

BUSINESS MODELS OUTSIDE THE CORE: LESSONS LEARNED FROM SUCCESS AND FAILURE.

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Acknowledgements

The authors would like to thank four anonymous reviewers and the editor for their helpful comments.

CITATION:

Bertels, Heidi M. J., Koen, Peter A., & Elsum Ian (2015). Business Models Outside the Core: Lessons Learned from Success and Failure. *Research-Technology Management*, vol. 58, no. 2, pp. 20-29.

Link: <https://www.tandfonline.com/doi/abs/10.5437/08956308X5802294>

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Business models outside the core: Lessons learned from success and failure

Succeeding in outside-the-core projects requires examining every assumption, even the seemingly prosaic ones.

OVERVIEW: Leaders at incumbent firms increasingly recognize that in order to sustain growth and protect their companies from disruption, they must innovate “outside the core”—beyond the familiar markets and competencies on which the company has built its existing business. Outside-the-core innovation projects, which target new customers or non-consumers in new markets, can lead to high growth. However, they are also very risky: the odds of success for outside-the-core projects rapidly drop with each step outside the core. In a study of six outside-the-core projects using a business model perspective, we found that, contradictory to common wisdom, the likelihood of failure is not related to how many steps the project is outside the core. Instead, the risk of failure is influenced by false assumptions about the distribution channels, cost structure, unit margins, and velocity elements of the innovation, which are often carried over from the incumbent business model.

KEYWORDS: Business model innovation, business model canvas

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For many large and otherwise successful corporations, sustaining organic growth has been difficult in recent years, and it is becoming more so. These companies, which have been very successful at developing products for their core markets, are struggling with the recognition that staying within their core will not support growth expectations into the future (Edwards 2012) and that disruption of their core businesses can undermine any growth potential at all (Christensen and Bower 1996). Some companies have sought to address this concern by seeking to expand their product platforms beyond their core—that is, outside the firm’s familiar markets, customer segments, and technologies.

Outside-the-core projects can be tremendously successful. Edwards (2012) offers Apple’s iTunes as an example of innovation several steps beyond the core, meaning Apple—predominantly a computer company in the late 1990s—had to innovate on multiple business components to create it, developing new core capabilities, new partnerships, a new revenue model, and new channels. Outside-the-core innovation paid off for Apple, but engaging in such projects is also fabulously risky. A Bain and Company study of 154 companies in the United States and Europe found that the odds of success dropped to 10 percent when companies tried to develop new products just two steps beyond their core, with a step defined as a change in one part of the business model (Edwards 2012). Further steps away from the core reduce the odds of success even more.

Given the low chance of success and the potential for extraordinary impact that come with outside-the-core projects, companies would benefit from a deeper understanding of the factors that contribute to success, or failure, outside the core. With this in mind, we undertook a paired-case research study looking at successful and unsuccessful outside-the-core projects in large companies, with the aim of identifying key success factors and best practices for outside-the-core innovation. Although the Bain and Company study, and conventional wisdom, would suggest that it is the number of changes in the business model (that is, the

number of steps outside the core) that determines the likelihood of failure, our data suggested other factors are more important. Specifically, analyzing the cases through the lens of the business model canvas, we found that a lack of awareness of embedded assumptions about the distribution channels, cost structure, unit margins, and velocity elements of the innovation, often carried over from the core business model, contributed significantly to the failure of outside-the-core projects. Companies did not pay much attention to these seemingly straightforward areas, but simply carried forward the assumptions driving their existing business models, not realizing they required change.

Business Models

In undertaking this study, we were primarily interested in what separates winners from losers when incumbent companies venture outside the core. Research on innovation at incumbents has developed in three streams, each looking at innovation through a different lens: technology, value network, and economics (Hill and Rothaermel 2003; Tripsas 1997). Few researchers, if any, have tried to study innovation at the intersection of these three streams. One concept that has such holistic properties is the business model, which incorporates elements of all three streams.

There has been an increased interest in business models from both the academic and the practitioner community. According to IBM's 2008 Global CEO Study, managers at companies from a broad range of industries were seeking to innovate business models, partly out of necessity and partly because of expanded opportunities to do so (IBM Global Business Services 2008). Despite this increased interest in business models, there is little clarity around what exactly a business model is and frameworks and conceptualizations have proliferated (see, for instance, Casadesus-Masanell and Ricart 2010; DaSilva and Trkman 2014; Johnson, Christensen, and Kagermann 2008; Koen, Bertels, and Elsum 2011; Osterwalder and Pigneur 2010). Wirtz (2011), DaSilva and Trkman (2014), and Zott, Amit, and Massa (2011),

reviewing the academic literature around business models, all concluded that there was little agreement in the literature with regard to what constitutes a business model.

Johnson, Christensen, and Kagermann (2008) conceptualize a business model as consisting of four interlocking elements: the customer value proposition, the profit formula, key resources, and key processes. This is similar to the view of DaSilva and Trkman (2014), who assert that the “core of a business model is defined as a combination of resources which through transactions generate value for the company and its customers” (p. 5). Indeed, resources can generate value only through (internal or external) transactions. The way companies capture value is reflected in the revenue model—a key component of the business model—which describes revenue sources and their volume and distribution (Amit and Zott 2001). DaSilva and Trkman (2014) offer as an example of this concept Ryanair’s business model, which combines resources (standardized airline fleet) and transactions (online bookings via Ryanair’s website) that generate value for customers (low fares) and the company (low variable costs). What these definitions have in common is the centrality of value, created and captured through transactions based on resources and capabilities.

Business models are clearly related to strategy. Casadesus-Masanell and Ricart (2010) consider a business model to be a “reflection of the firm’s realized strategy” (p. 195). Strategy is a company’s plan to gain and sustain competitive advantage based on a theory of what the future will look like (Rothaermel 2013); the business model is the implementation of that strategy at a particular point in time (Casadesus-Masanell and Ricart 2010; DaSilva and Trkman 2014). So while strategy is about developing valuable resources that can lead to competitive advantage (Barney 1991; Wernerfelt 1984), the business model is about how to deploy those resources optimally.

As we sought to analyze innovation through the holistic lens of the business model, we looked for tools to help us visualize its various elements. The most widely used tool for

developing and analyzing business models is Osterwalder and Pigneur's (2010) Business Model Canvas.¹ The Business Model Canvas breaks the business model into nine separate blocks, providing an integrated visual representation that facilitates discussion and debate without losing the complexities of the business. The nine building blocks can also be related to our definition of a business model, capturing the key resources, key activities, and key partners that generate value for the company (revenue streams minus cost structure) and its customers (value proposition and customer relationships for customer segments) through transactions (channels). We deployed the Business Model Canvas to identify the factors that determine success or failure in outside-the-core-projects and to examine the changes the projects required to individual business model components—and how firms identified and responded to those requirements.

The Study

To explore this question, we undertook a matched-case study; we chose this research model because it allows us to control for the many factors besides steps outside the core that can affect a project's likelihood of success. Our initial intention was to look at one successful and one failed outside-the-core innovation project in each of three participating companies: a global food-processing and commodities-trading corporation, a multinational energy corporation, and a manufacturer of commercial and institutional products. Ultimately, however, one project was dropped from the analysis because it was unclear whether it was truly outside the core and we took the opportunity to study three projects in another company. Thus, the final sample included four successful projects and two failures (Table 1).

Projects were selected for study based on four criteria:

1. They had to have been commercialized. Commercialization was defined as having achieved actual sales.

¹ A copy of the canvas may be downloaded from www.businessmodelgeneration.com/canvas/bmc.

2. There had to be organizational consensus regarding their success or failure. We chose this as the criterion for success because there was too much variety in success criteria used at participating companies to make any particular metric a good general measure.
3. They had to be outside the core, defined as requiring change of a minimum of two elements of the business model.
4. Finally, because of the matched-case study approach, the two projects had to have been executed at approximately the same time. The time-frame criterion helped us control for changes in endogenous characteristics of the company (for instance, business unit leadership) and exogenous environmental factors (such as the economic climate).

We then interviewed people with diverse perspectives (different functions and levels) who had played significant roles in the projects. A total of 25 on-site interviews and 7 phone interviews were conducted. Interviews began by asking participants to talk about the project from their earliest until their latest involvement, through the product's introduction to market. This allowed interviewees to offer their own perspectives on the project and helped develop a chronology of events. Salient dates were then used as anchor points in subsequent interviews. Although interviewees were mostly allowed to speak freely, questions were interjected if clarification or elaboration was needed. We also collected archival data, such as business plans, financial projections, and other documentation, which gave additional insight.

The interview data and archival materials were used to create six in-depth case studies (Eisenhardt 1989; Yin 2003), which provided chronological recollections of the projects, enabling us to reconstruct the mindset of the team at different points in time (see textbox "Outside-the-Core Project Overviews," p. 23).

Three researchers, including the two who conducted the interviews, met face to face to develop business model canvases for the six cases. The methodology for using the canvas is to create a board on which sticky notes or other markers are placed to describe what is going on in each area. For example, one might place markers saying “cost reduction” in the Value Proposition box and “mass market” in the Customer Segment box. There may be multiple markers in a given box; one of the cardinal rules of the canvas is to only describe one “thing” per sticky note (Osterwalder and Pigneur 2010). Each box, and each marker within the box, is treated as an atomic, individual element that can be moved around independent of the others.

In an attempt to capture the extent of each project’s departure from the core, colored sticky notes were used to code entries based on the degree of perceived change from the existing business model represented by an element: black indicated that the project team thought a large change was needed (the element was entirely new to the company), gray indicated that the team thought (for instance, the new product might sell in a different aisle of the same retailer), and white indicated that the team thought the particular component required no significant change (business as usual). Items were coded based on the project team’s perception at a particular point in the project’s development, as recorded in the case studies. If the project team’s perception changed, researchers placed a new sticky note on top of the older one, thus capturing changes in the team’s perception over time. Documenting changes in the perception of the project over time helped us understand why certain decisions made sense at specific points in time.

Modifying the Business Model Canvas

As the process of populating the business model canvasses proceeded, the researchers realized that Osterwalder and Pigneur’s original canvas needed to be modified to allow a more complete comparison of the outside-the-core business model to the company’s

established business model.² The original canvas didn't fully capture several areas that were important to our analysis. There was no area to capture the actual product or service. The Customer Relationships and Segments box didn't allow for the complexities of business-to-business projects, which may have a customer that is different from the final consumer, each requiring a different value proposition. For example, in Medication, the consumer is the nurse, physician, or pharmacist, but the customer is the hospital.

Finally, the original canvas included only two financial elements: revenue streams and cost structures. These did not capture other financial factors that affected decision making around outside-the-core projects, including unit margins, velocity, and volume. These factors influence how companies think about projects, including whether they consider entering a new business at all. Flexilis decided to pursue Medication, for instance, because it had the potential to deliver higher margins than the company's traditional products. This critical part of the Medication story would not have surfaced had researchers limited their view to the elements provided by Osterwalder and Pigneur's original Business Model Canvas. Similarly, velocity, which includes "both the actual turnover of current assets like inventory and the ability of the overhead and other related resources to support the turnover" (Johnson 2010, p. 37–38), is important to consider because it determines how companies think about tooling, capital investments, and product design. Volume is necessary to accommodate an explicit consideration of market size. Higher-margin products might be sold at lower volumes; hence, considering unit margin or volume without thinking of the other renders an incomplete picture.

² Alexander Osterwalder, Yves Pigneur, and Alan Smith have developed a Value Proposition Canvas that addresses some of the gaps we identified, by describing the product or service in terms of how it matches up to customer "pains and gains" in getting a particular job done (Osterwalder 2012).

In response to these findings, the researchers renamed Customer Relations and Segments to Customer/Consumer Relations and Segments; incorporated volume into the Revenue Streams box; and added boxes for the product offering, unit margins, and velocity.

The analysis also showed that certain external factors were crucial to understanding why projects failed or succeeded, echoing Osterwalder and Pigneur's emphasis on the importance of taking into account the business model environment along with the model itself. In multiple cases, for instance, regulatory actions, current or likely, were critical to teams' approach to projects. To incorporate these factors into the project business models, researchers added an area outside the canvas to list various external forces, adopting the form of a PESTEL analysis, which considers political, economic, sociocultural, technological, ecological, and legal factors (Kolios and Read 2013). They also added an Internal Dynamics box to capture factors external to the canvas but internal to the company, such as senior management support, which often determined whether a company would persist with a new business model following disappointing early results.

Finally, the added box Adoption Dynamics offered a separate space to capture speed of adoption and switching costs.³ Speed of adoption can be a critical factor in whether a project succeeds or fails. In Paint, for example, speed of adoption by the customer (paint companies) affected how fast Ager was willing to move from the pilot stage (for which unit costs were very high) to investing the necessary capital to produce the product at a volume that reduced unit costs. Paint companies, which typically offer 10-year warranties on their product, were reluctant to adopt Ager's product until they had performed multiyear testing cycles on samples. As a result, despite strong demand for the product from end-consumers,

³ The original Business Model Canvas includes one component of adoption dynamics in the Market Forces box under the rubric of "switching costs." In the Paint case, the risk of adopting a new paint component represented too large a switching cost, one the customer was not willing to assume before lengthy testing was completed.

Ager's customers were too slow to adopt it at a sufficient scale, and the company stopped production. This dynamic was crucial to understanding the failure of the project.

These additions and modifications produced a modified version of the Business Model Canvas (Figure 1). Obviously, the additional elements add to the complexity of the canvas. Osterwalder and Pigneur (2010) attempted to be as parsimonious as possible in an attempt to balance necessary complexity with ease of use. Researchers in this case also attempted to be parsimonious in their modifications, but found that it was impossible to capture the full picture of what was occurring in the outside-the-core projects without the extra information.

A summary of one project, Medication, helps to illustrate how the modified canvas was populated (Figure 2). Flexilis is a manufacturer of commercial and institutional products; the medication system around which the project was instituted was an entirely new product for the company (**Offering**). The value proposition was based on providing compliance with eMar, eliminating medication errors, and streamlining workflow for hospitals (**Value Proposition**). In later generations, Flexilis also realized that customization was an important part of the value proposition, and that was added to the box. Some of the company's existing sales people were responsible for initial sales; Flexilis also hired new sales people with experience in the healthcare industry, continued to work with purchasing groups for healthcare organizations it had worked with before, and started working with value-added resellers (VARs) in healthcare and distributors of healthcare information software systems (**Channels**). It needed these additional challenges to reach new customers (hospitals) and consumers—doctors, nurses, and pharmacists (**Customer/Consumer Segments**).

Results

Our analysis revealed some surprises. Contrary to the common thinking that projects further from the core (that is, those with the most black notes on the canvas) would have the

highest chance of failure (see, for instance, Edwards 2012), we found that the number of black-coded items was not a good predictor of success or failure. Actually, two of the successful projects actually had the highest number of black notes, indicating they were perceived as being furthest from the company's core.

On the contrary, failure was associated with fewer black notes. With the exception of Medication, the failed projects had a higher occurrence of faulty assumptions, generally assumptions that underestimated the degree of change required (Table 2). On the canvas, these false assumptions showed up as variables that were coded white at the start of the project, meaning the project team assumed no significant change from the current business model was required; over time, it became clear that these elements should have been coded black, indicating a major change.

These false assumptions tended to have a waterfall effect: one false assumption was detrimental to multiple areas of the canvas. Whether or not false assumptions led to the failure of the project depended on two factors: the degree of senior management support for the project and the durability of the assumption's effect on the project's profitability. A faulty assumption regarding market size, for instance, has significant and permanent repercussions for the project's success. On the other hand, an assumption about velocity, which can affect capital investment decisions, might have more temporary effects since investments can be adjusted if senior management is willing to make the additional investment to correct course. The Medication project exemplifies the effect of faulty assumptions. The team's conception of certain components of the business model changed markedly from the first generation to the start of the third generation (the seven starred items in Figure 2 indicate key assumptions for which the team had to adjust its understanding). For example, the team thought that hospitals adopting the new medication system would be satisfied with a standardized product offering, and that they would use the same system for many years. Based on that idea, the

team designed a single, full-featured medication system and decided to use expensive steel molds suitable for long product runs rather than less-expensive aluminum molds suited to shorter runs. The false assumptions around the product offering and life cycle, which were projected unquestioned from the company's incumbent business, had a waterfall effect, affecting how the team thought about velocity, product volume, and cost structure. Similarly, the team did not anticipate the importance of after-sales services for the system, something Flexilis had never offered for its other products, and this also affected several areas of the canvas (notably, Cost Structure and Customer/Consumer Relationships). The project survived because the effect of the assumptions on profitability was temporary and senior management was committed enough to fund the investment needed to rework the design plan, moving the project into the success column.

Another Flexilis project, Animals, did not survive false assumptions. In this project, Flexilis planned to rely partly on its existing distribution channels and partly on new distribution channels, assuming that its usual channels would sustain similar margin expectations for the Animals products as for their other business lines. However, products from project Animals saw slower turnover (lower velocity) compared to the company's established products, which led retailers to demand higher margins. The team—convinced producer margins would be sufficient to support higher manufacturing costs—elected to launch a whole line of new products simultaneously and use expensive steel molding, as was the norm in the business unit. The manufacturing costs proved to be too high given the lower producer margins the products allowed for. Thus, faulty assumptions around channels led to false assumptions about unit margins and velocity, which led to faulty assumptions about cost structure—and the accumulation of false assumptions caused the failure of the project. Because the false assumptions were embedded in the environment, their effect was permanent; the project could not be saved.

Similarly, in Paint, several assumptions around the cost of production at a low volume turned out to be false. Later, costs mushroomed due to an unexpected hike in the price of one of the key ingredients and the unexpected addition of an extra step in the production process. The combination of assumptions around several elements of the cost structure added up to unsustainable costs. This, on top of a much slower than anticipated adoption speed, caused the company to kill the project.

These illustrations show that false assumptions—and not steps from the core—are at the root of failure for outside-the-core projects. Assumptions in seemingly straightforward areas are often simply projected unquestioned from the company's incumbent business, without being subjected to necessary scrutiny. In addition, false assumptions in one business model element often affect other elements, creating a waterfall effect that cascades across the entire business model.

Discussion

The primary finding of this analysis, that faulty assumptions make business model innovation risky, echoes DaSilva and Trkman's (2014) point that if a "business model's core stands on untested and speculative assumptions about the future, the firm is doomed to an uncertain outcome" (p. 3). In this study, the failed projects, Animals and Paint, were characterized by high numbers of false assumptions. Teams believed that certain business model components would remain similar to the established business, requiring little attention and validation. Faulty assumptions also endangered successful projects Garage and Medication, which were unprofitable for several years and would have failed if not for strong senior management support.

Certain areas of the business model—areas where thinking tends to be more engrained—seemed to be more susceptible to false assumptions. There were very few false assumptions in areas such as value proposition, customer/ consumer segments,

customer/consumer relationships, key partners, key activities, and key resources, where departures from the incumbent business are relatively easy to identify and, as a result, firms directed extensive effort to resolving obvious uncertainties. For example, recognizing that developing Animals involved a large change from its traditional market, Flexilis spent six months conducting sophisticated ethnographic studies to determine the needs of this market. With this painstaking preparation, any remaining assumptions that proved false in those areas turned out to be both correctable and noncritical to the project's success.

The most problematic areas for faulty assumptions in the projects we studied were channels, cost structure, unit margins, and velocity. Business units have engrained ways of thinking about their cost structure and the velocity; required changes in these elements are harder to surface and more subject to cognitive inertia (Gavetti 2005; Gilbert 2005; Tripsas 2009; Tripsas and Gavetti 2000). In other words, teams missed faulty assumptions because they did not sufficiently investigate areas of the business they believed they understood. They knew they were handling an outside-the-core project, but did not validate all of the components of the new business model.

Compounding the problem, faulty assumptions in these areas have proven to be challenging to correct. Cost structure, for instance, includes both direct costs and overhead. Direct costs may be malleable, but, as Johnson, Christensen, and Kagermann (2008) point out, "Overhead requirements in particular are difficult to change. So there's a strong impulse to start with existing overhead costs when devising the cost structure of a new business model. But that order is backwards; in the new model, the overhead must be determined by the requirements of the value proposition, not taken as a given" (p. 36).

Perhaps the only way around the problem of false assumptions is to be explicit about organizational learning and adaptation as the new business is developing. The testing of assumptions is a well-accepted process for success in emergent strategies (Mintzberg 1978).

However, the problem in the projects we studied was that companies believed they understood the areas in which they made false assumptions; they didn't see the need to test their thinking. Keeping the new business small in the beginning and growing it at a rate determined by the pace of learning so as to allow false or hidden assumptions to surface is one approach to resolve this dilemma (Blank 2012; Christensen and Raynor 2003; Ries 2011). However this also presents large, established companies with another problem—how to justify a business initiative without requiring it to meet typical requirements for growth that often involve ambitious sales and margin targets.

Besides keeping the new business small and learning on the go, outside-the-core projects require ambidextrous managers (Tushman and O'Reilly 1996). Senior leaders need to be able to orchestrate sustaining businesses following a deliberate, well-articulated strategy based on careful planning while simultaneously leading the new, out-of-the-core businesses using an experimental or learning approach that allow the strategy and critical assumptions to emerge over time. Ambidextrous leadership saved project Medication, which was headed for cancellation as problems continued to surface, with slow and disappointing sales and negative returns. Persistent support from senior management with the knowledge that Flexilis was pursuing an opportunity for organic growth in an attractive market prevented its demise, allowing the team the time and resources needed to build organizational learning. There is a need for more research looking at outside-the-core innovation in general, and specifically using the perspective of the business model, to confirm our findings as well as to determine other causes of failure for these complex, risky projects.

Conclusion

Organic growth opportunities in new markets are the golden ring many companies seek. Pursuing this golden ring, though, is difficult and risky, often requiring significant changes to the company's existing business model, and it is made more so by the lack of

understanding regarding what drives success in outside-the-core innovation. In the projects we studied, contrary to expectations, success or failure was not simply related to the extent of departure from the firm's established business model. All of the projects took the companies into new markets that required new value propositions. And these companies directed considerable resources to understanding their new customers and developing appropriate value propositions—and they did this successfully. The Achilles heel of these projects was not in the unfamiliarity of the market, but in the faulty assumptions teams brought to the projects, often about the more quotidian elements of the business plan. The critical false assumptions that led to failure were disproportionately present in distribution channels, cost structure, unit margins, and velocity—areas that felt familiar to the project teams and therefore were not closely scrutinized in the initial evaluation of these new growth opportunities.

This indicates a key conclusion: it is in those seemingly easy, “no change required” areas that companies should closely examine and critically evaluate all their assumptions. Companies should go through each of the components of the modified business model canvas and deliberately challenge any assumptions embedded in it (especially ones that sound like, “We already know how to do that.”). Companies also need to be explicit about organizational learning and adaptation for all business model components as the new business is developing and key assumptions either are proven true or emerge as false. Finally, organizations should attract and provide room for ambidextrous leaders who understand that outside-the-core projects need special handling.

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Text box: Outside-the-Core Project Overviews

Successes

GARAGE (Flexilis)

The Garage product was an organization system to be mounted on garage walls. The basic system consisted of a rail and accessories that could be purchased as needed to meet specific storage needs, such as bicycle hooks or special racks for sports equipment. This project entailed a new consumer segment (a shift from females to males) and value proposition (an entirely new product line for Flexilis).

MEDICATION (Flexilis)

Medication entailed a medication system used by nurses, physicians, and hospital pharmacists to deliver drugs. It was designed to help hospitals comply with Electronic Medication Administration Record (EMAR) regulations and optimize workflow while minimizing medication errors. This project entailed a new value proposition (entirely new product line for Flexilis), new consumers (nurses, patients, pharmacists), partially new channels (Medication was sold, for example, as add-on for distributors of healthcare information software systems), new margins and velocity (high margins, high velocity versus low margins, low velocity), a new cost structure (aluminum molds to accommodate customization of product vs. the steel molds the company typically used), new key activities (electrical engineering vs. mechanical engineering), new partners (for instance, battery suppliers, new distributors), and new revenue streams (service) and volume (low volume).

PLASTIC (Ager)

Plastic was a project to convert crude glycerine into propylene glycol (PG), a highly versatile product used in many value-added functions; 1.3 billion pounds of PG are used in various manufacturing sectors in the US market alone. This project entailed a new value proposition (renewable) and new customer segment (chemical industry instead of agricultural).

ECO (Mendeljev)

The Eco project was a response to signals that the government would require companies to blend diesel with non-fossil (renewable) diesels, which represented a significant threat to Mendeljev's business. The project sought to produce renewable diesel from vegetable oil and tallow using the company's existing hydrotreaters (normally used to produce diesel from petroleum). This project entailed new key activities (heated storage and transportation of feedstock), new key partners (suppliers of soybean oil), and a new value proposition (renewable).

Failures

ANIMALS (Flexilis)

The Animals project involved a portfolio of about 60 products in six categories: food storage, feeding, litter, doghouses, grooming, and transportation. This project entailed new end-consumers (pet owners and pets), partially new channels (national and regional pet stores, different aisles in mass retail outlets), a new value proposition (new product line for Flexilis), a new cost structure (aluminum rather than steel molds), velocity (very low velocity versus high velocity), and margins (low margins).

PAINT (Ager)

Paint was a nonvolatile molecule with coalescent functionality (to retard cracking) for use in latex paints. This project, which had the potential to disrupt the paint market by offering a

paint that did not emit volatile organic compounds (VOCs), entailed a new cost structure (small-scale production with slow ramp-up vs. very high-volume production), new margins (margins collapsed due to multiyear small-scale production), and new volume (relatively small volume).

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Table 1. Projects studied

Company	Project	Industry	No. of interviews	Size
<i>Successes</i>				
Flexilis	Garage	Consumer products	9	\$15 million / year
Flexilis	Medication	Healthcare	6	\$15–20 million / year
Ager	Plastic	Chemical	2	260 million lbs / year
Mendeljev	Eco	Petrochemical	6	500–1,000 barrels / day per unit
<i>Failures</i>				
Flexilis	Animals	Consumer products	5	\$2–3 million in sales (6 months of 2004), \$1 million in licensing
Ager	Paint	Paint	4	\$1.25 million / year at discontinuation
<i>Total</i>			32	

Table 2. Number of false assumptions by canvas area

	Value Prop.	Customer/ Consumer Segments	Customer/ Consumer Relations	Channels	Key Activities	Key Resources	Cost Structure	Unit Margins	Velocity	Revenue Streams/ Volume	Total
Plastic (S)							1				1
Eco (S)								1			1
Medication (S)	1		1				2		1	2	7
Garage (S)				2					1		3
Animals (F)				2		1	1	2	1		7
Paint (F)		1	1		1		3	1	1		8
<i>Total</i>	<i>1</i>	<i>1</i>	<i>2</i>	<i>4</i>	<i>1</i>	<i>1</i>	<i>7</i>	<i>4</i>	<i>4</i>	<i>2</i>	<i>27</i>

Note: Table includes only areas that had false assumptions. Shading indicates false assumptions that were found to be critical to the success of the project.

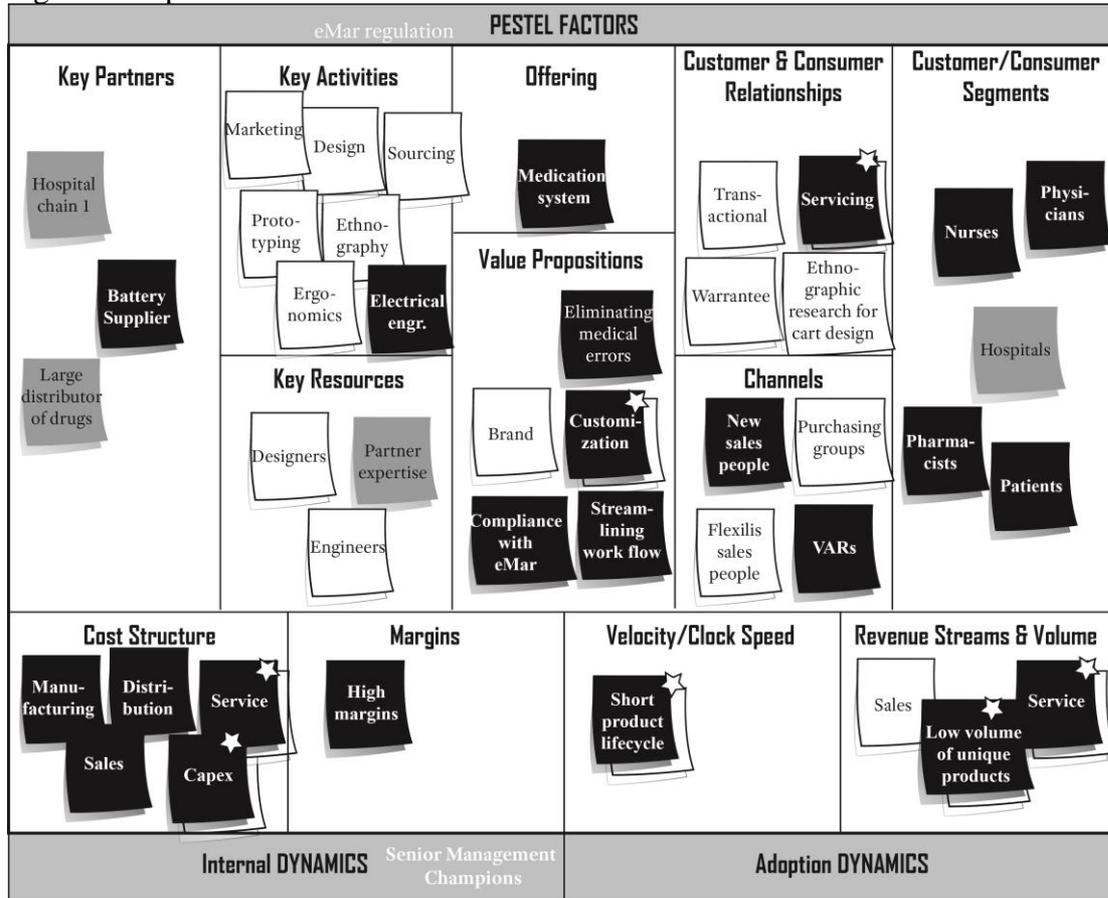
Figure 1. Modified business model canvas

PESTEL FACTORS (Political, Economical, Sociocultural, Technological, Ecological, Legal)				
Key Partners	Key Activities	Product Offering	Customer & Consumer Relationships	Customer/Consumer Segments
		Value Propositions		
	Key Resources		Channels	
Cost Structure	Margins	Velocity/Clock Speed	Revenue Streams & Volume	
Internal DYNAMICS			Adoption DYNAMICS	

Modified from BusinessModelGeneration.com

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Figure 2. Populated modified business model canvas for Medication



Modified from BusinessModelGeneration.com

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