

BUSINESS MODELS AT THE BOTTOM OF THE PYRAMID: LEVERAGING CONTEXT IN UNDEVELOPED MARKETS

TED LADD

Case Western Reserve University
Cleveland OH

ABSTRACT

Through interviews with 30 entrepreneurs selling distributed electricity to consumers at the bottom of the world's economic pyramid (BoP), we derive a new framework of business models that recognizes the venture's context to leverage existing systems. This framework may apply to other BoP sectors and to developed, mature, competitive markets.

INTRODUCTION

Of the 4 billion people at the base of the world's economic pyramid (BoP) who earn less than US\$2 per day, 1.6 billion lack access to electricity (London & Hart, 2010). This energy – and the lights and appliances that it enables – is a vital missing ingredient to economic development and poverty alleviation (Galvin & Yeager, 2009). With the advent of reliable, affordable, and portable technologies to generate small amounts of electricity in close proximity to the point of consumption, hundreds of entrepreneurs have created ventures to provide energy to BoP customers without using a centralized electric grid. Many are performing well (Hart & Prahalad, 2002; Prahalad & Hammond, 2002). Some, however, have performed poorly, with inadequate revenue growth to cover operating costs, resulting in eventual venture closure.

In order to explore business models in the BoP, the full version of this paper (available at [SSRN](#)) first provides an overview of the relevant literature on business models. It then describes the design of the research, including details on the sample and methods employed to extract themes from the data. These themes are described in our six primary findings, including concrete but anonymized examples from our sample. We then describe the implications of our findings to the existing perspectives on business models. Finally, we conclude by describing the limitations of our study and opportunities for further research.

THEORIES OF BUSINESS MODELS

A business model describes the core logic for creating and capturing value (Chesbrough & Rosenbloom, 2002; Morris, Schindehutte, & Allen, 2005; Osterwalder, Pigneur, & Tucci, 2005; Zott & Amit, 2010). Unlike business strategy, the business model does not incorporate contingencies for alternative paths of market evolution. The concept nonetheless informs theories around internal and external value chains, value systems, competitive advantage, strategic networks, theories about firm boundaries and core competencies, and even leadership around the entrepreneur's own capabilities and aspirations (Morris et al., 2005).

This growing body of research has created a shared ontology that has gained traction in academic and popular circles. Zott, Amit, and Massa (2011) contend that the business model is now recognized as a specific valid unit of analysis, asserting, "There is an increasing consensus that business model innovation is key to firm performance" (p. 20). Moreover, the business

model itself can be the subject of innovation, beyond and in addition to product innovation (Doganova & Eyquem-Renault, 2009) to provide competitive differentiation (Christensen, 2001).

Because of the concept's relative youth, competing theories and typologies of business models have been proposed in the academic literature. Normative definitions of a business model describe the aspects and attributes that *should* exist in a "complete" business model in order to improve firm performance. This perspective, epitomized by the Business Model Canvas from Osterwalder and Pigneur (2010), emphasizes learning from application by practitioners instead of explanation by researchers (Kalinowski & Vives, 2013).

Representing a second perspective, Zott and Amit (2010) define a business model as a system of interdependent activities, where each activity is comprised of transactions between actors. These actors may span the boundary of the firm; they might be employees inside the firm or partners outside of the firm. The authors state, "The architecture of the firm's activity systems... captures how the focal firm is embedded in its 'ecology,' i.e. in its multiple networks of suppliers, partners, and customers" (Zott & Amit, 2010, p. 3). They specify that the entrepreneur or manager creates these interdependencies with "purposeful design" (p. 3). Although these activity systems might span the boundaries of the firm, they are focused on efforts initiated or controlled by the firm. This theory does not explicitly extend to systems that pre-dated the firm that influence the firm's business model.

The choice perspective revolves around the belief that the business model "embodies a set of choices... [to] facilitate the analysis, testing, and validation of the cause-and-effect relationships that flow from [previously made] strategic choices" (Shafer, Smith, & Linder, 2005, p. 203). One test of this perspective is to ensure that the choices are internally consistent and mutually supportive of each other, which implicitly recognizes that decisions and their consequences are interdependent. The choices made through a business model can facilitate a virtuous cycle, where feedback loops strengthen aspects of the model at every iteration (Demil & Lecocq, 2010). In this perspective, the business model is the unit upon which the entrepreneur can experiment. McGrath (2010) contends that successful business models cannot be discerned through analysis, but only discovered through trial and error, especially in highly uncertain environments. Furthermore, change occurs not just within the same firm but across firms as new entrants observe the consequences of the decisions made by predecessors. The business model, then, is a discrete unit of analysis to allow external observers to explain and evaluate managers' decisions.

RESEARCH DESIGN

In this research project, we develop a framework of business models in the BoP through grounded theory. To do so, we interviewed 30 practicing entrepreneurs in order to extract themes from their lived experiences. The goal of this project is to discern the qualities of business models that underlie successful ventures selling off-grid distributed energy in the BoP.

For the purposes of this research, the concept of distributed generation includes micro-grids, which are mini-systems that might include multiple types of generation and even limited distribution networks, but within a confined "island" of power that does not connect to the region's central grid. This study also included solar lanterns, in which the energy-using product is integrated into the energy-generating technology. In all cases, the point of generation is adjacent to the point of consumption.

Of the entrepreneurs interviewed for this research, 43% are based in India, 43% in Africa, and the remainder in the Caribbean or Far East, although the projects that these entrepreneurs

have operated encompass a larger area. Forty-eight percent of the ventures are profitable, 37% are generating revenues but have not yet reached profitability, 13% have failed, and 3% are still in concept stage. Even though the research had no intentional bias towards renewable energy, roughly 75% of the ventures employed solar panels, presumably due to the dramatically declining cost of this technology and the simultaneous increase in price of petroleum-based fuels. Sixteen percent relied on biomass to generate biogas, and 7% used hydropower.

We analyzed the data in discrete steps in order to catalog the ideas captured from the interviews. Using Dedoose software, we applied codes (or tags) to excerpts of quotations within the transcripts in three phases – open, axial, and selective – as advocated by Corbin and Strauss (1990). In total, we conducted over 22 hours of interviews across 30 respondents. We read each transcript at least five different times to generate a total of 86 codes across 657 excerpts. Because some excerpts captured multiple themes, our analysis contained 1316 code applications.

FINDINGS

Few of our findings about business models in the BoP mesh with the existing theories of business models found in the literature. Indeed, many of the ventures in our sample neglect or even contradict several of the precepts of extant theories and frameworks on business models.

We also found a single underlying theme: business models of successful BoP ventures are informed and strengthened by an appreciation for the complex context in which they operate. This phenomenon has been noted in regard to the economic system of the market (Seelos & Mair, 2007), but not in detail around the pre-existing systems relating to the consumer.

Finding 1: BoP business models seek a market linkage between the product's use and the customer's increased earned income.

Several entrepreneurs in our sample require that prospective customers have a market linkage where new access to electricity must increase users' economic activity. Simple demand, even coupled with ability to pay, is not enough to prompt business founders to provide the product or service to potential customers. Their business models focus on customers who will be able to use the electricity to not only increase productivity, but also profitably sell this higher output, thereby having an impact on the longer-term goal of poverty alleviation.

Finding 2: BoP business models set prices based on affordability.

In mature markets, price levels can be set based on value, cost, competitors, or a host of other options. In the BoP, twenty respondents in our sample declared that affordability was the basis for their pricing and a vital attribute to their offering, to their personal ambition, or to their efforts to improve economic conditions in the BoP.

The respondents in our research described three avenues to achieve affordable prices. First, they design their products and services for low cost. Credit is the second path for affordability for electricity generating products and services. In the BoP, credit is rare. Even for equipment that has clear opportunity for providing significant economic gain, most consumers cannot afford the initial up-front purchase price. As one entrepreneur declared, "You cannot build poverty-destroying infrastructure by trying to sell stuff for cash." The primary method for entrepreneurs to provide credit to BoP consumers is to partner with microfinance institutions

(MFIs), which offer small amounts of credit to help customers purchase vital products without struggling to pay a large up-front price.

Finally, several entrepreneurs have adopted a third strategy to achieve affordability: pay-as-you-go (PAYG) business models. In a typical PAYG transaction, the customer purchases a specially-designed solar lantern at a deep discount, and then purchases “light” credits to allow the light to operate. Payment is made through the customer’s mobile phone.

Finding 3: BoP ventures grow by replicating their services in multiple locations.

Ventures in the BoP have several options for how they can drive and manage growth, from adding new services for current customers to seeking new consumers of the existing service (London & Hart, 2010). With few exceptions, most of the entrepreneurs within our sample who discussed growth strategies focused on replication via franchising where an entrepreneurial franchisee injects additional capital into the firm for product manufacturing in return for the right to sell the product. The franchise owner and the franchisee split the profits of the sale, so both have incentives to grow sales.

Finding 4: BoP business models embed the product or service into the lives of their potential customers.

Twenty-two entrepreneurs in our sample intentionally designed their business models to embed their ventures’ products deeply into consumer lives. London and Hart (2010) define the embeddedness of a business model as its “capability to gain a deep sense of the social context and a detailed knowledge of the intrinsic economic rationale of the local economy” (location 1108). Below, we extend their definition into four practical areas of the consumer’s experience: social networks, daily habits, mental models, and product constellations.

For fifteen of the respondents, news of their products travels through social networks, creating inquiries that drive sales. The business models that leverage social networks do not rely on serendipity. They create deliberate elements that incorporate and capitalize on these rich networks. Primarily, this tactic is exhibited through the hiring of sales people who are selected for their existing networks as well as their ability to grow them.

Several ventures intentionally structure the delivery and pricing of their products to mirror the products that they intend to replace. These entrepreneurs constructed their business models to embed their ventures into the consumers’ daily (or weekly) activities and habits, so that the consumers are performing the same physical actions – going to the same places on the same schedule with the same results – as they had performed for purchasing non-electricity-generating fuel types.

These activities rely upon the mental models of consumers, which embody the assumptions, preconceptions, and vocabulary that inform their perceptions about the world around them. Gentner and Stevens (1983) describe mental models as “people’s views of the world, of themselves, of their own capabilities, and of the tasks that they are asked to perform, or topics they are asked to learn.” Hargadon and Douglas (2001) relate the concept of mental models to entrepreneurial activity, noting that innovations must “invoke the public familiarity with the technical artifacts and social structures of the existing [systems of products or services]... to locate their ideas within the [existing] set of understandings and patterns of actions” (pp. 477-478).

Fourth, electricity by itself has no value. The ventures that sell electricity, therefore, seek customers who already own products that require electricity, or their electricity-generating products are accompanied by appliances use electricity. By explicitly recognizing the customers' product constellations in their business models, these BoP entrepreneurs recognize the opportunities and constraints that emanate from the customers' existing possessions. This reality is rarely mentioned in contemporary theories of business models for mature markets, but was discussed by 10 respondents in our sample.

Finding 5: Distribution is a vital element in BoP business models.

Unlike in mature markets, distribution is one of the key challenges to serving consumers in the BoP. Seventeen of our respondents declared that distribution – especially the “last mile” from warehouse to consumer – is vital to their business success. The ventures in our sample employ three different methods for distribution. Some rely on key partners to distribute their goods, where the business model has been designed to ensure aligned incentives. Others create and operate their own dedicated distribution channels. Still others rely on social networks as their distribution avenue.

Finding 6: BoP business models incorporate and anticipate the influence of government regulations.

It is no surprise that government regulations exert significant influence over firm in both mature and undeveloped markets. Yet few of the existing theories of business models incorporate this influence. Several respondents in this research stated that government programs factored heavily in the design and implementation of their business models.

RESULTS

We extract from this research a framework (**Error! Reference source not found.**Figure 1) to explain and propel business models for ventures at the bottom of the pyramid. Just as with the Business Model Canvas from Osterwalder and Pigneur (2010) and the Lean Canvas from Maurya (2012), this framework - a “BoP Canvas” - is intended to highlight the vital elements and logical connections by which firms at the BoP can provide value to their customers. (Please see the full paper at [SSRN](#) for the diagram.)

For theories that view business models as describing activity systems value (Zott & Amit, 2010), the models are designed and driven by the entrepreneur. From our research, we find a vital role in BoP business models for the systems that exist independently of the firm and usually pre-date the firm. Indeed, those ventures that actively incorporate context into their business models seem to have more success in the BoP market for off-grid electricity.

The choice perspective regards the business model as the lens through which we can analyze the path of choices made by a firm's managers. Our research findings suggest that ventures will be more likely to succeed in the BoP if they adapt their business models to incorporate the context of their intended markets. Because context includes complex pre-existing systems like social networks and mental models, some consequences of business model decisions to inadvertently seem insensitive to the preceding choice and thus, in the words of Casadesus-Masanell and Ricart (2010), “rigid”. As a result, the contextualized business model

may more accurately explain and propel the success of ventures in the BoP, but it may not be useful as a discrete unit of analysis for evaluating decision-making in the BoP.

In conclusion, our research into BoP business models, including the BoP canvas, recognizes the venture's context to leverage existing systems into its business model. With further research, several of the concepts proposed in this framework might also apply to business models in other BoP sectors and in developed, mature, competitive markets.

ENDNOTES

Please see the full paper at [SSRN](#) or contact the author at ted@tedladd.com

REFERENCES AVAILABLE FROM THE AUTHOR