next?" This indicates that new entrepreneurs need a simple yet effective methodology to guide them through the validation and development process of their business idea to use it before they can even decide whether they should proceed forward with their business concept. In addition, lack of experience that many new entrepreneurs endure during the very early stage of their business, make them subject to falling into the common traps technology startups fall into. For example, many technology startups fall in love with their own technology and, run the risk of ignoring the equally important tasks of understanding the market for their product and formulating a successful business strategy. Committing mistakes that could have been avoided by following a structured commercialization methodology may negatively affect the financial resources of the startup and affect its ability to accelerate the commercialization of its product & services by losing its sense of direction or making inappropriate decisions. It can become even

more challenging for entrepreneurs at that point to seek help or consultation from professionals since they don't know where they want to take their business. The situation gradually turns into a similar dilemma to what Alice had in Wonderland when she had the conversation with the cat where Alice asked the cat (4)

- "Would you tell me, please, which way I ought to go from here?"

-"That depends a good deal on where you want to get to," said the Cat.

-"I don't much care where--" said Alice.
-"Then it doesn't matter which way you go," said the Cat.

One other major challenge that startups face is the planning dilemma. What is meant by the "planning dilemma" is that a startup has to spend a long time in planning a set of tasks and activities during the different business development maturity phases across multiple business disciplines: for example, doing different activities as part of the strategic planning, market validation, competitive analysis, marketing planning, sales, and communication. Due to the scarcity of resources in most startups, both financial and human, the more time a startup spends in planning the higher the impact on its time to market and potential success opportunity. Typically a startup should do as much planning and analysis as it deems necessary and useful for the business and product development at a given business maturity phase. Otherwise, if they spend too much time in planning they will risk missing the right "Market Opportunity Window" where they can bring their product to the market. Startups can minimize time to market by frequently utilizing the lean startup model where the discovery and the validation processes are tightly integrated with the development process through an iterative approach. However determining when "enough" is "good enough?" is a dilemma in itself. Accordingly, defining what we call the "*Minimal Viable Planning*" decision points is a challenge for startups. They should be able to decide at key points how much time should be invested in planning versus execution to ensure the optimum use of their financial and human resources and to ensure the success of the company. This can be done by allocating key resources to the most critical and important set of activities that will potentially influence the startup's success and its ability to catch the market opportunity.

The last major challenge a technology startup will potentially face, assuming it knows what to do at each business maturity phase, is why and how to do it. For example, any technology startup will typically need to do a competitive market analysis for its new concept or product as part of its concept screening or product validation exercise before it can decide to proceed forward with the initial proposed product idea or terminate it. However, a competitive market

analysis is not simply about finding or using a good and comprehensive market analysis template from the Internet that the entrepreneur or the startup team can simply fill in and consider the job done. The entrepreneur or startup team need to be consciously aware of the goals and decision points they need to achieve out of the competitive market analysis before they decide about the template or document that the team wish to use in their analysis. Otherwise, the template might not help the team to answer the right questions or provide the proper information that will help the management team to make the right decision. Once again, it is about Alice in Wonderland and the Cat conversation analogy. You have to know what you want to achieve, and where you want to go, before you can decide which route or template to use.

In summary, technology startups that are managed by new entrepreneurs need an easy to use self-guided process to help them in screening their business concepts and to enable them in overcoming the different challenges during the early maturity phases of their businesses. Most of those challenges are sometimes caused by an overwhelming array of information that may affect new entrepreneurs' ability to properly identify the critical set of activities, tools, and goals they need to focus in at the different maturity phases of their business development and guide them through the common pitfalls technology startups fall into.

1.2 Project Objective

To develop the SBCVM, I performed a comprehensive review of the existing literature that introduced and discussed the different methodologies, models, and processes a startup team can use to screen and accelerate the commercialization of their products and services during the different phases of their business maturity levels and during the concept phase in particular. Throughout the literature review, I found out that most of the existing methodologies either provide a very detailed approach that does not fulfil the minimum viable planning needs of the startup team, or they provide a very high level description of the proposed methodology leaving most of the implementation steps and details to the startup team. The SBCVM is meant to be used as a self-guided tool by unseasoned early stage startup teams, rather than a progress or performance measurement tool by mentors or incubators, to help startup teams to use a well-organized approach to evaluate and validate their business concept and create a development & growth strategy from day one. The SBCVM is better suited for inexperienced, new entrepreneurs rather than experienced or serial entrepreneurs as the latter will be more familiar with most of the introduced concepts. Most of the concepts in this methodology are based on the different lean

startup and agile development models and business model tools introduced by authors such as Eric Ries (5), Steve Blank (6), and Alex Osterwalder (7).

Traditionally startup teams are asked to put a business plan together for a new business concept they have and wish to commercialize, but ideally there should be a structured, easy-to-follow process to help the team identify early success or failure indicators before they invest additional time and resources in preparing and implementing a business plan (8). I believe that the business concept validation process flow introduced in the SBCVM will help startup teams to efficiently validate their business concepts and to use the outputs of the process to prepare a basic startup plan. I am not claiming that the SBCVM is the most comprehensive or single best methodology that technology startups can use to validate and screen their business concept. However, I believe that the SBCVM is addressing a need that other existing methodologies do not fulfil by introducing a new approach that integrates the best-of-breed elements of other popular methodologies and tools that incorporate the efficiency, simplicity, and ease-of-use required by startup teams. I can summarize the goals that technology startups will achieve by using the SBCVM in the following points:

- Help new entrepreneurs to efficiently screen business concepts at an early stage and avoid costly mistakes that are caused by uninformed decisions.

- Help new entrepreneurs to avoid possible information-overload created by the large number of business planning tools and guides in the market during their early startup phase.

- Use an integrated process that covers all the relevant aspects of the business concept screening.

- SBCVM will focus on the practical business concept screening by assessing the business concept with respect to four major venture dimensions (Customer, Market, Product, and Business Model)

- SBCVM will help startup teams accelerate the commercialization of their business concepts by reducing the required time to move from concept phase to market penetration phase and by producing outcome that can be fed to the next phase.

Even though parts of the acceleration methodology I'm introducing in this work can be applicable and useful for different types of startups (i.e. technology-based and non-technology-based startups), the focus of this work are technology startups, as some of the recommended steps and covered areas might not be applicable to non-technology startups. Further, this work focuses

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only on the concept phase, where the startup team is testing and validating the idea or business concept in order to reach a decision about how to proceed forward with the business concept.

In addition, the focus of the SBCVM is product-focused startups not service-focused startups. In other words, the SBCVM might not be suitable or optimal for technology startups that are focused on providing professional services. Despite my realization of the differences between physical and non-physical products (e.g. Hardware vs. Software) from a business planning and execution perspective, we intentionally did not highlight the differences between the various types of products and their related development profiles across the different dimensions introduced in the SBCVM.

Finally, this work does not focus on the regulatory aspects and requirements for new technology products or ideas, as this is usually a country or region specific issue. Additionally we did not focus on financial performance analysis, investor relations, or fund-raising aspects of business planning, as those are separate topics that require a dedicated analysis and are out of the scope of this work. The SBCVM does not focus on any business maturity phases beyond the concept validation phase.

1.3 What is a Methodology?

Methodology is usually a guideline system for solving a problem, with specific components such as phases, tasks, methods, techniques and tools (9). In general a methodology is about establishing a mindset or a way of thinking rather than establishing a comprehensive 360 frame. The goal of the introduced methodology in this work is not to create a standard checklist or a one-size-fits-all approach to analysis - as many of the issues that are worthy of analysis will depend on the type of venture undertaken (10). The use of well defined methodologies should help startups to minimize the time, money, and resources they utilize in researching their business concept that will pass their initial screening by doing as much planning and analysis as seem necessary and useful at the concept validation phase (10).

1.4 What is a Startup?

Since the SBCVM is mainly concerned with technology startups, we better provide a clear definition of a startup. As per Steve Blank definition, a startup is not a small version of a big company since it has a completely different set of goals, measures, structure, and culture and accordingly we cannot use the same metrics or Key Performance Indicators KPIs to measure the

success or progress of a startup (11). According to Adam D' Augelli, an associate at True Ventures, a San Francisco venture capital firm, a company is a startup until it finds product / market fit and has begun to scale. "Until that happens, a company is exceptionally nimble – small engineering team – hacking away trying to solve a problem," says (12). On the other hand, Steve Blank believes that unlike big stable companies, a startup is usually facing a set of conditions and situations, which are dominated by great uncertainty and based on that he defines a startup as "a temporary organization designed to search for repeatable and scalable business model". He also believes that the big audacious goal of any startup should be how to stop being a startup; what he means by that is not to get out of business but rather to "find a repeatable and scalable business model". In other words, they should focus on finding the source of their competitive advantage. Therefore, as long as a startup doesn't find a repeatable, successful, and scalable business model it will remain a startup no matter how many employees it has or revenue it makes (13).

The rest of this paper provides a clear roadmap across the different business dimensions as defined in the SBCVM. We will start by explaining the four major business dimensions introduced in the SBCVM, which are Customer dimension, Market dimension, Product dimension, and Business dimension. The paper also covers the different areas in each dimension that need to be discovered and validated as part of the SBCVM validation process. Finally, the paper explains how the startup team can integrate all the outcomes of the validation processes across the four dimensions to result in a conclusion and a decision. The decision to be made will be based on the outcomes of the analysis results. Usually negative analysis results are early warning signs for the need to reconsider the business concept and make a course correction to enhance the success opportunity of the concept in consideration.

2: Validation Methodology High Level Overview

The main goal of the startup business concept validation methodology is to introduce a clear validation process that will help new entrepreneurs to validate their business concept through a well-defined and easy to follow process. As shown in figure 2.1 the methodology is built around three steps: business concept identification, validation, and screening. The startup team should begin by identifying the list of business concepts they are considering for their startup venture. Once that list is ready, they need to go through the validation process for each of their concepts.
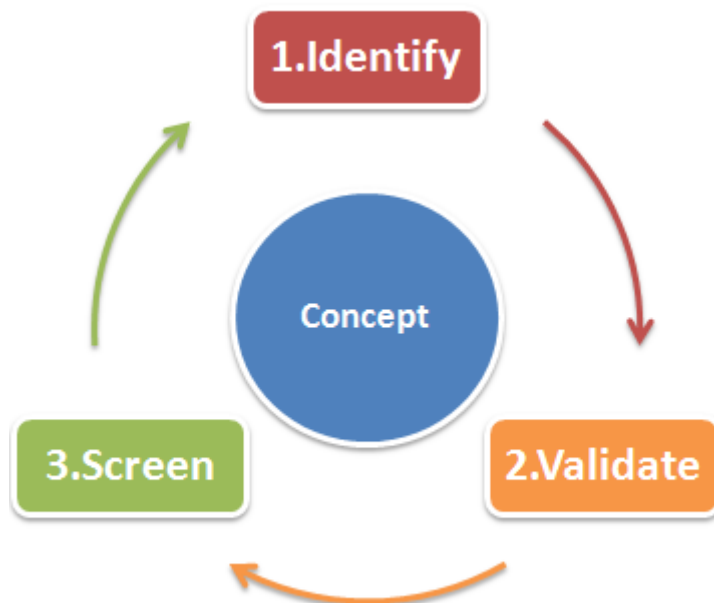
Figure 2-1 Three Step Concept Validation Model

The validation process has four major dimensions that need to be validated. These dimensions are: Customer Dimension, Market Dimension, Product Dimension, and Business Dimension. The first step in the validation process is "customer validation" where the team needs to discover and validate two areas: problem recognition and customer discovery. Once the team validates the customer dimension, they focus on "market validation". The market validation dimension covers four major areas: market size, competitive landscape, market structure, and

market type. Market validation is followed by product validation. Two major areas are covered in the product validation dimension: innovation type and minimal viable product. Finally, the startup team validates their business dimension by covering the following areas: business model, finance, risks, and IP. Figure 2.2 provides an overview of the validation process across the four dimensions and provides a visual representation of the full concept validation methodology and areas that are covered during the validation process.
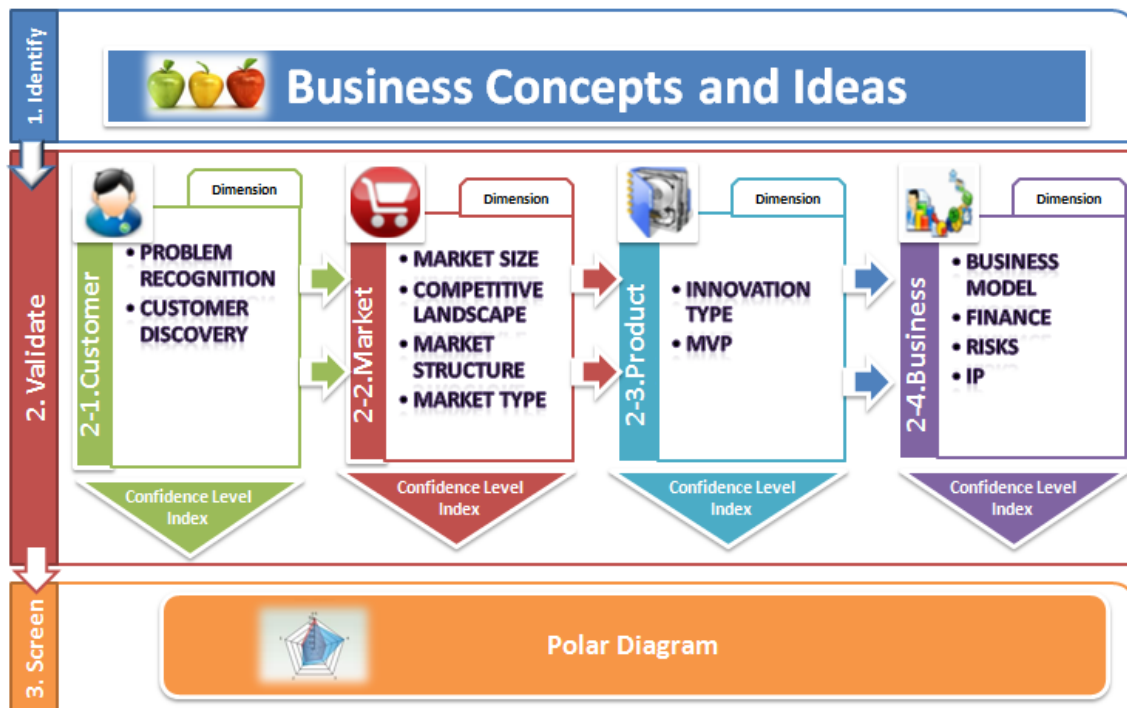
Figure 2-2 Startup Concept Validation Methodology

Once each area is analyzed and validated, the startup team should be able to assign an "opportunity confidence level" value for each area. The "opportunity confidence level" value ranges between 1 and 10. Where 1 to 4 indicates a very low opportunity in the relevant area, 5 to 8 indicates a medium opportunity, and 8 to 10 indicates a high opportunity. The average value of the different areas provides an indication of the dimension "opportunity confidence level" Assigning a value for each "opportunity confidence level" area needs a thoughtful understanding of the area and a sense of balance between the business concept weaknesses and strengths within the dimension context. For example, if the team finds out that their business concept is not really solving a critical customer pain or addressing a significant need upon validating the problem recognition area within the customer dimension, they should assign a low opportunity confidence

level for that particular area. The opportunity confidence matrix (Table 2.1) provides a summary of the different areas across each of the four dimensions and identifies some of the key measures that will help the startup team to determine the "Opportunity confidence level" value for each area. As we indicated earlier, the dimension "opportunity confidence level" can be obtained by calculating the average value of the different "opportunity confidence level" areas. The below opportunity confidence matrix also includes some sample "Opportunity Confidence Level" values assigned to the different areas in multiple dimensions

Dimension	Area	Opportunity Confidence Level			Dimension Confidence level	Measure of Confidence Level
		Low (0-4)	Medium (5-7)	High (8-10)		
Customer	Problem Recognition	2			Low	- Is the proposed concept going to solve a critical customer pain or significant need? - Are customers aware of their problems or needs?
	Customer Discovery		4			How confident are you about the answers to the following questions: - Who are the customers? - Why will they buy the product and how will they use it? - Will customers care if the new product lets them do something they couldn't do before? - How sophisticated are your customers? (e.g. are customers sensitive to the color, shape, and look of the product or they are more focused on the features and price of the product)
Market	Market Size			8	High	- How large is the target market and what is the opportunity size?
	Competitive Landscape		6			- Are there many direct and indirect competitors? - How complex competitors' strategies and position in the market are? - Is there any "strategic competitive advantage" for the new business concept?

Category	Subcategory				Confidence	Questions
	Market Structure			7		- How complex the structure of the market or industry is? - Are there high barriers to entry or is it easy for new startups to enter the market?
	Market Type			7		- Is this a new or an existing market? - How much will it cost to penetrate the market and raise customer awareness about the new product?
Product	**Innovation Type**		5		Medium	- What type of innovation the new product is going to introduce? - What is the expected adaption rate and market penetration strategy?
	MVP		6			- How easy/difficult is it to build a Minimum Viable Product (MVP)? - How was the customer response to the MVP? (e.g. Like it, not interested, willing to buy)
Business	**Business Model**		6		Medium	- Is there a well-defined and valid business model around the business concept?
	Finance	3				- Does the high level P&L analysis indicate some positive revenues? - How easy is it to raise fund for your business concept?
	Risks		6			- How high the probabilities of technology, market, and customer risks? - Are there any feasible mitigation plans to reduce the different risk types?
	IP			8		- Is there any IP protection strategy for your business concept that can help you to gain a competitive advantage and raise barriers to entry?

Table 2-1 Opportunity Confidence Level Matrix

The startup team should validate the different areas within each individual dimension until they are able to complete the "Confidence level" matrix for the four dimensions. Once the confidence level for each of the four dimensions is calculated, it can be mapped into a polar diagram similar to the one shown below in figure 2.2 where the screening process can takes place.
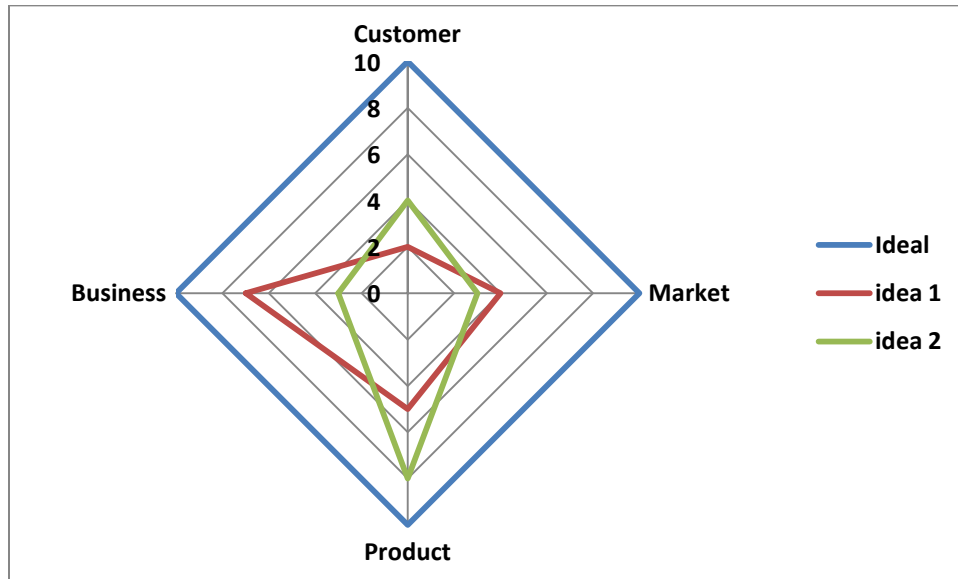
Figure 2-3 Ranking Business Concepts Across Four Dimensions Using Polar Diagram

Polar diagrams are usually used to compare and contrast the different alternatives. They are not meant to be used to choose the optimal option, but rather they are intended to enable the team to spot and select the best alternatives (14). Assuming the startup team wish to evaluate more than one business concept idea, polar diagrams will enable them to spot the weaknesses and strengths of each idea from a dimension point of view and make a decision based on that (15). In other words, a polar diagram will help the startup team to both screen their business concept and choose the best one or identify the key areas of weakness in their concept and think about a way to pivot their business concept to reinforce the weak area. Screening is the last step in the SBCVM. Pivoting is usually about making the required course corrections, to improve the odds for success. Pivoting can take place in different ways; each relies on the different customer type, target market, product, and business model in consideration by the startup venture. For example, pivoting can take place around the product as the entrepreneur realizes that what was previously considered a single feature in a product becomes the whole product (Zoom-in pivot) or the

reverse situation, where a single feature is insufficient to support a customer set (Zoom-Out pivot) (5). The same can take place across any of the dimensions.

Once the startup team validates and screens the different business concepts and agrees to move to the next phase, they should be able to use a great portion of the validation outcomes in their go-to-market strategies and phase preparation. For example, the competitive landscape analysis will list all the major market players and their offerings. The outcomes of this analysis can be used to identify and create a list of the sales& distribution channels, sales partners, and marketing partners that competitors are using in order to be fed into the market penetration strategy.

New entrepreneurs should consider the SBCVM as a tool that will help them to understand if their business concept is underperforming in one or more dimension. It will also act as screening utility that will provide some course correction guidance. The SBCVM will enable the startup team to better understand the business concept weakness and strength areas and guide them to the areas where they need to focus their effort. The open question though is "what should the startup team do if they found themselves with a low rank with respect to a certain dimension?" The detailed answer to this question is beyond the scope of this work. However, the SBCVM provides entrepreneurs with a number of good tools and analysis mechanisms to consider different course correction and pivoting strategies. For example, if the entrepreneur finds that his/her product is not a good fit for the market segment he/she was originally targeting, he should consider some of the re-segmentation strategies listed under the market type area in the market dimension. The same principle applies to the other areas and dimensions. The rest of this paper provides a detailed description of the validation process and concept screening across the different dimensions.

3: Concept Identification

In this chapter, we discuss the major challenges that startup teams usually face during the concept phase and provide an overview of the different business maturity phases. Concept identification, sometimes referred to as the ideation phase, is considered the first step and starting point for the SBCVM.

The SBCVM assumes that the business development maturity phases for technology startups are: concept phase, market entry/penetration phase, and growth/market expansion phase. We realize that each of those phases can be broken down into additional sub-phases. However, we intentionally kept the definition of the business development maturity phase as simple as possible in order not to complicate the structure of the methodology.

At the concept phase a technology startup team usually has a new idea for a business, however they are not sure whether this idea can be developed further into a full product that can be successfully commercialized. At the market penetration phase, the technology startup team has already validated both their product and target market, completed all the key tasks in the concept phase and at least has a validated product prototype ready to be taken to market. At the growth phase, the technology startup has a single product or a portfolio of products that are being commercialized and brought to market; the technology startup team had their first sales and starting to turn a profit, and would like to know what they should do to sustain growth and establish a repeatable, scalable business model.

"In their enthusiasm many entrepreneurs dilute the much-better than your rival's imperative to an 'as-good-as' standard, perhaps they have been conditioned to believe that failure is the consequence of a pathological hubris or ineptitude" (10). Successful startups usually recognize that all they have at the concept phase are untested hypotheses that still need to be verified (16). One of the main challenges startup teams usually face at this phase is the ability to measure and validate all the external and internal factors that will potentially lead to the success or failure of their concept within a reasonable timeline. They also struggle to set their analytical priorities and figure out which areas to touch lightly and which to spend more effort and time in analyzing while trying to understand "what must go right and anticipate the venture-destroying pitfalls" (10). At the end of this phase, the startup team should be able to validate and screen

their business concept and reach a solid conclusion about whether they should proceed forward with their business concept to the next phase, or if they should pivot and modify their business concept to enable them to commercialize and scale successfully.

Similar to automobile manufacturing, where it is always cheaper to make a change to any part of a car during the design phase rather than the production phase, decision-making costs for a startup are much less costly during the concept phase than the market or growth phase. One of the main reasons for the decision cost variance at the different business maturity phases is simply that at the concept phase startups have a minimal, if any, path dependency that will constrain their future actions. In other words, the startup venture still has not made any critical decisions or expensive investments yet (e.g. build a product, factory, or bought some expensive assets) at the concept phase. At a later phase, for example at the growth or go to market phase, the startup venture might have already taken some decisions that will potentially create path dependency. Nevertheless, decision-making at the concept phase will still have some serious implications that will potentially create some future path dependency. As a result, startups should carefully consider all the different dimensions and areas of this phase.

In summary, at the concept phase the main goal of the startup team is to validate their business concept. However, entrepreneurs sometimes struggle to set analytical priorities and figure out which areas to touch lightly and which to spend more effort and time in analysing. The SBCVM provides the startup team with one integrated method and a number of tools to analyze and validate their business concept.

4: Validation

In this chapter, we cover the validation process of the business concept by introducing the four different dimensions of the SBCVM that need to be validated. I also describe the validation process in each of the different areas within each dimension and explain the benefits of using the SBCVM across each dimension.

4.1 Customer Dimension

In this section, we explain how the validation process can be executed in the customer dimension and we will highlight the different areas that need to be validated across this dimension. Once the validation process takes place in this dimension, the startup team will have a better understanding of the customer pain points and requirements.

As in most businesses around the world, your customer is the most valuable asset of your business because he/she is the one who generates revenue and purchases your products and services. Accordingly, the customer dimension is the most important element for any successful business throughout all the different business maturity phases. Steve Blank, a Silicon Valley-based retired serial entrepreneur, founding and part of 8 startup companies in Silicon Valley, is one of the leaders of the customer development theory. According to Blank, customer development is a core part of the process to organize the search for a successful business model (16). Blank also believes that the traditional product development model is not good enough to be the main driver for business model development and validation because it shifts the focus of the startup from the customer, who is the main revenue-generating source, to the product that has to be liked and used by customers. In addition, he believes that the traditional product development model is not flexible enough to support possible iterative changes in the business model and it mainly engages the customer at a very late stage of the development process where changes become very expensive. Steve Blank's customer development model consists of four phases: customer discovery, customer validation, customer creation, and company building. He believes that the best practice is to use the three-step approach (learn, build, and pivot) along with the customer development process (16)**.** According to Blank, as shown in figure 4-1 the startup team will go through several iterations of the customer development process until they achieve measurable progress in finding the business model as defined by the startup board and team (17).

We won't cover the customer development process in detail in this methodology since there are several dedicated literature work that explain the entire customer development process in details, however we will focus on the relevant parts that are aligned with the SBCVM.
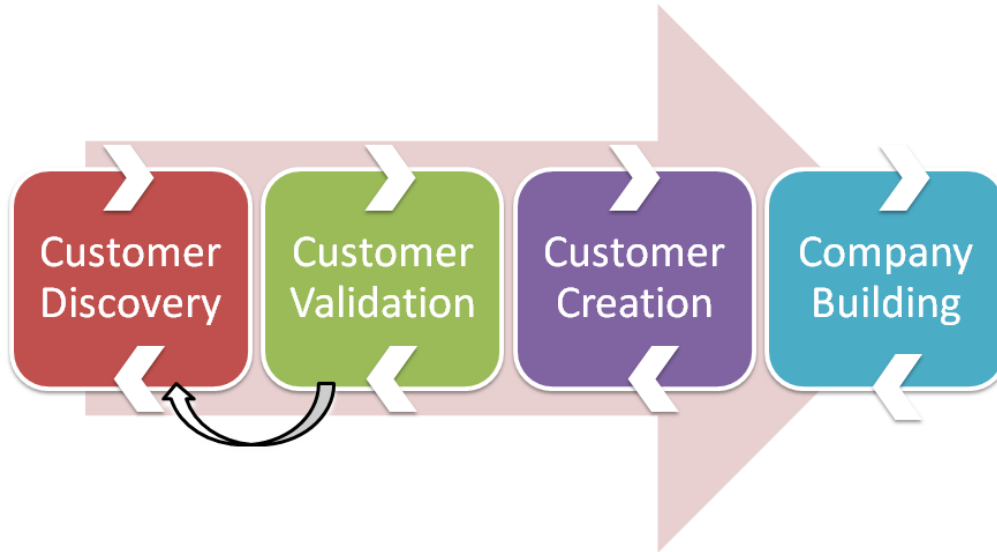
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Figure 4-1 Customer Development Model (16)

4.1.1   Problem Recognition

It is crucial for any business to recognize the problem they are trying to solve from a customer angle and a solution / product provider angle because this is usually the first step in the consumer decision-making process (i.e. customers recognize that there is a problem). When the two angles match each other (i.e. the consumer and solution provider angles), the business concept will potentially have a better success opportunity. Problem recognition occurs when a customer realizes that her/his current state of affairs differs significantly from some ideal or preferred state (18). Problem recognition can be as simple as noticing a near empty milk carton in the fridge or a need to solve a set of complex problems. Sometimes problem recognition can be activated by marketing efforts done by the solution / product provider (19).

In general, the startup team needs to understand whether their product addresses a customer need or solves a critical problem, because the type of problem or the need it addresses will control consumer behaviour and influence his / her willingness to pay. For example, with the advancement in the power processing of Smartphones and resolution of embedded cameras, many

mobile companies introduced the concept of "mobile media" in the form of a mobile application that runs on Smartphones. The application enables field reporters to instantly use their Smartphones to record, edit, and push content to newsrooms. However, the challenge that the solution development company is facing is that most news agencies don't realize the value that the new app will bring to their business and sometimes they are not aware that such solutions exist. Most news companies believe that existing mobile equipment and cameras are good enough to do the job. Therefore, it becomes a huge challenge for the solution providers to convince the news agencies about the value they are bringing to the table. On the other hand, first-movers who introduced the hand held cameras and satellite broadcasting systems to the news agencies were addressing a major need for most of the news agencies, which mainly was "How to broadcast live events in different sites". Although the new mobile based app solution is probably 100 times cheaper than the handheld cameras and satellite broadcast, it simply still does not address an urgent need or solve a pain for most of the news agencies; therefore, it is more challenging to make potential customers think about or consider buying that solution. At times, particularly in a new market or in disruptive technologies, an entrepreneur's vision is clearer than the vision of potential customers, however the entrepreneur must think about a way to properly articulate the value of the product and the problem it will solve for customers (16). Therefore, it is crucial to understand whether the target customers really recognize, understand, and appreciate the problem that the product will solve or the need it will satisfy. There are some exceptions for some famous products that were very successful although they were not solving a problem or directly satisfying a need (e.g. iPhone from Apple, AIBO dog robot from Sony) however, these exceptions are not the rule.

4.1.2   Problem Statement & the Problem Recognition Scale

Ideally, the startup team should develop a problem recognition statement or what is also known as "a positioning statement", to satisfy the requirements of this area. A problem recognition statement will sound like the following statement: "***We satisfy the need for, or solve the problem of, by ...***" This simple statement will summarize the problem or need the product is trying to solve and will help the startup team to understand the type of business they are in. For example, a company that is developing database mining software can describe their solution or the problem they are trying to solve by saying *"We solve the problem of letting ordinary business users ask sophisticated questions of their corporate data without any need for programmers by introducing a desktop application that runs on top of a complicated multi dimensional query engine"* (20)

One important tool that will help startup teams to understand the problem they are trying to solve is the problem recognition scale: As per Steve Blank's classification, the problem recognition scale consists of four major types (16):

1- **A latent problem:** Customers have a problem but they don't know it.

2- **A passive problem:** Customers know of the problem but aren't motivated or aware of the opportunity to change it.

3- **An active (or urgent) problem:** Customers recognize a problem or passion and are searching for a solution but haven't done any serious work to solve the problem.

4- **With a vision:** Customers have an idea for solving the problem and even have put together a home-grown solution, but are prepared to pay for better one.

Each customer type in each of the problem recognition scale will have different motives to buy a product that address his/her need or solve his/her problem, and will have a different willingness to pay (WTP) level. The ideal customers are the ones who belong to the active and / or "With a vision" problem recognition type. The most challenging customers are probably the ones who belong to the latent and passive customers' problem recognition types. Therefore, it is important to know and understand the type of customer based on the problem recognition scale, because this will potentially affect your pitching, communication, and marketing activities and will control your core message, tactics and strategies to some extent.

4.1.3   Customer Discovery

From a customer dimension point of view, the startup team should focus on customer discovery during the business concept validation phase. This will help them to minimize their spending during the early stages of their business and increase the odds of a successful execution phase by verifying that early customers can be scaled into mainstream markets and that the product is solving a high value problem (16). During the customer discovery phase, most of the founder visions and ideas are captured and turned into business model hypotheses that can be developed into plans and minimal viable products to test customer reactions for and decide whether to take them to the next step or not (21). However, customer discovery is not about identifying the product features list based on customer feedback, reactions, or focus groups. On the contrary, it is about the features that should not be included in the product (16). During the customer discovery phase the founders defines the product vision and then use customer discovery to find customers and a market for that vision (16).

The exit criteria for the customer discovery phase include finding customers who will enthusiastically confirm the importance of both the problem and solution. The only way to achieve this is to "get out of the building to test customer reaction to each hypothesis, gain insights from their feedback, and adjust the business model" (16). During the discovery process, the startup team will gain a better understanding of their wrong and right assumptions and business model hypotheses and might decide to pivot at several points during the discovery phase as a corrective action (17).

For Web/Mobile apps, customer discovery begins when the first "low fidelity" version of the website or app is up and running. "Low fidelity" Web sites or Mobile applications usually have some characteristics of the target product but with very simple architecture and design and usually incomplete in order to quickly be produced and test broad concepts. The website is used to test the business model hypotheses against customers or users (16). During that phase the startup can set a small marketing budget (e.g. $5 a day, using Google AdWords) to attract users to the site. Then regular users or visitor can be targeted for online surveys and phone calls (11). However, the degree of the product innovation will determine the best method for the customer discovery phase (16) (10). For example, focus groups and surveys have little value in predicting demand for products that closely resemble existing offerings or for products that are so novel that customers can't express a useful opinion. Market research helps most with intermediate levels of innovation whereas businesses with more complex operations or development tasks require more analysis and planning (16).

In general, during this phase the startup team needs to focus on the following questions (16):

- Who are the target customers?
- What are their needs?
- Why will they buy the product and how will they use it?
- Will customers care if the new product lets them do something they couldn't do before?
- Where can they find the product and how can they be reached?
- How sophisticated are the customers? (e.g. are customers sensitive to the color, shape, and look of the product or they are more focused on other features or the price of the product?)

At the beginning, startups could focus on visionary customers/early adaptors rather than mainstream customers, as they are usually keener on trying new products and using new solutions. Steve Blank refers to those types of customers as the "Evangelists" or what is also known as "Early Adopters" and "Alpha Customers". Evangelists or early adopters are the perfect target to try the minimal viable product (MVP) because they usually care more about trying new cool and interesting things rather than looking for a perfect product (16). However if none of the "Evangelists" think your MVP solution is interesting or sufficient, the startup should iterate or pivot until an adequate number say "yes". The below diagram (Figure 4-2) summarizes the characteristics of an "Evangelist" customer.
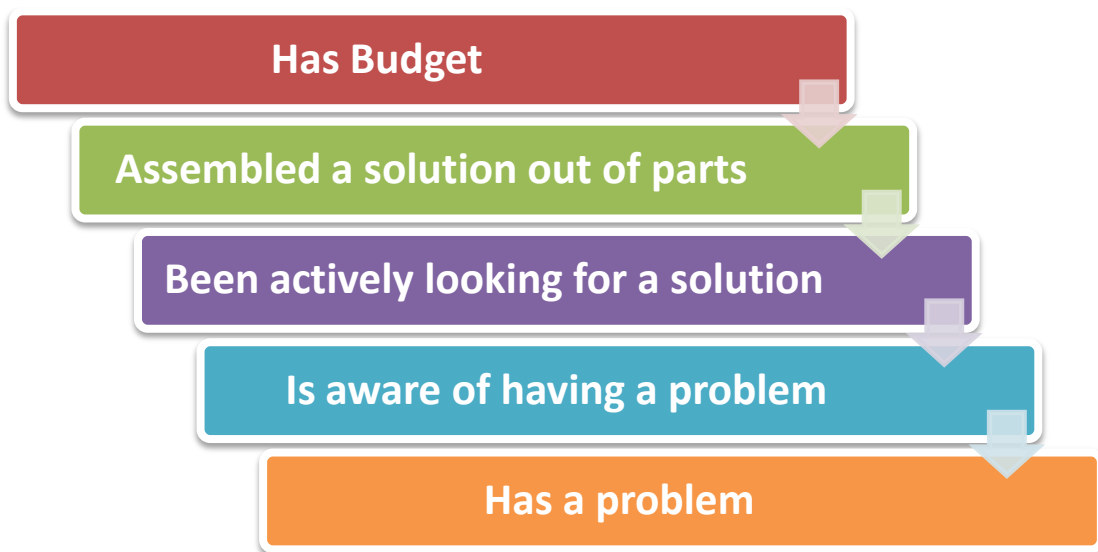
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Figure 4-2 Early Evangelist/Adopters Characteristics (16)

4.1.4   Understanding Customer Profiles & Types

At the business concept phase, the startup team needs to understand and learn about their users / customers as much as they can. Two major useful tools can be used to learn more about customers:

1. **User Story:** is a tool that can provide a good sense of the product vision, features, and benefits but it is not a feature list (16). For example, a website that will establish an online community for nurses can write their user story in the following way: "Until now, operating-room nurses had trouble talking to one another about their stresses and "doctor problems" for fear of

spawning gossip or incurring HR punishment. Now "ORNurse", "Nurseconfidential.net" allows these specialized nurses to:

- "Interact and chat anonymously with their peers nationwide and beyond
- Pose questions to fellow nurses in similar situations and collect a variety of advice.
- Obtain advice anonymously from legal, HR, and clinical professionals" (16)

2. **Customer / User Personas & Archetypes:** *"Personas* are archetypal representations of audience segments, or user types, which describe user characteristics that lead to different collections of needs and behaviors" (22). So the main objective of the personas is to create customer models that resemble the behaviors and demographics of the target customers. "Customer archetypes help the team visualize who will buy or use the product and helps crystallize product strategy, customer acquisition, and more" (16). The below table provides an example of the different customer archetype highlights and the implication of each archetype on the customer acquisition strategy.

Archetype Highlights	Customer Acquisition Guidance
Age 40-55, high income	User for targeting mass banner ad, text link campaigns
Two working professionals	Don't advertise or promote during the work day
Buy fresh gourmet produce	Reach these bloggers, co-promote with gourmet food sites
Drive luxury cars	Consider co-promotion offers from high-end auto Websites
Frequent business travelers	Send press releases to travel Web sites, bloggers
Cooks only on weekends	Don't run AdWords during the week to save dollars, send e-mail blasts, Tweets, text Thursday/Friday
Entertain friends at home often	Co-promote with home, entertainment sites, blogs

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Table 4-1 Archetypes (16)

3. Customer Types: Part of the customer discovery and analysis process is to understand the different types of customers to approach. Steve Blank divided customers into five major groups as illustrated in figure 4-3 (16).
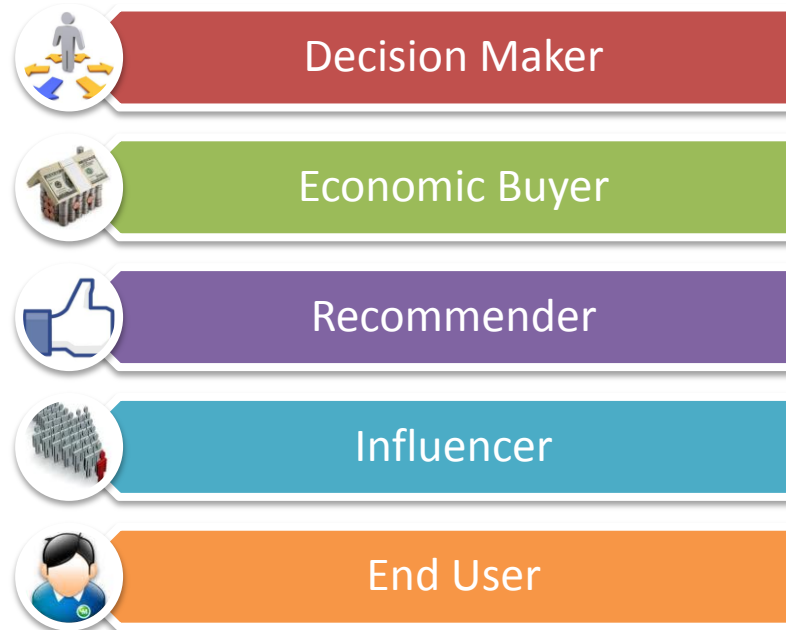
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Figure 4-3 Customer Types (16)

- **End Users:** The day-to-day users of the product. It is important to understand their needs, motivations, and influence. In a Business -to-Consumer (B2C) world, end users will probably be the decision makers; however in a Business-to-Business (B2B) world most probably they won't be the decision makers. For example if company is selling word processing software to end customers to be used on their home computers, they will be the decision makers: however if the same company is selling the same software to a corporate buyer, the end users of the word processor might not be the decision makers at the company.
- **Influencers:** In every market or industry a group of individuals usually pioneers the trends, styles, and opinions. In the fashion world, for example, movie stars, designers, and fashion models are usually the greatest influencers in the fashion world. Sometimes influencers are market research firms, bloggers, magazines, or even kids.

It is important to understand who are the influencers of your product and address them in your marketing efforts.

- ■ **Recommenders:** Recommenders have an influence in way that can break or make the deal. For example a department head can recommend that all new laptops should be from IBM.
- ■ **Economic buyers:** They sit further up the decision chain and often control or approve the purchase or budget.
- ■ **Decision makers:** Sometimes they are the economic buyers or a higher authority over the economic buyers. Decision makers might be VPs or CEOs in a company or DAD and MOM.

In summary, customer dimension is a critical element of the SBCVM. It contains two major areas that need to be validated: problem recognition and customer discovery. Many tools can be used to validate both areas such as problem recognition scale, customer profiles and types, and User Personas & Archetypes. The customer dimension will enable the startup team to understand whether their product is solving a customer pain and whether customers are interested in what they will sell.

4.2 Market Dimension: Understanding the Market Dynamics

In this section we cover the different areas that need to be validated across the market dimension and explain how this will impact the decision making process of the startup team by highlighting the different market opportunities through a market landscape analysis.

Industry market structure and situation is a critical determinant of firm behavior, and of industry performance (23). The market structure and situation will determine the tactics, strategies, and decisions a startup will make and will possibly indicate the success chances a startup will have based on its current business model. The market structure of an industry refers to the number and size distribution of sellers, the degree of product differentiation, and the height of barriers to entry (ease of entry and exit from the industry) (23). The number and size distribution refers to how many firms there are in a market or industry, and the market shares of each firm. The degree of product differentiation refers to how close substitutes the various firms' products are to each other (23). An entry barrier is something that allows incumbent firms to earn revenues above average returns while making it unprofitable for new firms to enter the industry – if there are no barriers; entry is free (23). It is important for any startup to understand how their product value proposition matches the customer segment they are planning to target (i.e. problem

solution fit) and market they are targeting (i.e. Product / Market Fit) (16). The main goal of the market dimension is to enable the startup team to gain an understanding of the market situation and eventually discover and validate their product / market fit and identifies the size of existing opportunities. The market dimension covers the following areas:

1. **Market Size Analysis -** taking a clear objective view of the customer for the product or service and identifying the size of the opportunity.
2. **Competitive Analysis** – identifying both direct and indirect competition, number of competitors, competitors' strategies and position in the market and defining the startup "strategic competitive advantage".
3. **Industry / Market Structure** – determining the structure of the market or industry and whether there are high barriers for entry or if it is easy for new startups to enter the market.
4. **Market Types** – determining the type of target market for the product and whether it is an existing or new market.

4.2.1   Market Size

The market size is an important area for startups to identify, as the market size will eventually determine the opportunity size, number of customers, and expected revenues. There are three major market categories that can be used to identify the market size (16):

1. **Total Addressable Market (TAM):** As an example, for a new Smartphone application the TAM is the 1 billion Smartphone owners worldwide.
2. **Served Available Market (SAM):** For a new Smartphone application that can be only deployed on iPhones and supports English only, SAM is the total number of iPhone owners who speaks English.
3. **Target Market (TM):** For a new Smartphone application that can only be deployed on iPhones in English and will be sold through Apple's online application store, the Target market is the online application store customers who speak English.

To better explain the difference between the three market categories, Figure 4.4 shows another example of how a software development startup that develops an iPhone mobile app to detect snoring among Americans can size their market.
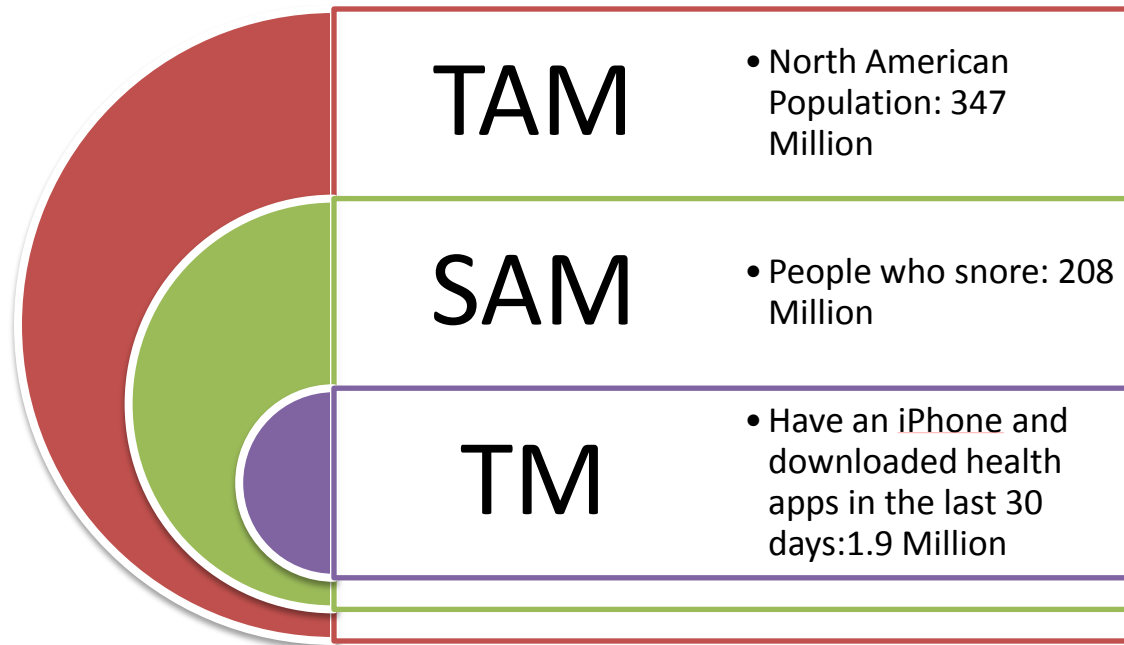
Figure 4-4 Example: Sizing-up the Market for a Mobile Smartphone Application

Primary research and secondary research sources will provide the startup team with a very good idea about the TAM and sometimes SAM sizes. Government entities, Industry analyst reports, market research agencies reports, competitor press releases, and industry associations are all examples of reliable secondary market research sources. Published market sizes in many technology markets, for example in machine to machine and telecom, are very attractive and sometimes deceiving because market research firms often use historical data to build forecasts, which may be misleading; therefore in many cases startups should use a bottom-up estimate for market size (16)

However, forecasting the number or percentage of end customers that will use or download a mobile app or visit a website remain a challenge for some startups and the forecasted numbers are required for sales forecasting and profit and loss (P&L) analysis. One approach to make projections for the number of end customers is use of the 1% rule that is commonly used in mobile apps download. For example if the TAM size of Smartphone users is one and half million users (i.e. One and half million users have smart phones of different brands), and 15,000 of the TAM have iPhones (i.e. SAM is 15,000) then according to the 1% rule only 150 users will buy a new iPhone application posted in the app store. Even though this looks like a very conservative

number, it is better to be used as a base for a sensitivity analysis[1] (SA) rather than using a more optimistic number.

Another approach to the end customers-sizing question is the "30/10/10" law of Web/Mobile user behaviour, first posited by leading venture capitalist Fred Wilson who observed that across his entire portfolio of mobile apps, games, social and music, services, this law applies consistently (24):

- 30% of the registered users or number of downloads (if it is a mobile app) will use the service each month
- 10% of the registered users or number of downloads (if it is a mobile app) will use the service each day
- The max number of concurrent users of a real-time service will seldom exceed 10% of the number of daily users

4.2.2 Understanding Competitive Landscape

The strategies, tactics, challenges, and opportunities are different for launching the next killer Web browser vs. for launching a new mobile game. Understanding the market situation, structure and competitive landscape are very crucial activities before a startup venture can bring its next business concept into reality. Those factors will determine its tactics, market penetration strategies, and plans and might even force it to tweak its business concept or model to make it fit with the given market situation. To understand the market situation and structure, the startup team need to understand the following (16):

1. Who are the incumbent competitors and which ones drive the market?
2. What is the market share of each competitor?
3. How many marketing and sales dollars will the market leaders spend to compete?
4. What is the cost of entry estimated be considering the incumbent competitors?
5. What performance attributes have customers said are important? How do competitors define performance?
6. How do the competitors define the market?
7. Are there existing standards? If so, whose agenda is driving the standards?
8. How have existing competitors defined the basis of competition? Is it in terms of product attributes or service? What are their claims and features?
9. In a retail store, which competitive products will be shelved next to the new entry?
10. For Web/Mobile apps, how do the competitors' product quality, features, sales or traffic levels and user data compare?

4.2.3   Industry / Market Structure

In general, the industry or market situation the startup is going to face will probably fall into one of the following types (23):

1. **A perfectly competitive industry / market:** In this market/industry it is relatively easy to start a business (almost no barriers to entry) and there are many small firms, each has a small market share. Products are almost identical and they are perfect substitutes. This market situation results in new entrants being "price takers" with almost no ability to set prices and in the long run profits are driven toward zero (23). Realistically speaking those markets don't exist in real life however, there are some industries / markets that have characteristics very close to perfect competition. For example, tea and coffee markets resemble perfect competitive markets to a great extent.

2. **A monopolistically competitive industry:** In this market it is relatively easy to start a business due to the absence of entry barriers. Usually there are many small firms that provide similar but differentiated products (they are not perfect substitutes). Usually firms can charge different prices ("price makers") but with a limited ability to set price and this drives profits towards zero in the long run. Firms in this industry often advertise to emphasize the differentiated nature of their product. Mobile games in particular and the game industry in general have characteristics that closely resemble monopolistically competitive industry. Today any small company or individual developers can develop a new mobile app and distribute it via multiple online mobile app stores. Barriers to entry are almost zero and most of the time mobile game developers will have to choose a price similar to what other games are being sold for in the market. Sometimes, the app store actually imposes a price range on the developer. The best chance for app developers is to differentiate themselves on a "likeability" or "quality" basis in order to maximize the number of downloads of their games.

3. **An oligopolistic market:** is a market structure in which there are a few, large firms (usually from two to six) competing in a market where some barriers to entry exist. Barriers usually lead to fewness; fewness leads to mutual interdependence. The key feature of oligopoly competition is mutual interdependence: firms know that their actions will affect their rivals and vice-versa. In oligopolies, firms must think

strategically – they must determine how their actions will affect rivals and how their rivals will respond. It is usually difficult to start a business in this industry / market due to significant barriers to entry. Products may be identical or differentiated. For example, mobile chip manufacturers represent an oligopolistic industry. Accordingly, if a startup is introducing a new LTE chip design to the market they should consider a licensing strategy for their IP to one of the existing incumbents rather than trying to start their own business and compete with the few existing dominating players.

4. **Monopoly:** In a monopolistic market entry is blockaded and there is usually only one firm. The firm is a "price maker" and the product is unique with no close substitutes. Monopolies are often regulated by government. The key to maintaining a monopoly is the absence of the threat of new entrants (entry is blocked). When firms apply for an IP or copyrights they usually try to block new entrants and become a monopolistic company for the IP/ Copyright duration. BC Hydro and also ICBC, with regard to its basic liability insurance coverage, are examples of monopolistic firms that can set price and not be concerned about competitive threats of new entrants.

4.2.4   Market Types

According to Steve Blank, there are four major market types and each market type will have implications for the spending, timing, competitive strategies and investor expectations of a startup. For example, investors that are investing in an existing market will have completely different expectations about their time to profit than investors who are investing in a new market. Although no immediate decisions related to the market type need to be made by a startup during the business concept validation stage, it is still important to gain a good understanding of the different market types. There are four major market types (17):

1. **Existing Markets:** In this type of market there is an established, well-defined market with large number of customers. Customers know the name of the market, competitors exist and the new product that the startup will introduce to the market has an edge over competitors (e.g. better performance, features, or service).

2. **Re-segmented market:** If some part of an existing market would buy a product designed to address its specific needs even if it costs more or even if it had work performance in an aspect of the product irrelevant to this niche, this is considered as a re-segmented market / niche strategy. Also another type of re-segmentation include

customers at the low end of an existing market who will buy "good enough"
performance product if they can get it at a substantially lower price (re-segmentation
/ low price strategy)

3. **New Market:** If there is no established and well-defined market, there are obviously
no existing customers or competitors and a new market is being created.

4. **Clone market:** If a startup can adopt/borrow/copy an already-successful business
model and company from one country and adapt it to local language and buying
preferences in a different country then this is considered a clone market.

The below table (table 4-2) shows the trade-offs and implications of each market type on
the customer needs, product performance, competition, and risks.

	Existing Market	Resegmented Market (niche or low cost)	New Market	Clone Market
Customers	Existing	Existing	New/New usage	New
Customer Needs	Performance	1.Cost 2. Perceived need/problem	Simplicity & Convenience	New idea already proved overseas
Product Performance	Better / Faster	Good enough at the low end. Good enough for new niche	Low in "traditional attributes," improved by new customer metrics	Good enough for local market
Competition	Existing incumbents	Existing incumbents	Non-consumptions / Other startups	None, foreign, originators.
Risks	Existing incumbents	Existing incumbents Niche strategies fail	Market adoption	Cultural adoption

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Table 4-2 Market Types Trade-off (16)

The below table (table 4-3) summarizes the cost of entry and recommended entry strategy
for each market type:

Market Structure	Single company Market Share	Cost of Entry (vs. Leader's Sales/Marketing Budget)	Entry Strategy
Monopoly	>74%	3X	Resegment/New
Duopoly	>74% & 1.7 X share of second company	3X	Resegment/New
Market Leader	>41% & 1.7 X share of second company	3X	Resegment/New
Unstable Market	>26%	1.7X	Existing/Resegment
Open Market Perfect Competition	<26%	1.7X	Existing/Resegment

Table 4-3 Cost of Entry (16)

Below is a brief explanation of how this table can be used (16):

■ "If a single company has 74% (or more) of the market, the market has become an effective monopoly. For a startup this is a head-on collision with the existing player (Google in search or Facebook in social networks are examples of such market). The cost of entry for a new player is (typically) three times the total sales and marketing budget of the leader.

■ If the combined market share for the market leader and the second-ranking company is greater than 74% and the first company is within 1.7 times the share of the second, it means a duopoly commands the market. (In the telecom sector, Cisco and Juniper's combined share of the core router market fits this description).

■ If a company has 41% market share and at least 1.7 times the market share of the next-largest company, it is the market leader. Markets with clear market leaders offer an opportunity for re-segmentation" (16)

- If the biggest player has more than 26% market share then the market is relatively unstable and the market power can shift or change at point of time. This market usually indicates some possible entry opportunities.
- If the biggest player has less than 26% market share, than the market is very fragmented and the biggest player has no influence. This is usually the easiest market to enter.

The Lisa project that was introduced by Apple Computers in the early 1980s is a good example of how important understanding the market dimension and the market type is in order for a new product to succeed. Steve Jobs introduced truly user-friendly personal computing through the Lisa in 1983. Positioned as high-end $10,000 product, it couldn't attract the critical mass of software developers, value-added resellers, distribution channels and users it needed to survive. When the same technology was reintroduced for a broader market as the Macintosh however, the product was a smash hit (10).

In summary, the market validation dimension covers four major areas: Market size Analysis, Competitive Analysis, Industry/Market Structure, and Market Types. By analysing and validating those areas, the startup team gains insights into the market opportunity and validate the potential target market size of their product. They will also assess the need to redefine their target segment or determine to continue with their originally selected target segment.

4.3 Product Dimension

This section discusses the major areas of the product dimension and how can they be validated. Once the product dimension is validated, the startup team should be in a better position to decide on the list of top features of their new product, and will have a better understanding of types of potential early adopters and the expected adoption rate.

The major two areas that the product dimension covers are:
1. **MVP:** The Minimum Viable Product (MVP) focuses on concept implementation feasibility through basic prototypes.
2. **Innovation Type:** It is critical for the startup team to determine the type of innovation their product technology is introducing to the market to determine the adoption rate and market penetration strategy.

4.3.1   Concept Implementation Feasibility Through MVP

Committed entrepreneurs believe that their ideas are going to be successful and change the world, and they might be. However assuming a mobile game developer is telling a group of physics professors or investors that his/her business concept is to build a time machine and that he/she thinks it is an achievable business concept; the least they will do is laugh at him, assuming they are nice people. Now imagine that Einstein was still alive today and he told the same group of professors / investors that he is working on building a time machine, do you think that their reaction will be the same? The moral of the story is that entrepreneurs have to ask themselves about the kind of skills and experience they or their team have to be able to make a sound judgment about their business concept idea and to be credible to their audience and investors. They should ask themselves: are they or their team considered as domain experts, observers, regular users, or have they built this before (25)? Based on the answer, the startup team should be able to decide among themselves whether the business concept is doable from a technology point of view; otherwise, they will have to find technology expert(s) or put together a panel of technology and domain experts to assess and evaluate the business from an implementation point of view. Introducing an early stage prototype or what is commonly known as the minimal viable product (MVP) in the lean startup world, will definitely increase the credibility of the startup team in front of potential customers and investors. A team that has the necessary "know-how" for developing products based on the technology can best achieve the development or construction of the MVP. The main goal of the MVP is to create an initial technology concept-screening gate before the startup team decides to proceed forward with their business concept and take it to the next phase. If the startup team doesn't have the required technical skills they should use field experts or consultants that are able to provide them with some technology insights and useful feedback that will help the startup team adjust their business model and initial product design.

What is a minimal viable product (MVP): The MVP concept is an integral part of the lean startup model and the agile development / programming model. An MVP helps startups to shift their thinking from traditional full-featured product releases to an incremental, iterative model. The main goal of the MVP is to build the smallest possible feature set to help both customers and developers to better understand the problem/need they are trying to solve and to present how they will solve it. Accordingly, the startup team can determine if customers really care about this product (16). In the Web/Mobile world, a minimum viable product can be developed faster and delivered earlier which helps to accelerate the customer discovery process by conducting more tests with customers, with more granular customer response data (16). For a

Web-based product, the MVP is a live site, a live demo, or a feature or piece of functionality or content. The goal is not to sell the product, but to validate how well the startup team understood the problem (16). Below is a summary of the common missteps that should be avoided when testing the low fidelity MVP (16):

a) Customer discovery slips from the hands of founders and becomes a task for specialists (consultants, employees, etc.)

b) Comments are summarized, averaged, and amalgamated, which tends to blur or hide the most distinct "outlier" comments that often lead to iterations and pivots.

c) National laws on mobile messaging and privacy need to be understood and respected. Penalties are substantial

d) As a rule, people pay far less attention when filling out online surveys than they do in face-to-face conversation.

e) Online feedback is not a substitute for leaving the building and talking directly to customers, some of whom can be initially identified online. Online interaction should not be relied upon as the sole channel for customer feedback.

4.3.2 Determining Innovation Type

Assuming that the startup is introducing or using a new type of technology innovation in its product, it becomes important for the startup team to understand what type of technology innovation they are introducing to the market. The innovation type will determine their go-to-market strategy, customer development activities, and adoption rate. A startup that is introducing a new radical innovation, for example new 3D TV technology, should not have the same adoption rate expectations as a company that is introducing a new TV with a higher resolution or better surrounding sound capability (i.e. sustaining technology). Another important reason for startups to determine their technology innovation type during the business concept validation phase is to make sure that the company is not going to over-innovate and over-shoot the technology trajectory, or in other words the startup won't simply provide customers with more product functionality than they need and want. Several technology companies over-shot their target markets by introducing innovative products that simply exceeded the customer/technology needs at that time (26). This is essentially what the "product-market fit" concept is about. The moment the venture finds a set of customers and a market that react positively to its product by liking and

buying the product and they represent a sufficient install base, the startup can claim that it has a "product-market fit".

In general, there are three major innovation types:

1- **Disruptive Innovation / Technologies:** A new product that falls under this category usually introduces a very different package of attributes from those that mainstream customers historically value and often perform far worse along one or two dimensions that are of value to traditional customers. At first, they tend to be used in new markets or new applications. Ultimately, the technology matures and displaces an older generation of technology in mainstream markets (25). Usually new markets are created by disruptive technologies (27). New entrants usually have a decisive advantage due to the "Innovator's Dilemma" (28) and issues of path dependency. Voice Over IP (VOIP) technology is considered as an example of a disruptive innovation that disrupted the traditional landline and mobile communication technologies. Traditionally disruptive technologies will have the following attributes (29):

   1. Usually customers won't lead you to them.
   2. Their business models are usually (initially) less profitable than alternatives with current business models.
   3. Marketing, sales and financial people will oppose or be unenthusiastic
   4. Senior management will often be unaware or attach little importance to technology

2- **Radical Innovation:** usually has "the potential for delivering dramatically better product performance or lower production costs or both" (30). It usually does not create new markets, but slightly affects existing markets (31). Amazon.com is considered as an example of a radical innovation since it introduced a new Internet-based approach to selling books online.

3- **Incremental / Sustaining Technologies / Innovation:** In sustaining technologies a product usually maintains a steady rate of improvement. The product usually gives customers something more, or better in the attributes they already value. Incumbents usually have a decisive advantage due to first mover advantages. The improvements and new features that took place across the different Apple iPhone generations (i.e. 3, 3S, 4, 4S) are considered as incremental / sustaining innovation. The below diagram provides an overview of the

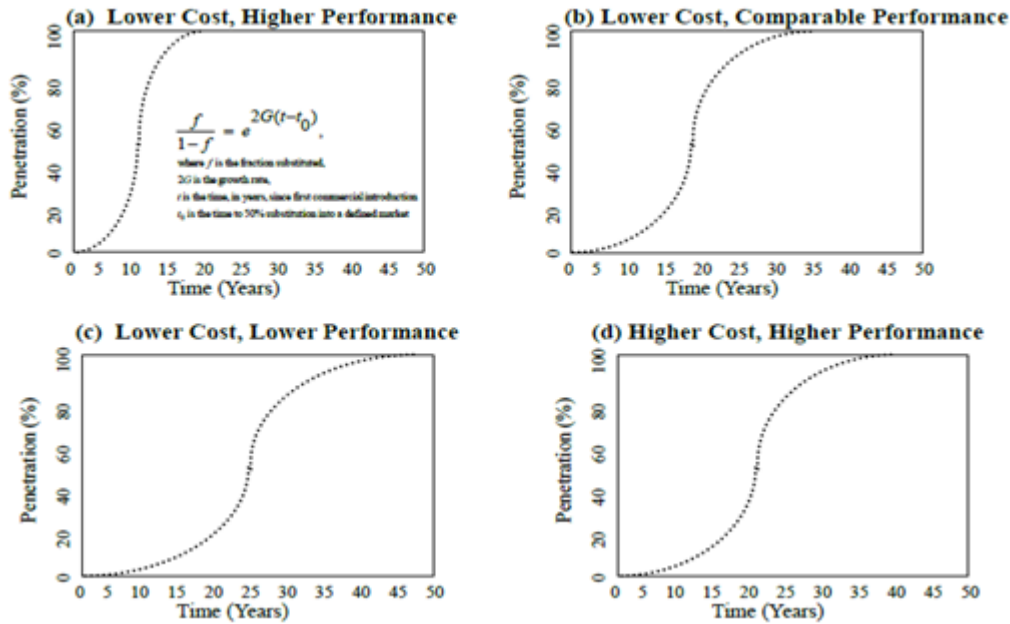performance improvements over time in both a radical and incremental innovation
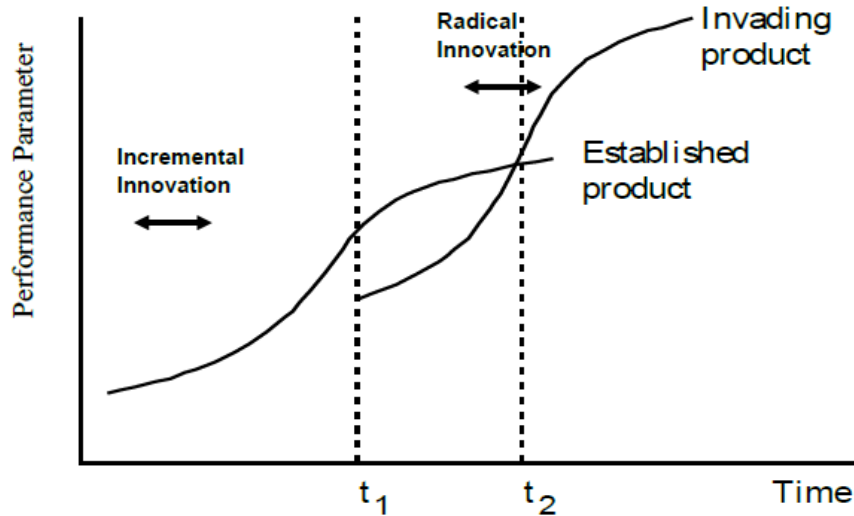
Reproduced with Permission: E. Maine, 2012

Figure 4-5 Performance Improvements in Incremental and Radical Innovation (31)

Below are some of the characteristics of incremental innovation (32):

1. Seeking cost advantages over the competition
2. Making minor modifications to design
3. Creating organizational routines, procedures and standards for more efficient and economic production
4. Adding features to existing products
5. Re-innovating – making changes to designs after their first introduction and then quickly introducing them to the market
6. Developing a reputation for product quality
7. Learning from users and customers

As we mentioned before, the adoption / penetration rate will vary between the different innovation types. The below diagram illustrates the different adoption / penetration rates over time for the different innovation types and what they offer to the market.

(a) Lower Cost, Higher Performance

(b) Lower Cost, Comparable Performance

(c) Lower Cost, Lower Performance

(d) Higher Cost, Higher Performance

Penetration (%)

Time (Years)

$$\frac{f}{1-f} = e^{2G(t-t_0)}$$

where f is the fraction substituted,
$2G$ is the growth rate,
t is the time, in years, since first commercial introduction
t_0 is the time to 50% substitution into a defined market

Reproduced with Permission: E. Maine, Cambridge 2000

Figure 4-6 Penetration Levels Over Time for the Different Innovation Types (33)

In summary, two major areas need to be discovered and validated in the product dimension, the minimum viable product (MVP) and innovation type. By discovering and validating those two areas, the startup team will be able to measure the feasibility of implementing and selling their product and determine the adoption rate of their product.

4.4 Business Dimension

The main goal of the business model dimension is to make sure that the startup business model makes sense from a business and profitability points of view. First, what is a business model? Steve Blank defines a business model as a way to "describe how your company creates, delivers and captures value or in other words how your company makes money" (13). There are several tools that can be used to analyze and validate business models. However based on my literature review I found that "Business Model Canvas" is the most comprehensive and easy to use business model generation and discovery tool based on the lean startup model at the concept validation phase.

4.4.1   Business Model Development & Validation

4.4.1.1   Business Model Canvas

The Business Model Canvas is an analytical tool presented in the book "Business Model Generation" proposed by Alexander Osterwalder based on his earlier work on Business Model Ontology. It is a visual template preformatted with the nine blocks of a business model, which allows the startup team to develop and sketch out new or existing business models (34).

Source: www.businessmodelgeneration.com

Figure 4-7 Business Model Canvas Template (35)

A business model describes the flow between key components of the company and it consists of nine different building blocks:

1. **Value proposition:** what the company offers to its customers (product / service, benefits).

2. **Customer segments:** such as users, and payers, or moms or teen

3. **Distribution channels:** to reach customers and offer them the value proposition

4. **Customer relationship:** to create demand

5. **Revenue streams:** generated by the value propositions

6. **Resources:** needed to make the business model possible

7. **Activities:** necessary to implement the business model

8. **Partners:** who participate in the business and their motivations for doing so

9. **Cost structure:** resulting from the business model

The good news is that some of the outputs of the different business areas and dimensions we covered in the previous sections are integral parts of the business model canvas building blocks (e.g. value proposition, segments, and resources). The startup team is not expected to produce a comprehensive business model canvas during the business validation phase; however, they need to touch on each of the building blocks to make sure that their business concept is fully articulated in order to assess its validity. There are several dedicated literature works and websites that explain and illustrate the usage of the business model canvas; therefore, we are not going to dive into the details of the business model canvas. Saying that, there are few key principals that the startup team have to keep in mind while they are using the business model canvas:

1- The business model canvas should be considered as a living document that needs to be regularly updated during the validation process. Ideally it is meant to be used as a score card to track the progress of the businesses concept validation and even at later stages of the business maturity and development (e.g. during the go-to-market or even growth stages)

2- Mapping the business concept into the nine blocks of the business model canvas is a necessary task for using the business model canvas, however it is not everything. Once several models are mapped the startup team needs to compare and validate the different business models before they can make a decision. Unfortunately the business model validation process is not something that can be fully quantified as it depends on the knowledge, experience, and ability of the startup team to understand the business model and read between the lines. The business model canvas is a tool that will help the startup team to organize and visualize their thoughts. However if the startup team finds out that it is very challenging to map all the segments of the business model canvas, they might need to seek some professional support from outside experts.

4.4.1.2   Business Model Bird's Eye View (BMBEV)

Another useful tool for consolidating and putting together all the different dimensions of a business concept is the Business Model Bird's Eye View (17). The below diagram depicts the Bird's eye view for a company called iNote that sells a software that can be used by college students to both view their books and take notes. This software is bundled with an e-book. The bird's eye view diagram consolidates all the relevant information about the product cost, customer acquisition cost, demand creation activities and channels, distribution channels, and target market size into one single diagram that will enable the startup team to visualize the entire business model and identify the gaps. The bird's eye view diagram provides a very high-level consolidated overview of the business model without having to dig into the details of the different building blocks of the business as it is the case when using the business model canvas.
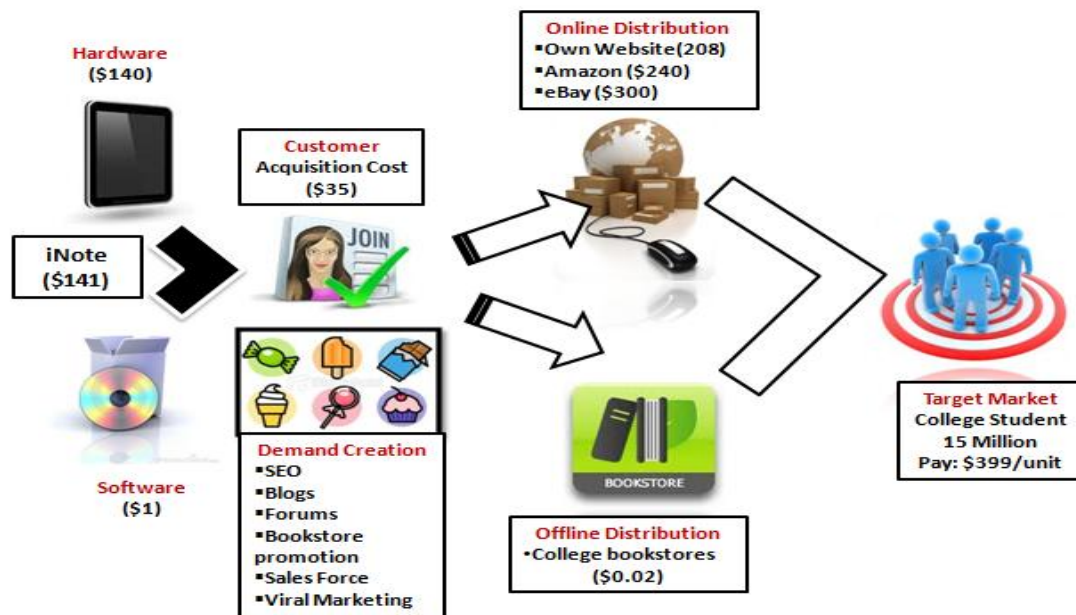
Reproduced with Permission: © 2012 Steve Blank, the Startup Owner's Manual

Figure 4-8 Bird's Eye View of iNote Business Model (16)

4.4.2   Finance

As indicated in section 1.2, fund raising and financing is a huge area that needs a dedicated work to be properly covered. Traditionally startups should consider funding their business concept using founder's own money and/or friends and family money before they consider approaching any angel investors or venture capital firms. Simply because an angel

investor or a venture capital (VC) firm would like to make sure that an entrepreneur has skin in the game before they put their own money. New entrepreneurs also need to focus on building the value of their product or concept before they start seeking additional fund sources; otherwise, they risk damaging their opportunity by prematurely approaching angel investors or VCs for additional funds. Additionally, personal funds will contribute to the development and execution of the business plan and will take the business concept to an investment ready phase.

The goal of this section is to provide a high-level overview of the angel and venture capital industry that a startup team needs to understand at the concept screening and validation phase. Figure 4-9 below provides a high-level overview of how the venture capital industry works. The venture capital industry has four main players: entrepreneurs who need funding, investors who want high returns, investment bankers who need companies to sell, and the venture capitalists who make money for themselves by making a market for the other three (19).
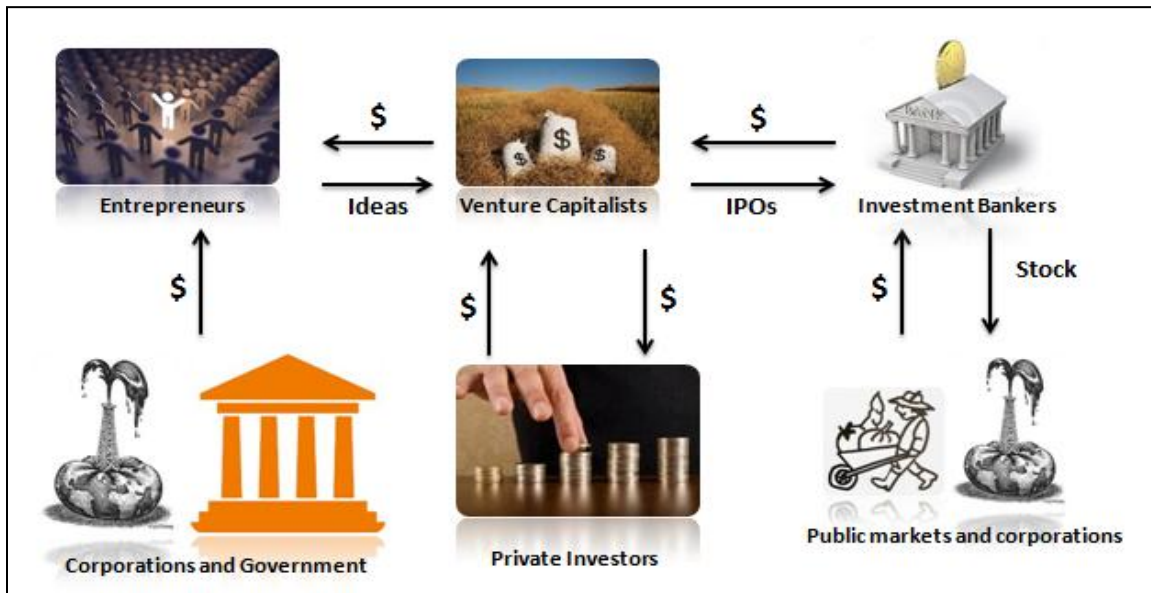

Figure Reproduced From Zider, 1998

Figure 4-9 How the Venture Capital Industry Works (36)

Below is a list of the general criteria used by most VCs to evaluate opportunities. Startup teams should carefully consider these criteria when they are thinking about their business concept (25):

a) Viability of the Concept or Technology

b) Team's Ability to Develop Concept

c) Commercial Potential of the Technology

d) Capability to Exploit the Technology

e) Fit with Investor Goals

f) Fit with Investor Capabilities

4.4.3 Statement of Earnings (Losses)

Even though the startup team is not expected to perform a comprehensive profit and loss analysis during the business concept validation phase, they have to consider the financial aspect of their business idea. The cost analysis is considered as one of the business model canvas components; however, the team will also need to perform a profit and loss analysis as part of their validation process. Many P&L templates and mobile apps are available to help startup teams to project sales, revenues and expenses and determine P&L. However, for simplicity an example is provided below that provides an overview of how Cost of Goods Sold (COGS) calculated for a tablet device and how the statement of earnings (Losses) is calculated for the same company.

Cost of Goods Sold

Specification	Cost/piece
Single light LCD panel	$25
Motherboard (w/ Wifi)	$60
RAM 512 MB	$2
Wacom A5 (tablet sheet)	$20
SDHC slot (expandable storage)	$5
USB socket	$1
Plastic casing (for panel and motherboard)	$20
Rechargeable battery + ACD power supply	$15
Assembly cost	$5
Software embedding	$1
Shipping cost ($5,000 for 5000 pieces in 20 ft container)	$1
Total Hardware Cost	**$155**

Table 4-4 Example: Calculating Cost of Goods Sold (COGS)

Statement of Earnings (Losses)

.	Quantity	Total
Sales	(10,000 units x $350 / unit)	$3,500,000
COGS (Cost of Goods Sold)	(10,000 units x $155 / unit)	$1,555,000
Gross margin		$1,945,000
Personnel		-$150,000
Marketing expenses		-$250,000
Overhead		-$100,000
EBITDA (Earnings Before Interest Tax and Depreciation / Amortization)		$1,445,000
Depreciation (e.g. 6% of the building)		-$100,000
EBIT (Earnings Before Interest and Taxes)		$1,345,000
Financial expenses		-$245,000
Loan / debt payment		-$100,000
EBT		$1,000,000
Taxes		-$100,000
Net Profit/Loss		$900,000

Table 4-5 Example: Statement of Earnings (Losses)

4.4.4 Risks

There are three major types of risks that can potentially affect the growth and development of any business even at an early stage. The startup team can use a four by four risk assessment matrix to identify and map all risks and determine their severities and probabilities as shown in figure 6-4 (31). A risk mitigation / reduction strategy should be developed for the high severity / high probability risks.
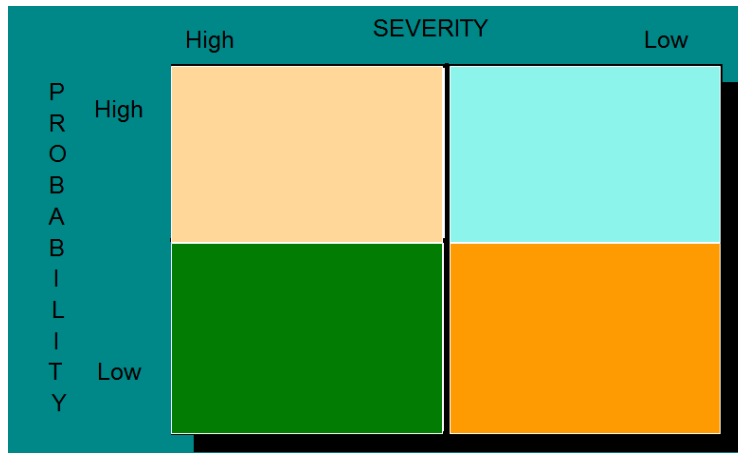
Figure 4-10 Example: Risks Classification Matrix

The three major types of risks that a startup should consider carefully are:

1- **Technology Risks:** technology uncertainty (will new technology work?), shifts in technology, and existing IP that claims the same or similar technologies or features.

2- **Market Risks:** market uncertainty, regulation, incumbents' defensive response, substation threats, bargaining position relative to those with required complementary assets.

3- **Customer Related Risks:** change in customer needs, taste, or WTP.

4.4.5   Intellectual Property

It is important for the startup team to understand the different types of IP and their implications in order to be able to properly plan for the protection of their IP at an early stage of their business development. Types of Intellectual Property Protection table (Table 4.6) summarizes the different IP types and indicates what can be protected under each type.

Type of IP	What is Protectable	Examples
Trade-mark	Branding (i.e. Nike swoosh)	Marks, logos, slogans
Copyright	Creative, authored works; expression (not ideas)	Software, songs, movies, website content
Trade Secrets	Secrets with economic values, Know How, and confidential information	Non-public technology customer lists, formula
Contract, NDA	As defined in the contract	Technology, business information
Patent	Inventions	New technology

Data obtained from: © 2012 Steve Blank, the Startup Owner's Manual

Table 4-6 Types of Intellectual Property Protection (16)

In summary, business model validation is a crucial part of the business concept validation because the business model reflects how the venture creates and captures value from customers.in order to make profit. I have introduced specific tools and approaches that can be used to validate the business model and highlighted some of the different areas that need to be covered by the startup team as part of their business model validation process.

5: Screening

Once the startup team completes the validation process across the four dimensions, they need to decide if they will proceed forward with their concept as it is, pivot, or kill the idea. In other words, they need to screen their business concept. The result of validating each dimension can be mapped into an opportunity confidence level index that will roughly indicate the confidence level in taking the business concept to the next phase with the given dimension analysis. Once all the different business ideas have been assessed, they can be mapped into a polar diagram similar to the one shown below in figure 5-1

For example, a new startup team that has a solid background and experience in Enterprise Resource Planning (ERP) software had two new concepts for two products. The first product concept, which we will refer to as C1, is about developing a new product that reviews on-going operations from a variety of information sources and then notifies users via desktop and mobile platforms, as text, graphics or voice messages, of actions they should take as a result. The second product concept, which we will refer to as C2, is planned as a cloud solution that enables fast data capture, mining, and analysis of unstructured information via the Web and Mobile devices (including voice input). C2 is planned to have a form creation and definition function, the ability to accept data input from a variety of sources including mobile and voice input, The team wish to validate and compare both concepts. They started by discovering and validating the problem or need that their product is solving. Then they mapped the different customers' archetypes and determined the willingness to pay of the different segments and their ability to make decision. Based on the complete validation process of the customer dimension they found out that customers value C2 more than C1.They also found that C2 is mainly serving business customers who are looking for as mobile force solution. The team then moved to the market dimension. By identifying the market size, competitive landscape, market structure, and market type for both concepts, they found out that the market is quite competitive and crowded for C1. They also found that TAM size for C1 is bigger than the TAM size for C2, however TM for C2 is bigger than C1. Overall, the market validation was in favour of C2.

The team also verified the product dimension and found out that the complexity and technology of both products are similar, however C1 is less complex to implement than C2.

However, none of the products is considered a disruptive technology. Accordingly, the adoption rate is expected to be normal.

Finally, the team validated the business model for both concepts and found out that C2 will potentially have better revenue potential than C1.

Figure 5.1 below illustrates the outcomes of validating the four dimensions for C1 & C2. Based on the outcomes, the team decided that C2 will have a much better opportunity than C1 and they decided to terminate C1 and proceed forward with C2.
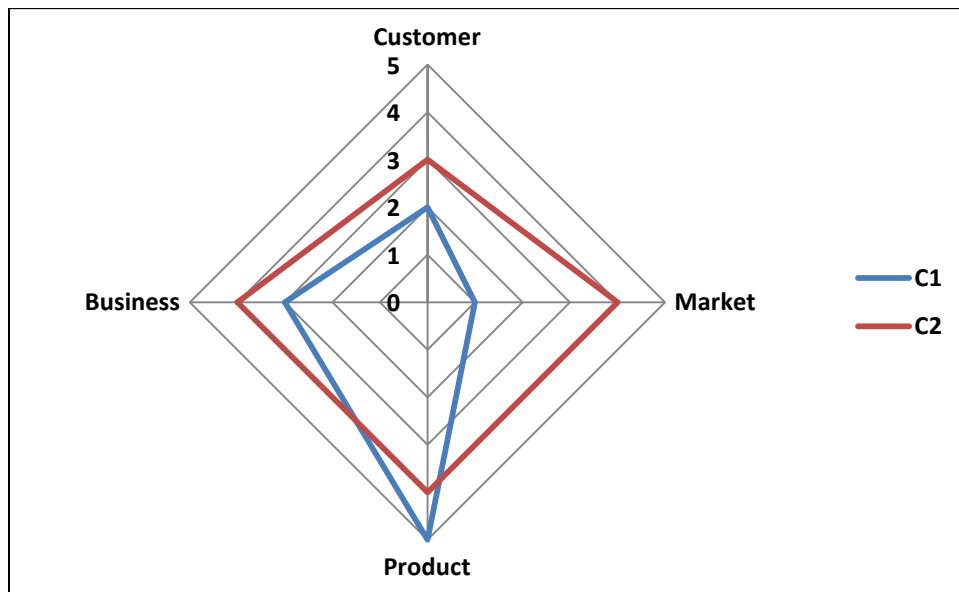

Figure 5-1 Example: Polar Diagram Comparing Two Alternative Business Concepts

Although the decision making process is unique to each business model and situation, there are some useful and common guidelines that can be used by the startup team in their decision making process (37):

    a. Identify objectives

    b. Generate a list of well-developed alternatives

    c. Search for all available confirmatory & disconfirmatory information

    d. Unbiased assessment of the alternatives

    e. Reconsider & reexamine the pros and cons of all alternatives

    f. Assess costs, benefits and risks of the preferred alternative

    g. Develop an implementation plan, monitor results and assess outcomes

6: Conclusion

If you are a new entrepreneur with a business or product concept for a technology startup, statistically the odds are against attaining business success. Therefore, to improve the probability for success, founders need to develop a clear roadmap that will help the startup team validate your business concept before you dive deep into the implementation and the market penetration details. Successful startups usually recognize that all they have at the concept phase are untested hypotheses that still need to be verified and validated (16). Accordingly, due diligence requires a great deal of preparation and understanding of the different critical business aspects that need to be covered during the concept phase. One of the main challenges startup teams and new entrepreneurs usually face at this phase is the ability to measure and validate all the external and internal factors that will potentially lead to the success or failure of their concept within a reasonable timeline. They also struggle to set their analytical priorities and figure out which areas to touch lightly and which to spend more effort and time in analyzing while trying to understand "what must go right and anticipate the venture-destroying pitfalls" (10).

In this work, I'm introducing a methodology that will help technology startups to avoid some of the common pit-falls new entrepreneurs usually fall into and will enable them to speed their concept validation process and go through a fast decision-making cycle while they are able to discover, validate, learn, and share their experiences. SBCVM is about establishing a mindset, or an organized way of critical thinking, rather than establishing a comprehensive 360-degree, formalized review process. However without a logical methodology and a roadmap in place to act as a guiding compass that offers new entrepreneurs a sense of direction, they may be uncertain about the best tools, priorities, activities they should utilize at each phase of their business development. My methodology is meant to be used as a self-guided tool by new entrepreneurs to provide them with a well-organized approach to evaluate and validate their business concept and create a development and growth strategy from day one. The SBCVM is based on a three-step process to validate new business concepts. The three steps are: - identify, validate, and screen. Startup teams begin by identifying the list of business concepts they are considering for their startup venture. Then they work on validating each business concept through the validation methodology. Finally, they use and map the validation data to help them in screening the different business concepts and make a decision about next steps.

SBCVM also introduces useful tools and guiding processes that can be used in different areas across each dimension to properly complete the validation process. The SBCVM is built around the following four dimensions:

1. Customer dimension

2. Market dimension

3. Product dimension

4. Business dimension

The startup team can utilize the findings from assessing each of the dimensions to modify some of the aspects of their business concept in order to reach the best product /market and product / customer fit. Modifications can be done in several business areas such as target customer segment, market type, product features, or business model. The goal of the SBCVM is not to rule out business concepts once a challenge is identified or a concept is invalidated in any of the dimensions. On the contrary, the goal of the SBCVM is to help startup teams to find and create successful businesses and overcome common pitfalls by executing a pre-validated business concept, to enhance their opportunities for success. Ultimately, the startup team has to develop a mindset or an organized way of critical thinking about their business rather than simply placing their reliance in gut judgments and reactive decision making during the execution phase or on a "one size fits all" or mono-dimensional success formula.

Accordingly, startup teams should expect to use the SBCVM as a guiding compass. Founding teams should pursue real business opportunities where the SBCVM shows positive indicators that can be further evaluated during the screening step using tools such as polar diagrams. Otherwise, they may find themselves in a reactive mode during the execution phase where they may have to decide whether to address the areas of weakness, pivot to another opportunity in order or kill the concept. Since most startups have limited financial resources, they also have limited time and ability to redirect or pivot to another opportunity. Therefore, it is in their best interest to use a logical methodology, such as the SBCVM, to pre-validate and select optimal business opportunities before advancing to the execution phase.

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