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A Business Model Architecture for Lean Start-Ups

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Abstract: Lean Start-up is a management process for start-ups that emphasizes learning via hypothesis formulation and experimentation. The business model is the paradigm of choice for designing the start-up company and for obtaining funding.

Although many business model architectures have been suggested, we believe that none is well-suited to the needs of a start-up. We therefore propose a new solution that is motivated by specific attributes of the Lean Start-up approach.

We present an example from a real-world start-up project that demonstrates the application and usefulness of our architecture.

We believe that our solution will improve collaboration in start-up teams and help to improve the chances of success of new-venture projects.

Keywords: Start-up; Business Model; New Venture Creation; Hypothesis-Driven Entrepreneurship, Value Network, Validated Learning.

1 Introduction

Lean Start-up is a management approach for start-up companies that was developed and popularized by the entrepreneurs Steve Blank (Blank and Dorf, 2012) and Eric Ries (Ries, 2011) with the aim of mitigating the inherent market risks in a new venture. It has quickly established itself as the preferred method for start-ups and is favoured by many start-up accelerators and incubators.

Lean Start-up is a discovery-driven process. It postulates hypotheses about central aspects of the business model which are then tested empirically by experiment. Each time a hypothesis is disproved it is discarded and replaced by a new one.

Largely owing to the work of Osterwalder (Osterwalder and Pigneur, 2010), business models have emerged as the tool of choice for developing and communicating new venture projects. Most start-ups today use Osterwalder's model or a close derivative of it.

A Lean Start-up has a rapidly changing business model which it uses to learn about its customers and about possible configurations of business components. Start-up companies using the Lean approach also go through a sequence of phases, each of which emphasizes different aspects of the business model.

Models in science have three tasks: to describe the structure, the system, and the dynamics of the object of interest. Of the two approaches to business modeling, the focus firm template deals (only) with the structure, while the value network approach deals with (only) the system. Until now, there has been no attempt to model dynamics. Our proposal is the first to accommodate all three of these views.

The research question we attempt to answer in this paper is, *What business model architecture is most useful for supporting the Lean Start-up process?* The architecture we propose consists of three parts: the Template, the Value Network and the Experiment Description. The contributions we hope to make are to facilitate the development of innovative business ideas and to increase the success rate of new ventures.

2 Derivation of Requirements

Lean Start-ups

Lean Start-up treats every item of information in the business model as a hypothesis which must be validated by an empirical experiment. If the validation fails, the hypothesis must be replaced by a new one. Only when all critical hypotheses have been validated may the start-up commit to costly activities such as product development.

One of the most important concepts in Lean Start-up is the Minimum Viable Product (MVP). This refers to early versions of the product that are used in the learning phases to validate hypotheses. The MVP may change substantially as experiments reveal the demands of the market.

The phases that a Lean Start-up must successfully pass through before emerging as a fully-fledged company are:

1. Problem-solution fit: Determine that there exists a target market that has a significant unmet need and that considers the start-up's proposed product to be an effective solution to that need.
2. Product-market fit: Determine what form the product has to have in order to be attractive to the target market.
3. Customer-side issues: Establish processes for the distribution of the product and for building and maintaining customer relationships.
4. Production-side issues: Acquire resources, set up a supply chain and develop processes that will enable the company to manufacture its product.
5. Growth strategy: Develop and implement a method for achieving the planned market share. For start-ups, this typically requires the participation of first-generation customers as referrers and evangelists.
6. Scale. As the growth strategy unfolds, scale the business processes accordingly while retaining reliability and efficiency.

Requirements for a Business Model Architecture

In addition to the standard components that would be needed to describe any new venture business model (such as revenue streams and cost structure), we suggest that an architecture for Lean Start-ups must have several additional characteristics.

The architecture should be able to represent different models that describe different phases of the start-up process or experiments for validating hypotheses. At the end of the start-up process, the archived set of business models documents the process of discovery that led to the creation of a successful company. From this viewpoint, what is normally regarded as "the" business model becomes merely the last one in the sequence.

In the problem/solution fit phase, the value proposition must be made to fit customer needs; in the product/market fit phase, a solution must be developed that satisfies those needs. Figure 1 illustrates these relationships.

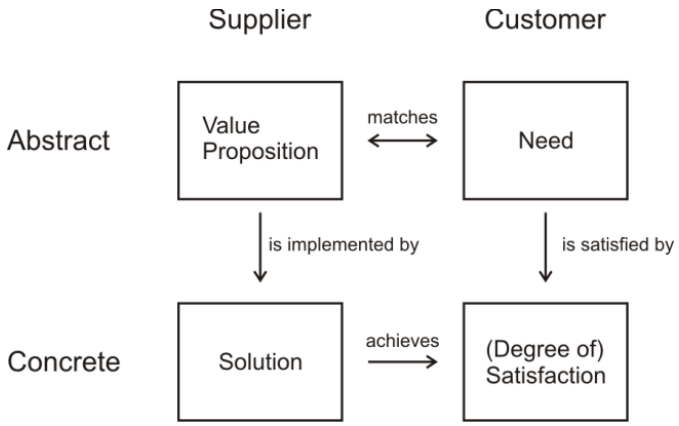

Figure 1 The Start-up's fitting tasks

Matching these elements is essential to success and is one of the defining characteristics of the Lean Start-up method. The business model should explicitly represent them.

Several authors have noted the need for the consideration of the value network in business modeling. Chesbrough (Chesbrough, 2006) states for example that the two functions of a business model are "define the structure of the value chain required by the firm to create and distribute the offering" and "describe the position of the firm within the value network". Zott et al claim that "value is created through the focal firm in concert with its ecosystem of exchange partners" (Zott et al, 2011).

Value network representations typically contain no details of the individual actors. However, it is often necessary to consider their needs, activities and other aspects. We therefore suggest that the architecture should provide representation of each partner in the network with the same degree of detail as the focus firm itself.

The service dominant logic approach (Lusch et al, 2010) claims that value is only created at the moment of use by the customer. This influential paradigm requires that partner and customer activities and resources be explicitly considered.

A further requirement for start-ups is that they must design and implement a growth strategy in order to achieve scale. The business model should be able to support the design of this strategy.

3 Related Work

Template-Based Approaches

Almost all business model architectures fall into this category. The most widely used template is Osterwalder's "Business Model Canvas" (BMC) (Osterwalder und Pigneur, 2010), shown in Figure 2. This focus firm template consists of nine components.

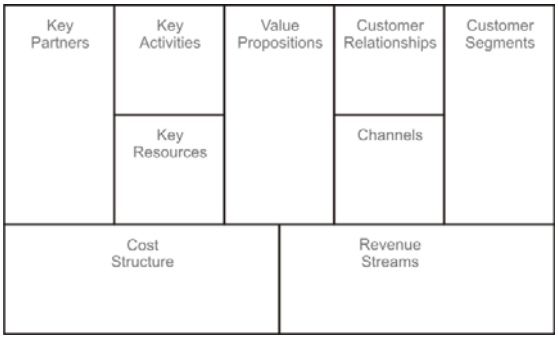

Figure 2 Business model canvas

Despite its popularity, the BMC contains conceptual weaknesses which are particularly misleading for start-ups. For example, it contains a component named "Value Propositions", but none for "offer". This forces the user to conflate their products with their value propositions, which is a serious conceptual error.

Zolnowski et al replicate the BMC to also cover customers and partners (Zolnowski et al, 2014). Their argument is that partners and customers often participate in service delivery. Although this is an improvement, because it is a single template, it still does not allow the description of multiple partners or of value networks.

The recent template by Schallmo (Schallmo, 2013) is the first to explicitly depict partner channels and relationships. However, it is still restricted to a single template.

Value Transaction Approaches

An approach based on value networks has been presented by Allee (Allee, 2003). Allee explicitly allows the depiction of non-monetary types of value, which is an important advantage of this type of model. Figure 3 shows a generic example.

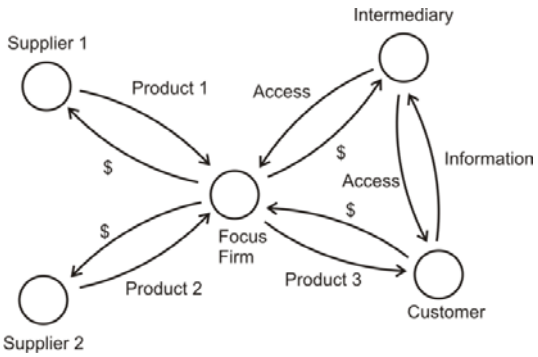

Figure 3 Value network

The e3 value ontology was developed by Gordijn (Gordijn and Akkermans, 2003) for describing e-commerce business ideas. It also represents multiple actors in the value network and connects these with bi-directional arrows that represent the exchange of value. However, they also do not allow for any detailed description of each actor.

4 The Architecture

We propose a business model architecture that consists of three elements: Templates, Value Transactions and Experiment Descriptions. Any specific model may consist of several (possibly only partially) templates that are linked together by the transactions.

The Template

The template consists of 11 individual components that are arranged symmetrically about the vertical axis (Figure 4). Components on the left are associated with suppliers, while those on the right are concerned with customers.

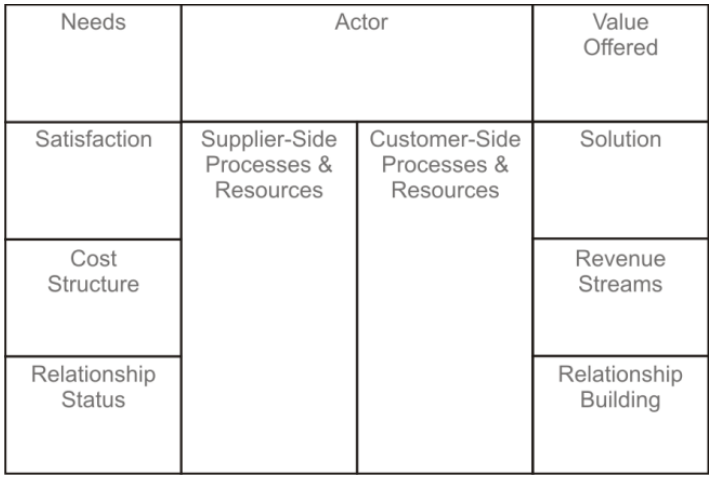

Figure 4 The template

The meaning of the individual components is as follows:

The *Actor* is the member of the value network to whom the template refers. Typical actors are suppliers, customers, and the focus firm itself.

The *Needs* component describes the customer needs that a product or service must satisfy in order to be successful.

The *Value Offered* is the value that the actor is offering to its customers. Examples are convenience, flexibility or cost savings. This component must be linked to the *Needs* component of a customer template.

The *Solution* is that which is offered to a customer. For the focus firm at the Product/Market Fit phase, it is a Minimum Viable Product. Ultimately, the solution represents the final product that is offered for sale.

Satisfaction represents the degree to which the recipient is satisfied by the solution. In Problem/Solution Fit this might be a survey response to idea of the product, in

Product/Market Fit it is the quantified reaction to the MVP. This component must be linked to the *Solution* component of a supplier template.

The component *Revenue Streams* is a qualitative description of the sources of revenue for the Actor. Examples of revenue streams are asset sales or monthly licence fees.

The *Cost Structure* describes the costs incurred to sustain the business model. Two examples are parts purchasing and channel costs for advertising. This component must be linked to the *Revenue Streams* component of a supplier template.

Customer-Side Processes and Resources may include production of the product or customer service, Resources may include patents or key competencies.

Supplier-Side Processes and Resources are associated with inbound products and services, for example supply chain management.

Relationship Building describes the Actor's plan for establishing and maintaining relationships with their partners and customers. One well-known example is the customer referral program.

The *Relationship Status* is the goal of Relationship Building: it is the partner's subjective view of their relationship with the focus firm such as *long-term partner* or *fan*.

Value Transaction

Value transactions represent the exchange of value between two actors. They are represented by arrows that join components from different templates. Figure 5 shows an example in which the focus firm and a customer exchange a product and a payment.

The product/payment transaction is the most common type, but there are others which are important. In a computer game, for example, a player might exchange a referral for an in-game prize.

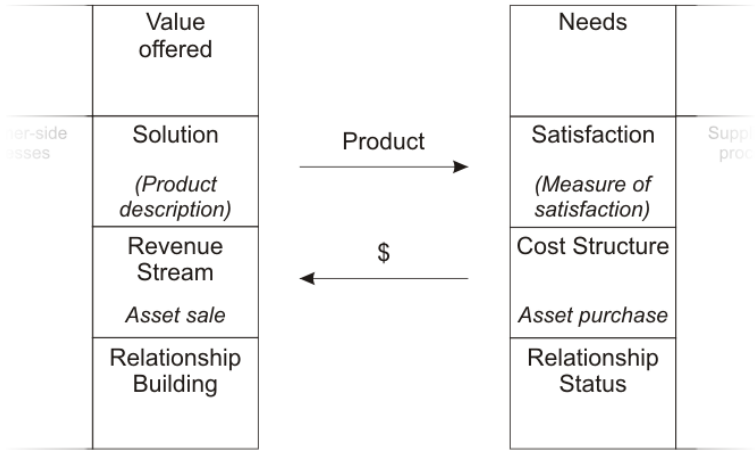

Figure 5 Value transaction

In addition to value transactions, links may also be made to indicate important relationships between components of different templates. For example, the Customer-Side and Supplier-Side Processes may be connected by an arrow in order to draw attention to the fact that these are integrated or synchronized.

Experiment Description

Every entry in the business model is a hypothesis that must be validated with an empirical experiment.

We propose a simple solution called *Experiment Description* that consists of three components: a *Goal*, a *Hypothesis* and a *Status*. The combination of an Experiment Description with its corresponding business model is referred to as an *instance*.

The Goal describes the intent behind this particular instance of the business model, for example, *Find a profitable price model that is acceptable to the customer*.

The Hypothesis component describes the hypothesis that is being tested using the current instance of the business model. An example for the Problem/Solution Fit goal might be: *The target market believes that a rental service would provide significantly increased flexibility over the alternatives that are currently available.*

The Status describes the current state of the validation. Possible values of the status are *open*, *in progress*, *validated* and *disproved*.

5 Example

We give an example of the application of our business model architecture from a real-life start-up project. This start-up offers a rental service for small children's clothing. Parents order clothes in an online shop and return them when the child has grown out of them. The clothes are washed between rentals.

Figure 6 shows a business model that describes a strategic partnership. Our start-up plans to outsource laundry to a specialist who ideally would also perform all other related activities such as checking for damage or placing into a plastic bag for storage. The measure of satisfaction is the effort saved to process returning clothing.

The start-up hypothesizes that the best solution would be to find a laundry service that is interested in growing its business and to suggest to them a long-term partnership. This would motivate the laundry business to develop the additional processes and to integrate them with the start-up's own logistics. In order to foster this relationship, the start-up is prepared to offer the laundry business owner a seat on its advisory board.

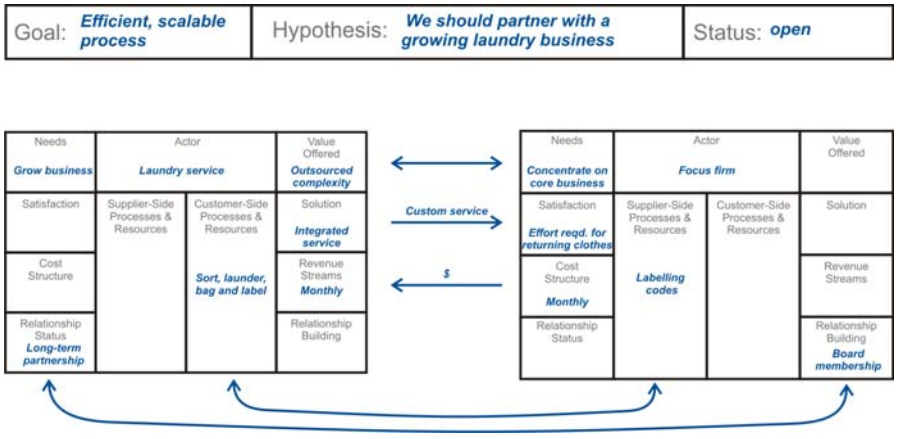

Figure 6 Example: Strategic partnership

6 Conclusions

We propose a new business model architecture for Lean Start-ups that is intended to better support the start-up process than previous designs. Our solution contains three specific innovations: it unites the template and the value network approaches, it adds a dynamic aspect to represent different stages and sub-goals of the business development and it introduces new components to the template that represent specific issues of importance to a start-up project.

The proposed architecture provides a better fit to the needs of Lean Start-ups because it addresses their key paradigms explicitly. In particular, it provides a means for distinguishing between different experiments, the matching required in the problem/solution fit and product/market fit phases and relationship goals and strategies. It has already been used successfully for planning and ideation by local start-up teams.

Compared to previous solutions, our architecture has substantially richer semantics. This increases its modelling power on the one hand, but also lengthens the learning curve required to be able to use it effectively.

We will continue to evaluate our architecture while mentoring student start-up projects. Of particular interest is whether the increase in usefulness justifies the increase in complexity compared to the traditional single-template approach.

Finally, we intend to use our architecture as a basis for developing a business model ontology for Lean Start-ups which will add richness to its descriptive power and thus further increase its usefulness.

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8 Areas for feedback & development

Questions for discussion:

- If a Lean Start-up is in the "business of learning", how useful is it to represent the learning stages with business models?
- How might the model support new venture creation within corporations (as opposed to start-ups)?
- How might we better capture the dynamics of the business model as the project progresses?
- How appropriate is it to include "soft" factors in a business model?
- What features should a business model ontology for new ventures have?