Financial Projections based on Business Model Canvas

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Abstract. The digital era changes how people think about commerce and the way of doing business. With this (re-)evolution born new concepts and among them is new digital business models that can be defined as how an organization creates, delivers and captures value. This concept takes us to the financial modelling theme, in order to represent and make financial projections inside business models. Combining this two concepts, we argue that this concepts are inseparable and a good financial projection leads us to a more concrete and realistic business model. However, almost any model focuses in this relation, particularly canvas framework. In order to trying to solve this problem this paper proposes a financial analysis extension to canvas framework.

Keywords: business model canvas, financial projections, modeling.

1 INTRODUCTION

Business is always changing and one of the biggest changes in recent years came with the advent of several new digital businesses. The new digital business firm is defined as an organization “that derives a significant portion (at least 10%) of its revenues from transactions conducted over the Internet” [1].

With those changes, the importance of IT in business is strongly increased. To understand it is important to define the capabilities that IT can bring to organizations. The identified capabilities are the following [2]:

- Expanded capability because digital business is by definition online and will therefore, place greater demands on the IT infrastructure;
- Stronger gravity (meaning, infrastructure drops from business-unit to firm-wide provision) to garner potential economies of scope and scale;
- Greater externally (meaning, looking outward more often), due to the increased demand for and supply of commodity IT services; and
- Increased cooperation within industries to gain potential economies of scale.

Business model term does not have a generally accepted definition. This term is relatively new and it leads to “diversity in the available definitions poses substantive challenges for delimiting the nature and components of a model” [3]. Despite the definition is not consensual among all authors (this subject will be addressed in the Related Work section) it can be defined as “a business model describes the rationale of how an organization creates, delivers and captures value” [4].

Financial modeling is defined as a “representation in mathematical terms the relationships among the variables of a financial problem so that it can be used to (…) make projections” [5]. This concept was born “to support management decision making” [6]. Basically, “modeling is a proven and well-accepted engineering technique” [7] that is a “simplification of reality” [7], that when correctly applied is able to “build models of complex systems that we cannot comprehend such a system in its entirety” [7] to “better understand the system” [7]. When this concept is applied to financial area, help us understand the financial part.

Relating both previous concepts, we are reaching the problem that this paper aims to solve: the lack of modeling an accurate financial analysis in business model. This is particularly important problem because “in all businesses in the United States one fourth is one year old or less, and the median age of all firms is about seven years” [8]. If we focus on the life expectancy of these firms just “fifty four percent survives one year and half” and “one quarter survive six years.” [8]. In terms of new products/services launched by existing firms, nine out of ten fail [9].

To address the problem this paper proposes an extension of the canvas framework with a financial analysis [10]. With this approach we have a business model of a firm with a financial profitability projection.

This proposal was evaluated with one case study and interviews with entrepreneurs and specialists. The main conclusions are the following ones:
The financial analysis and business model concepts are not separable and we should not think them separately;

- The quantification of the elements presents in a business model helps design it.

The research method adopted is Design Science Research [11]. The artifact is the extended business model canvas and the demonstration was done using a startup [12].

This paper is organized in eight sections; they are: introduction (Section 1): introduces the concept and summarizes the paper; related work (Section 2): explains the context; problem (Section 3): identifies the problem this paper wants to solve; proposal (Section 4): explains the proposal for the identified problem; prototype (Section 5): is a real materialization of the proposal; demonstration (Section 6): demonstrates an application of the proposal in a real case; evaluation (Section 7): evaluates the proposal; conclusion (Section 8): aims at extracting the main conclusions of the proposal’s application.

2 RELATED WORK

The related work section starts from the most important section to the least relevant one and is divided into four subsections: new business digital models history, business model, canvas framework and related applications.

2.1 New Digital Businesses history

Digital business is a direct consequence from “the shift that the business world experienced from the traditional way of doing business to the new way of digital business, which is engulfed with high-level of complexity and rapid change” [13]. This term can be defined as “the carrying out of business activities that led to an exchange of value, where the parties interact electronically, using network or telecommunications technologies” [14].

Is important to understand that this definition includes information (that has no market value per se), and not only goods and services [14]. The information concept is central is this new digital way of doing business whether we are talking about the way it is processed or managed (here can be our competitive advantage to our competitors).

2.2 Business Model

The term ‘Business Model’, despite being widely used, does not have a unanimously accepted definition in the business environment in general. Using a top-down approach, this concept “at its heart performs two important functions: value creation and value capture” [15]. This discussion will be separated into two different parts: classification and definitions of Business Model.

From the Business Model classification point of view, we will classify them into two categories [16]:

- The revenue model that refers to the specific manner in which an organization/network is able to generate income;
- The integrated model, which refers to the strategy and the organization’s configuration and/or the network that is designed to explore business opportunities.

After organizing the term into two different categories, it is imperative to precisely define the business model term. To define it, it is important to look out for various definitions from many authors and, then, adopt one. Following the historical timeline, for [17] the concept is defined as “an architecture for the product, service and information flows, including a description of the various business actors and their roles, a description of potential benefits for the various business actors, and a description of the sources of revenues”. Later, for author [18] “a Business Model describes the way a company or network of companies aims to make money and create customer value”.

The definition adopted by this paper and that must be present for the rest of it is the following: “a business model describes the rationale of how an organization creates, delivers and captures value” [4].

2.3 Canvas Framework

The canvas framework is “a shared language that allows you to easily describe and manipulate business models to create new strategic alternatives”. It is divided into nine building blocks “that show the logic of how a company intends to make money” [4].
Next, the nine building blocks of canvas framework are described:

- **Customer Segments.** Customers are the “heart” [4] of every Business Model. Canvas framework [4] groups them into segments to better identify their needs, behaviors and attributes;
- **Value Proposition.** It is what the startup offers, whether it is a product or a service that “solves a problem or satisfies a customer’s needs” [4];
- **Channels.** The channel is “how a company communicates with and reaches its Customer Segments to deliver a Value Proposition” [4];
- **Customer Relationships.** This building block “describes the types of relationships a startup establishes with specific Customer Segments” [4];
- **Revenue Streams.** It “represents the cash a company generates from each Customer Segments”. Basically “if customers comprise the heart of a business model, Revenue Streams are its arteries” [4];
- **Key Resources.** This building block represents all important resources;
- **Key Activities.** This building block shows the processes a company needs to perform to make its business work (i.e. all that produces value for the customer);
- **Key Partners.** This block provides the concept of value network and strategy to the model. There is “space” to represent all the important synergies: “Building Block describes the network of suppliers and partners that make the business model work” [4];
- **Cost Structure.** The Cost Structure block is for Key Resources, Key Activities and Key Partnerships as Revenue Streams is for other blocks. The meaning of this block is that it “describes all costs incurred to operate business model” [4].

This framework was selected to be in the foundation of this paper because:

- The simplicity of the model;
- The model helps to structure ideas.

This framework is very useful and valuable because this language describes business model in a very intuitive, simple to use and easily understandable way.

### 3 PROBLEM

With the state of the global economy nowadays, many people with an entrepreneur mindset have several business ideas that in their viewpoint represent good investments. However, just 1 out of 10 business ideas is actually a good idea in the profitable meaning [9]. Following this reasoning, it is important to have (in a more or less exact form) a clear idea about the business as well as a realistic understanding about how profitable a business idea in fact is. This paper tries to prove that if you attach a financial analysis to your business model (and extract financial expectations directly from it), the model that is being designed will change depending on the analysis. This means that financial analysis has direct influence on the business model. Clarifying the problem in a sentence, we consider is that the canvas framework does not provide an accurate financial analysis, and because this is not able to provide a real projection for what really matters: earnings expectations.
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To address the problem described, it is important to reformulate and instantiate. The problem of the present research is improving an existing meta-model to describe a business idea and be able to answer a set of simple, but important, questions for the potential company. However, that is very complicated because of the inherent difficulty of making good predictions or to build a “perfect” meta-model.

Until now, in this section, two subjects were addressed: what the main objective of this work is and in which way we can address the problem (business models). Now it is important to focus on a more specific problem formulated by very simple question: what are the problems of the canvas framework and why does it not solve the needs of the idea design by using the business model concept? With this approach it is possible to consider this paper’s problem as the framework’s problems as it clearly expresses the initial difficulty as a whole.

In conclusion, the concrete problem of this paper is that the financial model of canvas framework remains unexplored and it was the genesis of the Business Model concept. Despite the simplicity of the model is important to have a well-structured business model, it is important to clarify that “when the term ‘business model’ became fashionable for Internet-based business, it was generally applied to the description of the underlying financial flows, the revenues and the costs inherent to the business” [16].

4 PROPOSAL

The proposed solution for the problem mentioned in the previous section is a directly consequence of it: provide a stricter and more useful financial model. Earnings and revenues expectations play a crucial role in the most important conclusion of all: if the future company will be successful or not.

At this point, we propose to merge the canvas framework and profit and loss statement (P&L). The P&L “reflects the effect of management’s operating decisions on business performance and the resulting accounting profit or loss for the owners of the business over a specified period of time” [10] and is able to specify the Cost Structure and Revenues Streams building blocks of canvas in a more tangible way. P&L is composed by the following items:

- **Cost of Sales**: expected direct cost of producing the product/service that a company provides;
- **Gross Margin**: revenues less cost of sales. This is a high-level indicator of the company’s earnings;
- **Operating Expenses**: expenses the company needs to work;
- **Operating Earnings/Loss**: gross margin less operating expenses. This indicator is closer to reality;
- **Income Taxes**: taxes that a company needs to pay. This item depends on which country the company establishes their activity in.

The proposed extension to canvas framework is based on the idea that the revenue streams and the cost structure are directly extracted from the information that populate the others seven blocks of the model. In order to realize this, it is important to assign estimation (quantification) to every element that we put into the model. For instance, if we are populating the customer segments block, it is important to estimate how many customers from that segment we are expecting or if we are populating the value proposition block is important to quantify how much will cost each unity of our product or service. The same idea is applicable for the rest of the model.

In addition to the P&L analysis, the calculations of financial indicators that can provide an overview of the business are important for the evaluation of it. The calculated indicators are the following ones:

- **EBITDA** (Earnings Before Interest, Taxes, Depreciation and Amortization): gives an overall idea about the potential capacity of the business to generate cash [19];
- **Break Event Point**: it is the point from which the company begins to have positive operating results [20];
- **Quantity Critical Point**: represents the minimum amount that the firm should sell that does not have negative results [20];
- **Security Margin**: expresses the distance on the level of activity achieved by the company for the critical point [20];
- **Sales Cost Coefficient**: give us part of sales, after we paid the variable costs, which will be left to pay for fixed costs [20].

## 5 Prototype

The whole theoretical basis explained in the previous sections is implemented in a prototype\(^1\) that is divided in three fundamental parts that are explained in the following paragraphs.

The first part is the design of business model using the canvas framework. It is the canvas framework except the two lasts blocks: revenue streams and cost structure. These two blocks are not populated by the user: instead of it, there are automatically generated in the following part of the prototype.

![Fig. 3 Proposed meta-model with the iTunes case study.](image)

The second part is the conclusions that we can reach from the information inserted in the business model. It is presented in two forms: a graphical one (to give an overall idea) and in a P&L (to explain how the graphic is calculated).

![Fig. 4 Results obtained on the prototype from the iTunes case study.](image)

As can be seen, for the business model present in figure 3, the expectations about income (blue line) for the business model present in figure 4 widely exceeds the costs (red line).

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\(^1\) Available at www.financial-canvas.com
In figure 5 can be seen financial conclusions of iTunes business model (third part of prototype). In addition to the financial indicators, this board shows how the fixed costs, variable costs and income will evolve in the next three years. As we can see, fixed costs have small importance in the final results and practically it not evolves. Variable Costs are higher than the fixed ones, has some progress over the next three years. Despite this, income is considerably higher than the costs and has a higher evolution capacity.

6 DEMONSTRATION

This section aims to demonstrate the use in a real case of the proposal previously presented in this paper. This proposal was presented in several places in order to receive feedback and reinforce it. The best examples of these presentations were at INOVISA and EADA. INOVISA is a startups incubator that developed it works in a close relationship with the academically environment. EADA is the 27th in the European Business School Ranking of 2011 [21] and one of the best 50 management schools of the world [22]. Despite the good feedback received in both presentations, this demonstration is focused on a Portuguese startup called Portal de Serviços and was performed using the developed prototype. This startup is one of the top-ten final companies of the Energias de Portugal, the best entrepreneurship initiative in Portugal, which allows us to admit that this business model has some maturation level in advance.

First of all, is important to justify the choice of this particularly case study. Portal de Serviços is a new digital business because derives 100% (the definition selected above defines at least 10%) of its revenues from internet transactions.

Second, we need to justify the added value for this company to use our proposal instead of use the canvas framework without any extension. The proposal argued in the paper give to who wants to design a business model a powerful feature: the ability to instantiate which are being represented and change a business model in accordance to the results. With this approach you know if the changes that you are performing improve or worsen the model itself.
Portal de Serviços is a startup that aims to be a trusty intermediary between service providers and private clients. This trusty in the service provided by this startup is reached by one main reason: accuracy in provider’s selection. In figure 6 is shown the Portal de Serviços business model.

Explaining the model, the values that appear in key partners, key activities and key resources are for month. The values present in value proposition are the unitary value of each and the value present in customer segments is the expected number of each segment. The unitary values of each value proposition were calculated using the previously made interviews to Portal de Serviços potential clients that select the importance of each value proposition. To reach the values shown in figure 6 the value of intermediate service providers and clients (that has as total value 12 €), this startup divides the value of the service accordingly to the importance pointed by the potential customers interview.

The above figure shows the P&L result for the business model present in figure 6. As we can see and as expected for a new business, this company presents a negative result for the first year (year of the execution of the model). This negative result is closely related to high cost of digital platform design and implementation and marketing as well.

Despite these conclusions are in accordance with Portal de Serviços financial plan, they use this feedback to reconsider their own business model. After several interactions, in that they change the model, review the results and change the model again, the result is presented in the following figure.
The comparison between the initial and final business model will be made in evaluation section. However, explaining briefly the alterations made on business model, we can separate them in two different changes:

- The perception that there were false elements in the model because it did not constitute an asset to the company in monetary terms (except some that may make sense even if they do not constitute a revenue or a cost);
- The changes in the values associated to each element;

The figure above shows the final P&L result for the final business model. The main difference between this one and the initial one is the reducing of the magnitude of the numbers.

The above figure represents the results of final business model for Portal de Serviços. As can be seen, there is a significant difference between the break even point value (although is achieved basically at the same time) and EBITDA. These differences are the results of changing the business model and represent an investment less risky by potential investors.

7 EVALUATION

The evaluation of this paper is based on show and discussion of the results and the opinion of three entrepreneurs: Paulo Quendera, partner and co-founder of Portal de Serviços, the experienced entrepreneur João
Viana (co-founder of two companies, visiting professor on EADA and Kyiv-Mohyla Business School and associate researcher of INOV) and the expert António Lucena de Faria (founder of four companies, one of each is a business incubator and is a co-creator of [4]).

Paulo Quendera is partner and co-founder of Portal de Serviços. At the end of the case study with his company, an interview was conducted with the intent to collect his testimony concerning the proposal of this paper. When invited to comment the added value that can be achieved using this approach he says that “the result shows a tendency in line with the projections given by our business plan by which presents itself as a good basis for business analysis, measuring the values that in the beginning does not are previously quantified”.

Since the business model used and described in this paper as initial had some degree of maturity, what difficult the necessity of realize changes on it, but in other hand values any change that takes place. When invited to discuss the differences between the canvas without and with this extension and the utility that this way of thinking could have been useful during the creation of his startup he considers that “the financial analysis is the last thing you usually consider in a project, so sometimes we invest all the time to develop it instead of concerns about it financial viability”. When questioned about if with this approach we will obtain the same business model than without it, the answer is the following: “at the same time that the project is being developed, we are able to realize some financial traceability and understand which processes contributes most to the increase of costs and it can be changed even in draft form”.

Relatively to the evaluation of Paulo Quendera to the proposal presented in this paper, he concludes that “the business model associated with a financial projection optimizes the development phase of the project and does not delegate all financial concerns to the financial analysis stage.”

João Perre Viana is an experienced entrepreneur and is invited teacher in management universities all over the world. He considers that this proposal “complements the whole process of creating the business model” and the financial analysis provided “take the model closer to the reality”. In conclusion, “in order to quantify business elements, a financial analysis is an acid test that allows reducing the natural associated risk”.

António Lucena de Faria in addiction to an experienced entrepreneur is co-creator of the main related work of this paper [4]. He considers that “this approach allows obtaining a tangible and useful result to obtain a first overview about a business”. This analysis, which attach a P&L statement to a business model enables us to “obtain a different business model and earlier understand the profitability of the project and it prevents to understand only at the end that the project has no future”.

### 8 CONCLUSION

The conclusion reached in this work is that a financial analysis attached to a business model leads to a different business model. It means, in a first approach that this concepts are not separable and we should not think them separately. When we compare this proposal with the canvas, we understand that we can have a great (in a design point of view) business model, but we do not know if it will be profitable. Summarizing, a financial projection is a very important component of any business model.

Other conclusion that we can reach from this paper is that the quantification of the elements presents in a business model helps to design it. Basically, when we need to quantify elements, we understand that with this...
quantification we will produce a business model closer to reality. For instance, we can have the intent of sell some value proposition to one customer segment at some price. However, if we quantify these elements (how many customers are we expecting for that customer segment or what will really cost for clients this value proposition) we will understand that if this intent is feasible or not.

The last conclusion that we can reach from this paper is that with the merge of the two previous ideas we can answer some complex questions. For instance, if we have the intent of starting a business and have a very limited budget we need to make strategically choices. In this case, we probably will need to know, for example, what is the more profitable channel or what is the more profitable value proposition to bootstrap our startup. These answers are not trivial and can be achieved with this approach.

Future work is based on evaluate the evolutionary view of the business model. As Osterwalder describes it, “the relationship between business models and time is little discussed” [23]. This feature is already present at the prototype in two different ways: the concept of versions and the comparison between them in two different points of time.

REFERENCES