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Note on Business Model Analysis for the Entrepreneur

Introduction

Nearly everyone has seen, heard and employed the term 'business model' but how many people really understand what it means? The term is a standard phrase in the lexicon of business managers, and yet the term escapes definition in most books, articles, business plans and annual reports. It is assumed that business managers not only understand the term 'business model' but also that they know how to identify, assess and create them. This note describes the primary elements and defining characteristics of a company's business model from the perspective of an entrepreneur.

In order to assess a potential business model, entrepreneurs must uncover the nature of its 'profit engine' which is often obscured by ambitious financial and market projections. Entrepreneurs must ask themselves whether their business concept can be translated into a viable, profitable business venture and how much cash it will take to achieve that result. Thus, this note introduces several analytic techniques to enable an entrepreneur to answer the following questions: 1) How likely is the business to turn cash flow positive? 2) How much time is required to ramp-up the revenue in order to turn cash flow positive? 3) How large an investment is required to pursue the business model? 4) What are the critical success factors and associated risks? In addition to preparing the entrepreneur to answer these questions, this note also provides several illustrative business models to support the analytic frameworks presented.

Business Model Definition

Many businesspeople and academics have offered elaborate definitions for the term business model. This note proposes a more focused definition of the term and is specifically aimed at entrepreneurs who must decide whether a particular business model justifies an investment of their time and resources. In this context, a business model is defined as *a summation of the core business decisions and trade-offs employed by a company to earn a profit*. As such, every entrepreneur must understand the specific business decisions and accompanying trade-offs that resulted in the creation of a business model. In general, these business decisions and trade-offs fall into four groups: revenue sources, key expenses, investment size and critical success factors.

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Revenue sources

How many different revenue streams will the business model generate? What is the source of each revenue stream (sales, service fees, advertising, subscription)? What is the relative size and importance of each revenue stream? How quickly is each revenue stream likely to grow?

Cost Drivers

What cost drivers have the greatest impact on the cost structure? Are the costs fixed, semi-variable, variable or non-recurring? What is their relative size and importance? Will the cost drivers change over time?

Investment Size

How much cash is required to launch the business model? How much working capital is required to sustain the business? What are the timings of these cash needs? Will the cash expended produce a viable business entity?

Critical Success Factors

Which elements of a company's business model are most important to achieving its profit goals? Which of these elements are the most difficult to execute? Will they change over time?

Framework for Analyzing a Business Model

A framework for analyzing business models must be applicable to the numerous business models in the marketplace. In recent years, the number of business models has increased dramatically for several reasons. First, globalization has facilitated the transfer of business models across geographic boundaries. Second, technological advancements such as the Internet have fostered the development of new business models. Finally, the large infusion of private capital into new ventures has helped to spur the creation of new, innovative business models. As such, business model analysis requires a common starting point that is equally applicable to a manufacturing business or an Internet-based business. To this end, a company's financial statements—the balance sheet, income statement and cash flow statement—all serve as a fundamental starting point for business model analysis.

For early-stage companies, the pro forma or budgeted financial statements are required and for existing companies, a combination of actual financial statements and pro formas are required. Other useful sources of information include the mission statement, business overview, strategic goals and operating principles of a company—all of which may be found in a business plan, annual report, press clippings or media kits. To begin the business model analysis, the following steps should be taken:

- Determine the company's actual and projected revenues and the timing of the cash inflows. Disaggregate revenue data until you have uncovered the revenue drivers or the key factors that influence total revenues.
- Determine the company's actual and projected expenses and the timing of the cash outflows. Disaggregate cost data into discrete cost drivers.
- Determine the total investment required to achieve a positive cash flow position, including working capital.

- Plot cash flow versus time to generate a cash curve. This curve will illustrate the maximum financing needs and the timing of positive cash flows and cash breakeven.
- Perform a systematic sensitivity analysis of the business model to identify the critical success factors or the levers that have the greatest impact on the cash flows of the company.

A preliminary analysis of the company's revenue sources, cost drivers, investment requirements and critical success factors form the basis of business model analysis. The following sections will facilitate more detailed analysis and provide illustrative case examples for each key element of the business model.

Revenue Sources

Definition

There are four distinct revenue streams that underlie all business models:[1]

Single stream: company relies on one predominant revenue stream stemming from one product or service.

Multiple streams: company collects multiple revenues streams from different products or services. Each revenue stream is sizeable enough to have a meaningful impact on profitability.

Interdependent: company sells one/several products or services in order to stimulate revenues from another set of products or services. Examples of interdependent revenue streams include razors and razor blades or printers and printer cartridges.

Loss leader: company collects multiple revenue streams but not every revenue stream is independently profitable. One or several revenue streams may serve as loss leaders and drive traffic to spur other purchases. Combined, all revenue streams enable the company to achieve profitability. An example of a loss leader revenue stream is a grocery store selling laundry detergent below cost in order to stimulate other purchases.

Revenue Models

Business models can incorporate one or several different revenue streams depending on the company's product, industry and customers. The following revenue models are examples of how the four different revenue streams can be manifested in a business model:

Subscription/Membership: Customers pay a fixed amount at regular intervals (week, month, year) in advance of receiving the product or service. Examples include paying an annual subscription fee for a magazine or a fitness club membership.

Volume or Unit-Based: Customers pay a fixed price per unit and receive a product or service in exchange. Examples include retail operations such as a restaurant, clothing shop or beauty parlor.

[1] Mark Mooradian, Nicole Vanderbilt and Heather Dougherty, "Internet Business Model Implications: Real Revenues and Traditional Business Impact," *Forrester Research*, 4th Quarter 1999.

Advertising-Based: End-user is usually exempt from paying a fee or pays a fee equivalent to only a fraction of the true value of the product or service. Examples include network television stations and content-based web sites.

Licensing & Syndication: Customer pays a one-time licensing or syndication fee to be able to use or resell the product. Alternatively, the buyer may pay a separate licensing or royalty fee in a business-to-business transaction, for example, a pharmaceutical firm may license a drug from a biotechnology firm.

Transaction Fee: Customer pays the company that facilitates the transaction a fixed fee or a percentage of the total value of the transaction. Examples include brokerage firms and auction houses.

Revenue Model Analysis

In answering the following questions, the entrepreneur can gain greater insight into the core business decisions and trade-offs underlying a company's revenue model and the size and relative importance of each revenue stream:

Revenue Streams

- Is the business model based on a single, a multiple or a loss leader revenue stream?
- If the company has a loss leader revenue stream, how likely are the losses to be covered by other revenue streams?

Revenue Model

- Is the business model based on a single or hybrid revenue model?
- In the case of a hybrid model, what are the underlying revenue models (i.e. subscription, transaction, advertising)?
- How quickly will the revenues increase? Are there any barriers to revenue growth?
- How long does it take to collect cash following a sale?

Case Example

The revenue model employed by the legendary sixties rock band *The Grateful Dead* or *The Dead* demonstrates several of the principles of revenue analysis. *The Dead* was one of the highest grossing bands of all time but had only one Top 10 hit and not one of their first 10 albums ever climbed higher than No. 24 on the charts. Instead of creating No. 1 hits to drive record sales, *The Dead's* revenue model exploited the underlying structure and economics of the music industry.[2]

The high cost music production and distribution system run by the music labels leave only a small portion of album revenues for the musicians and the revenue is paid out semi-annually—only after the label has paid out all accrued expenses. In contrast, the record companies have no claim on concert revenues—comprised of ticket and merchandise sales. These accrue entirely to the touring

[2] Andrew Razeghi, "Commentary Lesson from the Dead," *Los Angeles Times*; August 27, 2001.

band and are paid within thirty days. In response to the favorable economics of touring and selling merchandise, *The Dead* developed a wildly successful revenue model.

The Dead essentially gave away their music. At live shows, *The Dead* invited fans with recording devices to plug them into the engineer's soundboard, allowing them to burn CD quality recordings for free. Moreover, *The Dead* encouraged the copying and trading of concert tapes. Music was the hook or loss leader—the proverbial free toaster for the first 100 people to open a bank account. Instead, the band toured frequently enough to attract loyal fans coined *Deadheads* who followed the band across the country and attended their live shows. *The Dead* routinely achieved over $50 million in annual ticket revenues. Their frequent live concerts stimulated demand for merchandise so the band developed a line of merchandise--etched with their signature monikers—that were sold at each live concert. To discourage bootlegged merchandise, *The Dead* was known to have hired security personnel who scoured the parking lots of concert venues to enforce their trademarks with people illegally selling unlicensed merchandise. On average, *The Dead* generated an additional $70 million in revenue per year in merchandise sales.[3]

While most bands struggled to generate enough album sales to cover their label's marketing and distribution costs, *The Dead's* revenue model was focused on the larger and unencumbered sources of profit in the music industry. A fishbone diagram (See **Exhibit 1**) illustrates the revenue model employed by *The Grateful Dead* by disaggregating total revenues into three key revenue streams and each component's revenue drivers.

Cost Drivers

Definition

A cost driver is any factor that affects total costs.[4] In general, costs vary with either time or volume of output. More specifically, there are four primary types of cost drivers that comprise a firm's cost structure:[5]

Fixed: Items of cost that do not vary at all with volume. Examples include annual rent, property taxes and management salaries.

Semi-Variable: Items of cost that include a combination of variable costs and fixed costs. Therefore, a semi-variable cost varies in the direction of, but less than proportionately with, changes in volume of output. An example is the payroll expenses of a supermarket. A supermarket must employ a minimum number of staff to operate the store regardless of sales volume. However, as sales volume increases, more staff may be required to handle the increased business.

Variable: Items of cost that vary, in total, directly and proportionately with volume. Examples include materials cost (vary with total number of units produced) and sales commissions (vary with total number of items sold).

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[3] Elana Ashanti Jefferson, "Truckin' in style: Jam-band Vendors Sell Fans Wares to (tie) Dye for", *Denver Post*; July 19, 2001.

[4] Rakesh Niraj, Mahendra Gupta and Chakravarthi Narasimhan, "Customer Profitability in a Supply Chain," *Journal of Marketing*; July 2001.

[5] Robert Anthony, David Hawkins and Kenneth Merchant *Accounting: Text & Cases* (New York: McGraw Hill Companies, 1999).

Non-Recurring: Items of cost that appear irregularly or infrequently in the company's cost structure. Examples include investments such as purchasing a building or equipment.

Cost Structures

The dominant cost driver of a business model usually characterizes the overall cost structure. The following list is a subset of the most common cost structures:

Payroll-Centered (Direct): Semi-variable costs driven by employees directly involved in the output of the firm. Examples include professional services firms such as consulting firms and investment banks or manufacturing firms with assembly line production.

Payroll-Centered (Support): Fixed costs driven by employees indirectly involved in the output of the firm. Examples include Haute Couture fashion houses or insurance companies.

Inventory: Primary cost center related to maintenance of raw materials and/or finished goods inventory. Examples include manufacturing firms such as automobile manufacturers or retailers such as car dealerships or jewelry retailers.

Space/Rent: Costs driven by the high cost per square foot of office or retail space. Examples include a restaurant located in an affluent neighborhood or a service company such as copy centers located in downtown office buildings.

Marketing/Advertising: Costs driven by total marketing or advertising expenditures required to attract and retain customers. Examples include Internet content or commerce websites.

Cost Driver Analysis

In answering the following questions, the entrepreneur can gain greater insight into the core business decisions and trade-offs underlying a company's cost model and the size and relative importance of each cost driver:

Cost Driver

- Is the business model's cost based on primarily fixed, semi-variable, variable or non-recurring costs?
- How much volume can be supported with the fixed cost base? How likely is a reduction in the fixed cost base of the company?
- Are the primary cost drivers expected to change over time?

Cost Center

- What are the largest cost centers for the business model?
- What is the relative size and importance of each cost center?
- Do any of the cost centers deliver a strategic cost advantage?

Case Example

Seven-Eleven Japan—a chain of franchised convenience stores located throughout Japan—changed its cost structure in order to become one of the fastest growing and most profitable retail operations in Japan.[6] From the outset, Seven-Eleven Japan identified two critical cost drivers of the convenience store business and sought to convert them into a competitive advantage.

The first key cost driver was the Cost of Goods Sold (COGS) or the price at which the company acquired its products. Under the traditional system, individual stores had access to manufacturers only through multiple layers of distribution. Seven-Eleven Japan set out to rationalize the cumbersome and costly distribution structure in order to avoid capital expenditures and to lower the supply costs for the entire chain. To do this, Seven-Eleven Japan created the 'combined distribution' system that grouped products by the temperature at which they were stored and then delivered each product group to a different Combined Distribution Center (CDC). There, the products were sorted by store and then loaded onto trucks for delivery. The system eliminated the need for a multi-tiered distribution system and lowered the delivered cost of their products at the store level. Notably, Seven-Eleven Japan owned none of the CDCs or the trucks that shuttled goods between them. Instead, its suppliers and a few specialized distribution companies owned and operated the CDCs while Seven-Eleven Japan's role was limited to coordinating, assisting and supporting. Seven-Eleven Japan's distribution reforms converted fixed and non-recurring costs to variable costs.

The second key cost driver identified by Seven-Eleven Japan was the cost of managing information transfer amongst stores, suppliers and corporate head office. Although the initial foray into information technology (IT) was aimed at improving the ordering process for individual stores, it later had a profound impact on the company's ordering, merchandising and product development functions. Seven-Eleven Japan was the first convenience store chain to incorporate Point-of-Sales (POS) cash registers, an electronic order-booking system and hand-held scanners that store owners used to manage store deliveries. Instead of purchasing the hardware and software for its system, Seven-Eleven Japan worked in conjunction with Nomura Research Institute who helped to develop the software and administered the network, Nippon Electric Company which created the store computer, Tokyo Electric Company who built the register and Nippondenso who produced the scanner terminal. Seven-Eleven Japan insisted that any products developed with its collaboration could not be sold to any competitors for two years. Seven-Eleven Japan's IT partnerships also reduced the need for a large staff of computer experts—the company's IT department accounted for only 50 of its 2,500 employees in the mid-nineties. In sum, Seven-Eleven Japan drastically reduced the cost and risk of developing and implementing a superior IT system by creating partnerships with software and hardware suppliers instead of building the capability in-house.

By the mid-nineties, Seven-Eleven Japan's innovative approach to cost reduction helped it to become the fastest growing and most profitable convenience store chain in Japan. It also played an important role in the Japanese economy by helping to introduce IT into small stores and as a persistent force for rationalizing Japan's distribution channels.

A fishbone diagram (See **Exhibit 2**) illustrates the cost structure of Seven-Eleven Japan and the drivers influencing each major cost.

[6] Thomas K. McCraw, Creating Modern Capitalism (Cambridge: Harvard University Press, 1995), pp. 500-519.

Investment Size

Definition

Maximum investment is the amount of cash required before a company achieves positive cash flow. The total investment size of a business model depends on several factors including the company's revenue model, cost drivers and critical success factors. A cash flow diagram provides the means for capturing and summarizing information relating to the cash requirements of a business model (See **Exhibit 3** for a cash flow diagram for a hypothetical venture):

A cash flow diagram can be evaluated based on following characteristics:

Maximum Financing Needs: What is the maximum financing need of the business model (i.e. how deep is the cash trough)? Over what period of time is the investment required?

Positive Cash Flow: At what point does cash flow of the company turn positive? How long does it take to arrive at this point?

Cash Breakeven: When does the company achieve cash breakeven (i.e. what does time equal when the curve crosses the x-axis)? How does the slope of the cash curve change after breakeven?

Examples of Total Investment Size

The following examples describe types of business models with markedly different investment requirements:

Software: Large upfront investment is required to build an initial software product. If the product is successful, only relatively small follow-on investments in sales, distribution and customer service are required to capture a large software revenue stream.

Retail: Capital requirements during start-up phase associated with lease or rent costs, inventory and payroll. Financing needs remain relatively consistent over time.

Small Consulting Firm: Very small upfront investment for space, computer, and phone line are necessary to begin serving clients. If the firm is successful, larger follow-on investments may be required to hire additional staff, lease large office space and build IT infrastructure.

Case Example

Medical device start-ups can be used to illustrate how various business model choices—including pricing, manufacturing and distribution—can affect the total investment size required to achieve positive cash flow. Many medical devices companies sell two interdependent products: 1) equipment or instruments required to perform a procedure on an ongoing basis with a price often ranging from $50,000 to $100,000 and, 2) disposable products that are consumed during each individual procedure with a price ranging from $500 to $2,000. For a medical device company, sales of the disposable product are dependent on the total number of instruments installed in hospitals. And, since the price of each instrument or equipment is significantly higher than the cost of each disposable, the pricing, manufacturing and distribution of the instrument or equipment has a significant impact on the total cash requirements of the business.

The instrument or equipment can be sold at a profit, sold at cost or given away for free while the disposables are nearly always sold at a profit. A medical devices company that sells the instrument or equipment at a profit—assuming the market is willing to pay—will have a significantly shallower cash trough than one that gives it away. In addition, a medical devices company that sells the instrument or equipment at a profit—assuming fewer users are willing to pay for it than receive it for free—will have a more gently upwards-sloping cash curve than a company that gives the instrument away and generates a higher volume of disposables sales from its larger installed base of users (See **Exhibit 4** for cash flow diagram of two hypothetical medical device ventures).

Another factor affecting total investment size is the decision about whether to outsource manufacturing of the instrument or equipment. A company that outsources production will have a significantly shallower cash trough than one that builds and manages its own manufacturing facility. Similarly, a company that outsources the sales and distribution of its products to an independent distributor will avoid investments related to building, training and managing a sales force and will therefore have a shallower cash trough than a company with its own sales force. However, outsourcing production and sales—two critical functions within a medical devices company—can result in difficult management problems of controlling outsiders that may offset the advantage of lower total investment size.

The medical device case example illustrates how business model choices related to pricing, manufacturing and distribution can have a major impact on the total investment required to achieve positive cash flow. And, while business model choices should be assessed in the context of investment size, the entrepreneur should also consider how much cash is available to the venture and whether the business model choices confer a long-term competitive advantage to the firm.

Critical Success Factors

Definition

A critical success factor is an operational function or competency that a company must possess in order for it to be sustainable and profitable. Therefore, the success of a business model depends on both the creation of a viable business model and the successful execution of multiple operational functions.

Critical Success Factor Analysis

While a business model provides insight into underlying revenue and cost drivers, some of these factors are more important than others. By performing a sensitivity analysis, the entrepreneur can uncover the parameters or success factors that have the greatest impact on the amount and timing of the cash flows. The parameters with the greatest impact become the critical success factors for the business model. The following steps enable the entrepreneur to perform a sensitivity analysis:

- Construct a business model that illustrates the timing and size of the cash inflows and outflows.
- Select three or four parameters (e.g., sales growth, new customer acquisition rate, inventory turns) with the greatest perceived impact on total cash flows of the business model.

- Select a reasonable range for each parameter and then measure the impact of changing the parameter (across the entire range).
- Repeat this process for each parameter and note which variables have the most significant impact.

While a company's critical success factors may change over time, performing a sensitivity analysis enables the entrepreneur to measure the impact of a critical success factor at any given point in time. In addition, the sensitivity analysis can also help managers decide where to focus their efforts in order for their actions to have the greatest impact on the business model.

Examples of Critical Success Factors by Revenue Model

Critical success factors vary by business model, industry and stage of development. For example, a growing company's success may rest upon its ability to rapidly acquire new customers or to ramp up production fast enough to meet demand. A mature company's success may rest upon its ability to achieve high capacity utilization or reduce unit costs faster than its competitors. The following examples illustrate the critical success factors for three different business models:

Subscription/Membership: The ability to retain customers for a long period of time; the ability to acquire new customers at a low cost; the ability to consistently increase share of wallet with customers.

Transaction-Based: The ability to command a price premium for a product/service without a commensurate increase in costs; the ability to exploit economies of scale to lower fixed/variable costs as sales volume increases.

Advertising-Based: The ability to maintain advertising revenues during counter-cyclical economic period; the ability to increase advertising spending/customer.

Exhibit 1 Fishbone Diagram for The Grateful Dead Revenue Model

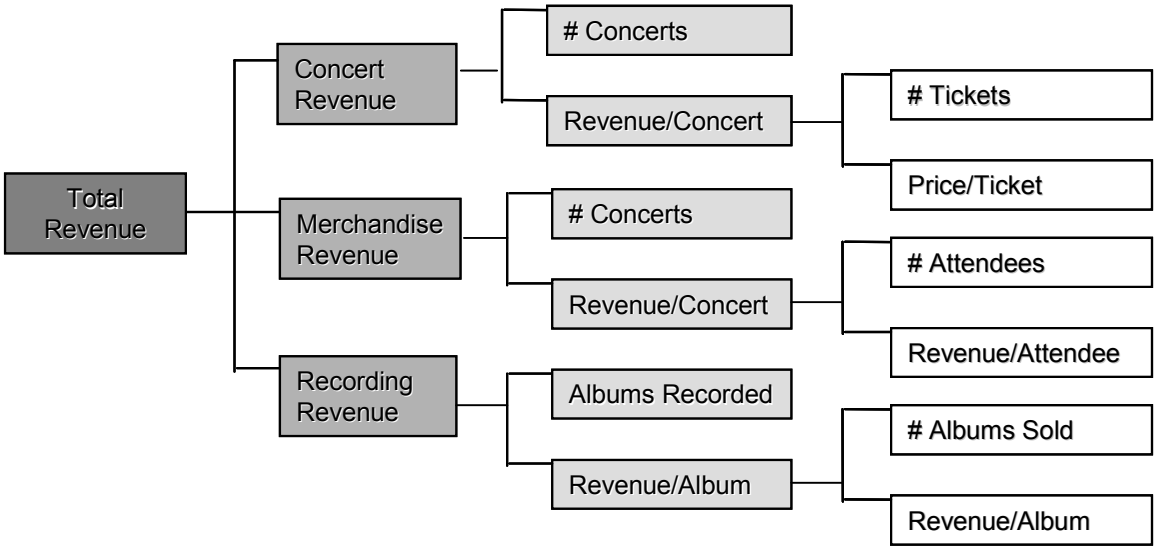

Exhibit 2 Fishbone Diagram for Seven-Eleven Japan Cost Structure

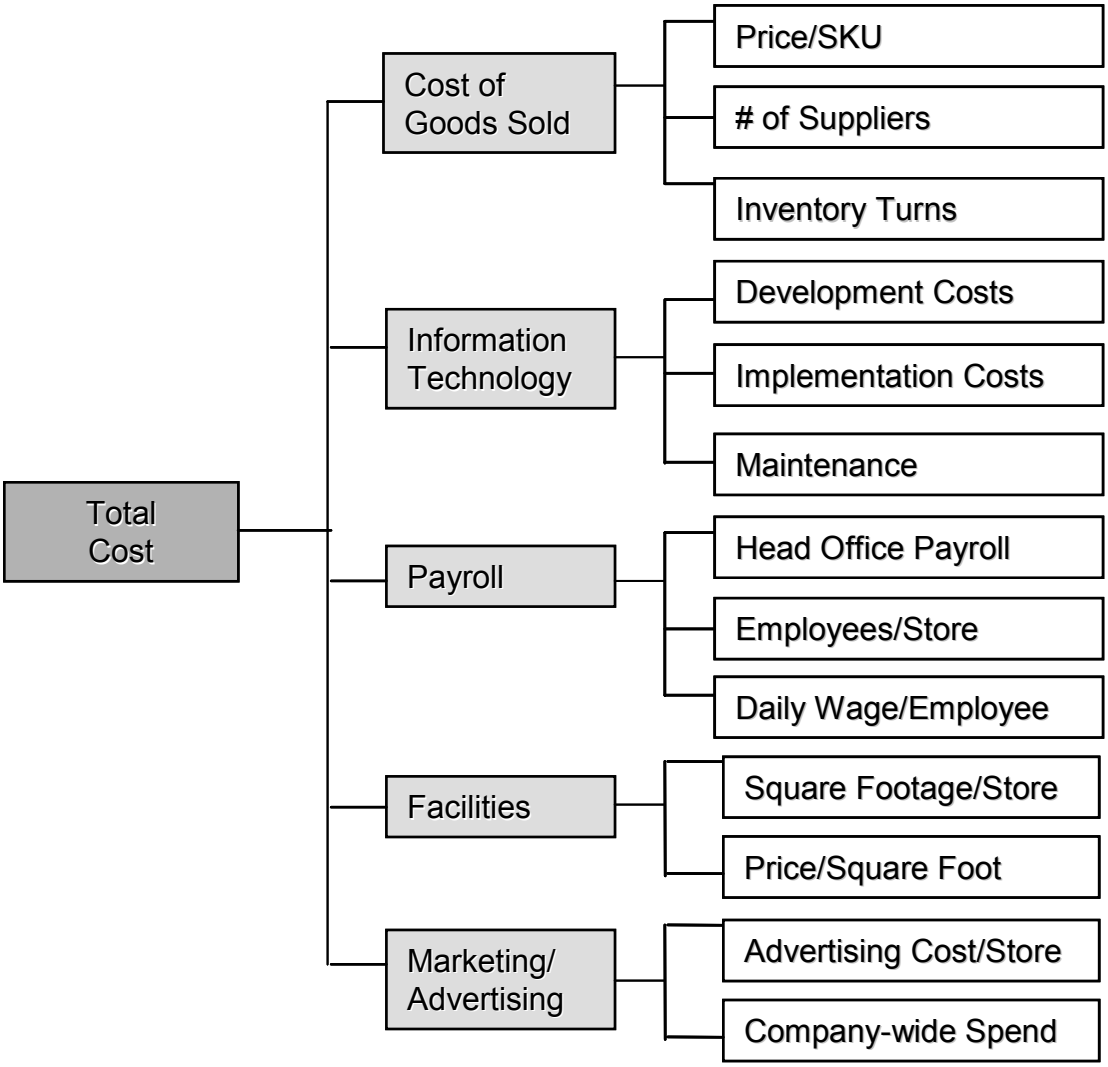

Exhibit 3 Cumulative Cash Flow Diagram for a New Venture

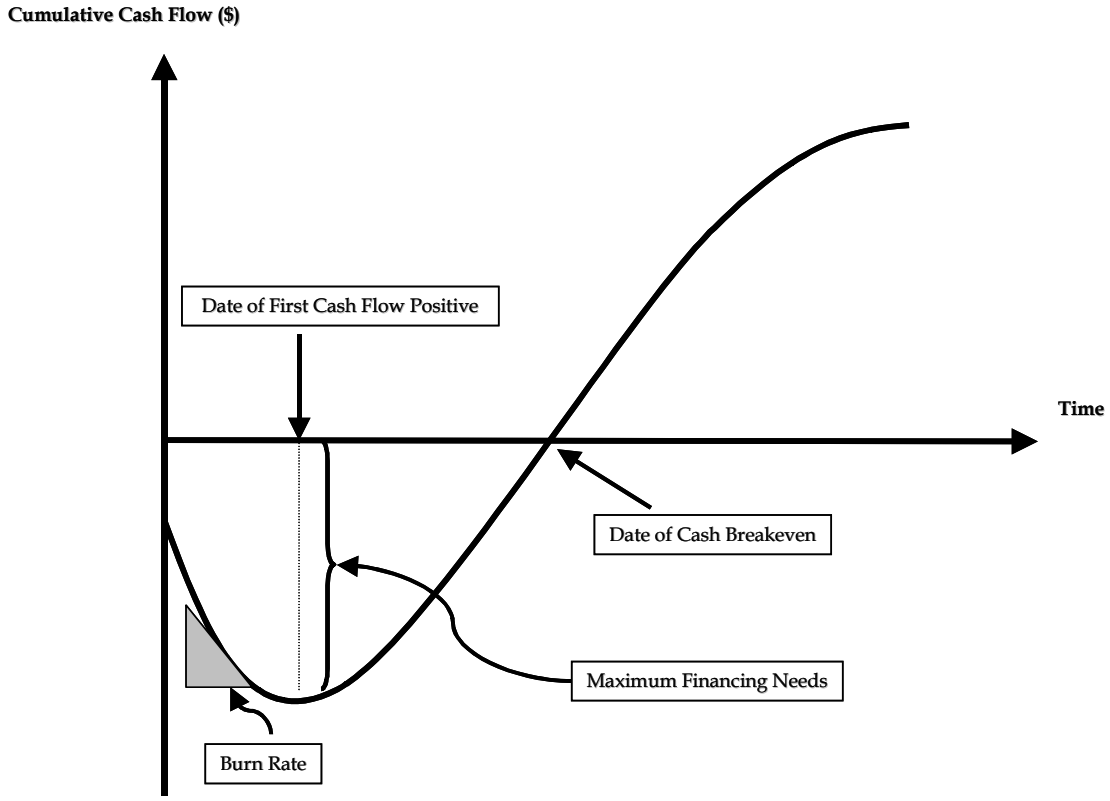

Exhibit 4 Exhibit 4: Cumulative Cash Flow Diagrams for Two Hypothetical Medical Device Ventures