

# **Business Models and the Theory of the Firm**

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# Business Models and the Theory of the Firm

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## Introduction

The concept of a business model facilitates analysis of the way in which a firm derives economic value from a newly developed technology. Indeed Chesbrough and Rosenbloom (2002) have argued that it is the business model adopted, more so than the technology itself, which is critical to the success of the commercialisation of new technology.

The concept is concerned with how the firm defines its competitive strategy through the design of the product or service it offers to its market, how it charges for it and what it costs to produce. How it differentiates itself from other firms by the nature of its value proposition. It also describes how the firm integrates its own value chain with that of other firms in the industry's value networks.

One of the difficulties of employing the business model concept is that it is still in its infancy in academic usage. It owes its origins largely to pragmatic development and use in the business sector. Chesbrough and Rosenbloom (2002) quote a May 2000 search of the Web which found 107,000 references to the term 'business model' in general use while a search of the academic literature (Econolit<sup>1</sup>) found only three references to the term.

The purpose of this paper is to outline some of the business origins of the concept, define the business model as well as possible from the academic literature and finally, use the theories of the firm to enrich its predictive powers as to whether the model will create value.

## The business need for a business model

The concept of the business model is strongly associated with the emergence of e-commerce and other new economy businesses. It grew out of a need to encapsulate the essential features of a business in a short descriptive document in order that a judgement could be made, for example by potential investors, on whether the business was likely to achieve its financial and other objectives.

In this context the business model is designed to answer a series of questions essential to any business – who are the customers, what do they value, how that value can be delivered to the customer at an appropriate cost and how the business deploys its assets. It includes a description of the key assets, both physical and intangible such as intellectual property, governance structure and management. It consists of both a *narrative* of how the business works and the *numbers* – how it makes a profit. The concept came into vogue when the spreadsheet provided an easy way to test the financial implications of the narrative in a financial model which contained assumptions about costs, product demand, sales revenue and profit. The financial

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<sup>1</sup> The American Economic Association's electronic bibliography, *EconLit*, indexes more than thirty years of economics literature from around the world (<http://www.econlit.org/>).

outcome of changes to the narrative, or assumptions about product demand, etc. can be tested in the spreadsheet model (Margretta 2002).

One reason for the popularity of the concept in the new economy, appears to have grown out of the need for the emerging dot com firms to have a comprehensive, but standard format, to explain to potential investors ‘how they were going to make their money’. The value proposition of dot com firms typically involved an innovative service or process for attracting a customer base. The proposed business model was often radically different. Often there was no precedent, no business experience, for instance, on which to base likely demand levels.

Accordingly, investors demanded that the entire business strategy, processes and outcomes be summarised and modelled in such a way that different scenarios could be tested. The narrative of the business model, once reduced to a spreadsheet-based financial model that encapsulated and quantified all the salient features of the proposed business, enabled potential investors to ‘stress test’ the business assumptions ahead of the decision to invest. The quality of the documentation of the business model was an essential part of the communication process between the entrepreneur and financier of the conceptualisation of the business model. Indeed the efficiency of this process was often critical to the business being successfully financed. An unsatisfactory documentation of a highly prospective business model, could result in the failure of the business to be financed (Eliasson 2000).

### **Academic approaches to defining the business model**

One academic response has been to generalise this pragmatically adopted framework (Fisken and Rutherford 2002; Feng et al. 2001). Such a definition of a business model is provided by Fisken and Rutherford (2002) in the following terms: ‘...the business model outlines how a company generates revenues with reference to the structure of its value chain and its interaction with the industry value system’.

This definition focuses on how a company uses its value chain and interaction with the larger industry value system to generate revenues.

Another approach has been to seek to better define the concept of the business model, by combining the theoretical traditions of the strategic management literature with other relevant theories of innovation and the firm. For instance Amit and Zott (2001) in their seminal paper on value creation in e-businesses, have used the theoretical foundations of strategic management literature and other theoretical work, to formulate and empirically test a business model of value creation for e-businesses. They have turned to value chain analysis, Schumpeterian innovation, the resource based view of the firm, strategic network theory and transaction cost economics to provide the basis of an integrated model of value creation in the firm. They draw on aspects of the various theories of particular importance to e-commerce, such as from value chain analysis, the identification of the primary activities of the firm that deliver value, from Schumpeterian innovation, the generation of rents following technological change, from the resource based view of the firm, value creation from a unique bundle of resources and capabilities, from strategic networks, value created by co-specialisation of assets and finally from transaction cost economics, the need for transaction efficiency. Amit and Zott (2001) suggest that no framework ‘should be given priority over the others when examining the value creation potential of e-

businesses' and that there is a strong interdependence between the various sources of value (p509).

Hedman and Kalling (2002) adopt a similar approach in developing a business model for IT businesses. The theoretical antecedents of their business model are organisation theory including transaction cost economics, strategy theory, Porter's framework, the resource based view and the strategy process perspective. The components of their business model consist of a description of the:

- industry, customers and competitors,
- product offering,
- activities and organisation,
- resources and competencies,
- factor markets and suppliers.

Each of the components is substantially informed by the concepts provided by the theoretical antecedents to the business model concept. For instance the concept of bundling complementary assets is important in defining the product offering. The concept of the value chain is important in describing the organisation of business activities and the resource view of the firm is fundamental to defining resources and competencies of the firm.

Developing a generalisable business model is a challenge. To date most other academic formulations of the business model focus on taxonomic issues in defining the relevant components of the model but offering little by way of empirical support for their propositions or suggested causation between the components. Some business model formulations provide little more than a comprehensive check list of things that should be considered for incorporation in developing a business model (Afuah and Tucci 2001).

## **The Chesbrough Rosenbloom approach**

The Chesbrough Rosenbloom exposition and definition of the business model is both comprehensive, and the most generalisable and operationalisable for the analysis of technology firms including biopharmaceutical firms. It is also the concept that forms part of the open innovation paradigm and is the one adopted in this thesis.

Chesbrough and Rosenbloom (2002) suggest that the business model of a technology company is the construct that mediates the value creation process between the technical and economic domains, selecting and filtering technologies and packaging them into particular configurations to be offered to the market. In this value creation process between the technical and economic domains there are strong echoes of the concepts of 'economic competence' (Carlsson and Stankiewicz 1991; Carlsson and Eliasson 1994) and 'competence bloc' (Eliasson 2000) both of which emphasise the need for firms to take advantage of their business opportunities arising from innovation to effect economic change.

As Carlsson and Stankiewicz (1991) point out:

Invention and innovation lead to economic change only to the extent that agents within the system are successful in taking advantage of the opportunities to which they give rise. This is where economic competence enters in. (p100)

The economic competence of a firm may be defined, then, as the sum total of its abilities to generate and take advantage of business opportunities. (p101)

The business model then for a technology firm, needs to consider the many facets of the firm's operations required to utilise the technology opportunity profitably. Chesbrough and Rosenbloom (2002) suggest that:

the functions of a business model are to:

- articulate the *value proposition*, that is, the value created for users by the offering based on the technology;
- identify a *market segment*, that is, the users to whom the technology is useful and for what purpose; and specify the revenue generation mechanisms for the firm
- define the structure of the *value chain* within the firm required to create and distribute the offering, and determining the complementary assets needed to support the firms position in this value chain;
- estimate the *cost structure* and *profit potential* of producing the offering, given the value proposition and value chain structure chosen;
- describe the position of the firm within the *value network* linking suppliers and customers, including identification of potential complementors and competitors;
- formulate the *competitive strategy* by which the innovating firm will gain and hold advantage over rivals. (2002, p7)

These will be discussed in turn. The articulation of the *value proposition* and identification of the *market segment* are highly interdependent. The value proposition requires the articulation of the nature of the offering to the chosen market segment. This is seen as fundamental to the success of commercialisation of the innovation. It means pitching the advantages of the technology, such as lower cost or new opportunities, to the appropriate market segment to generate value for the business. For many technologies there are a number of ways that a new technology can be offered to particular target market segments. Matching the two can be of critical importance. This involves developing the revenue model or how the firm is to appropriate value from the innovation (Amit and Zott 2001). Part of this process is specifying the revenue generation mechanisms best suited to the target market segment. Technologies may be packaged into products and sold, licensed to the end user or embodied into a service which is hired out involving quite different pricing regimes each with different implications for pricing.

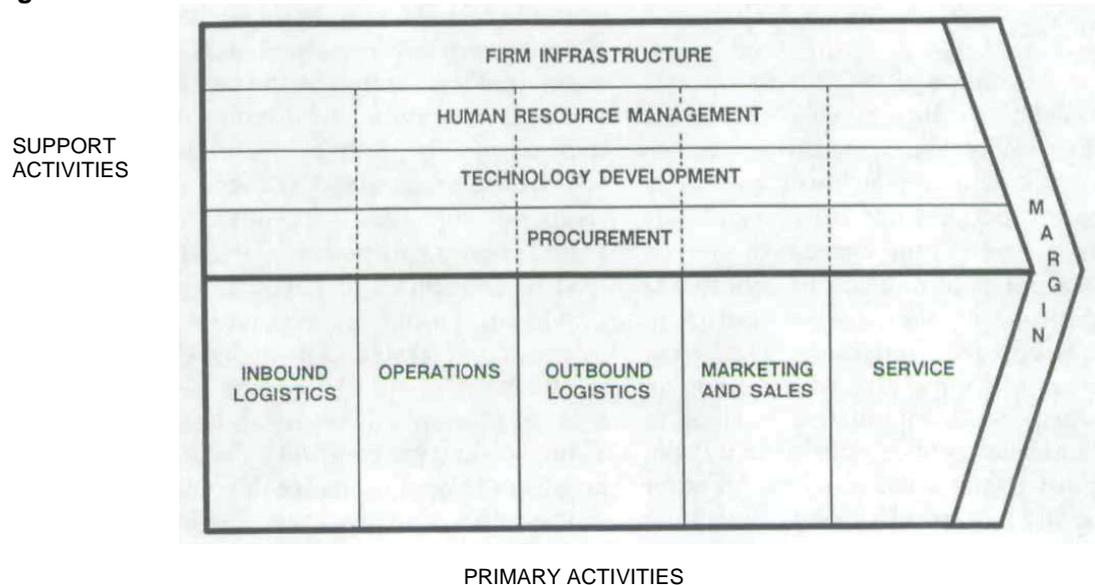
A further task in the Chesbrough and Rosenbloom concept of the business model is to define the structure of the *value chain*, and determine the complementary assets needed to support the firm's position in this value chain. This follows Porter (1985), who has argued that analysing the value chain of a firm provides the source of its competitive advantage. This may either be as a result of a cost advantage or through product differentiation.

The value chain displays how total value is created by the firm and consists of *value activities* and a *margin*. *Value activities* are physically and technologically distinct activities performed by the firm (Porter 1985, p38), not unlike *transactions* defined by Williamson (1981), by which the firm creates a product of value to its buyers. Every value activity employs purchased inputs, human resources, some form of technology and makes use of information. Porter divides value activities between *primary* activities and *support* activities. *Primary* activities focus on the creation and sale of the product to buyers whereas *support* activities include technology development,

procurement and human resources. These may be tailored to particular segments of the value chain or support the entire value chain. The value created by the chain is measured by the total product revenue. The *margin* is this value less costs (Porter 1985, p38).

The activities can be schematically shown in the value chain which provides a way of examining the interaction of the activities of the firm (see Figure 1)

**Figure 1 The Generic Value Chain**



Source: Porter (1985, p37).

Porter argues that the performance of each activity is a potential source of competitive advantage, either by its performance at a lower cost or by delivering superior buyer value and hence *differentiation* (Porter 1985, p39). Moreover the manner in which activities are linked may also be a source of competitive advantage. Firms belonging to the same industry may adopt value chain analysis as a diagnostic tool to regularly compare their performance with their peers and identify activities in need of improvement as part of creating and sustaining competitive advantage.

In Porter's framework, technology development is one of the support activities. It may enter at any stage of the value chain such as to lower the costs of outbound logistics through improved information management or to feature in the operations phase. However this conception of the role of technology has greater application to mature manufacturing companies where technology development is more likely to be exogenous to the primary activities. However for a firm whose main activity is innovation, consigning technology development to the category of support activity is inappropriate. For such firms R&D forms a core part of their operations and accordingly its performance needs to be viewed as a primary activity.

The Chesbrough and Rosenbloom business model contemplates the firm's use of complementary assets (Teece 1986) to supplement those owned by the firm. This causes the firm's value chain to intersect with the value chains of the owners of complementary assets and raises the issue of distribution of value between the participants discussed in the previous chapter. Chesbrough and Rosenbloom (2002) use the term 'value network' to describe the relationship between the firm and its

suppliers and customers. The role of the business model is to position the firm in the value network in such a way that the firm can capture value from its innovation.

The concept of the value network developed by Christensen and Rosenbloom (1995) describes 'a nested commercial system' (p240) of firms which contribute to the production of a particular computer component or set of components. These are then sold downstream to the assemblers of these components for integration into the next stage of the product pipeline.

Porter argues that a source of competitive advantage is optimising or better coordinating the linkages between the firm's value chain and the value chains of other firms. Integration of firm value chains with supplier or buyer value chains, for instance can provide the opportunity for a realignment of activities that jointly optimises activities across the firm boundaries. This is described by Porter (1985) as a value system but is in some ways analogous to Christensen and Rosenbloom's value network. However the concept of the value system has the greater application to a traditional manufacturing process whereas Christensen and Rosenbloom's concept of the value network has a greater focus on the integration of the joint contribution by firms to innovative production processes.

The value proposition and the target market helps determine the likely pricing of the chosen form of the product offering and its cost structure. Chesbrough and Rosenbloom (2002) suggest that having determined what the market will bear for the new product or service, places a discipline on the costs of development and production. The development of the business model is not static but a dynamic process subject to change through learning and adaptation. For instance the process of deriving value from a technology based offering requires a learning process of developing and adapting the technology to meet market requirements. Accordingly it may be necessary to adopt an iterative process between adjustments to product and the market segment to align the product with the cost of production.

Finally the concept of the business model includes consideration of the competitive strategy by which the innovating firm gains and holds an advantage over its rivals. There are a range of theoretical approaches to this problem suggested in the literature. The resource based view (Wernerfelt 1984; Barney 1986, 1991; Deirickx and Cool 1989) suggests the development of strategic assets (Amit and Schoemaker 1993) is the key to gaining and holding competitive advantage while the relational view (Dyer and Singh 1998) would be more concerned with gaining a share of the value of joint assets. If the firm was to follow the resource based view this component of the business model would be concerned with the formulation of a strategy to develop and preserve the value of strategic assets. Transaction cost economics (Williamson 1971, 1981, 1986, 1989) suggests an approach which would carefully consider integration of activities into the firm's value chain. Economising on external transactions is likely to favour more integrated company structures. The Porter approach would be more concerned with a strategy for cost management or developing a differentiated product.

## **Contribution of theories of the firm to the concept of the business model**

The advantage of the Chesbrough and Rosenbloom approach to the business model concept is that its functions or components provide a comprehensive structure by

which to analyse different sources of value in firms. Compared for instance with Amit and Zott's (2001) approach its functions or components are generic, rather than specific sources of value for a particular type of business. However the Chesbrough and Rosenbloom business model is still more of a framework than a theory (Teece 2006). By itself it does not enable predictions to be made of the behaviour of firms, although it has attempted to identify the key factors that may make such predictions possible. At the same time there are theoretical underpinnings that could be incorporated into many of the components of the business model to increase its capacity to be used as a predictive model. As with Amit and Zott's (2001) development of the business model, this analysis suggests that there is no single applicable theoretical framework, but that an integration of the various theoretical frameworks is useful in examining the value creation potential of the firm's business model.

The approach adopted here is to enrich the concept of the business model with the various a series of theoretical concepts based on the theory of the firm. The principal theories are transaction cost economics (Williamson 1971, 1981, 1986), the resource based view (Wernerfelt 1984; Barney 1986, 1991; Deirickx and Cool 1989) and the relational view (Dyer and Singh 1998) of the firm. In addition the concepts of dynamic capabilities (Teece and Pisano 1994; Teece et al. 1997), absorptive capacity (Cohen and Levinthal 1990), complementary (Teece 1986) and strategic assets (Amit and Schoemaker 1993), and value chain analysis (Porter 1985) as well as Teece's (1986) analysis of the appropriability regime are all helpful.

Table 1 summarises the relevant theories and their implications for the innovative firm with respect to each of the functions of the business model defined by Chesbrough and Rosenbloom. There is no single one for one mapping of the theories to the business model functions. Rather there is a good deal of overlap between the key theories and the functions. For some functions several of the major theoretical constructs are relevant. However different aspects of the theories are of particular relevance to certain of the functions.

The resource based view would suggest that the value proposition would be based on the most valuable offering that the firm can make in accordance with its strategic assets. By definition, strategic assets are those that are valuable and inimitable. However this may be complicated by the firm's participation in joint products.

The relational view suggests that the offering will not be the product of a single firm but be a joint product developed by the alliance or value network. Any relational rents generated will need to be shared between the participants of the alliance or network. The manner of sharing them is suggested by Teece's appropriability regime. Firms which have contributed assets with strong appropriability are likely to gain an economic share. However those not so well protected will tend to lose out. Such firms may be able to address this problem through their business models. For instance they may be able to recast their value proposition to offer a product capable of being protected by a suitable appropriability regime.

**Table 1 Theoretical Contributions to the Business Model**

<b>Business Model Functions</b>	<b>Relevant Theories</b>	<b>Implications</b>
Value proposition	RBV	Offering based on value derived from strategic assets / core competences
	Relational view/ appropriability regime	Value proposition designed to avoid appropriability problems
Market segment and revenue model	RBV	Market segment chosen follows the value proposition to gain maximum value from strategic assets
	Relational view	Revenue model designed to gain economic share of relational rents
Value chain	Transaction cost economics RBV	Optimise level of vertical integration  Identify need for complementary assets
	Value chain analysis	Comparative efficiency of individual activities
Cost structure and profit potential	Relational view	Profit depends on share of value
	Value chain analysis	Comparative efficiency of individual activities
Value network	Transaction cost economics	Cost and risk reasons for alliance formation
	RBV	Access complementary assets
	Dynamic capabilities	Adjust (build/acquire) internal and external competences to dynamic environments'
	Absorptive capacity	Increases capacity of the firm to gain from alliances
Competitive strategy	RBV	Development of strategic assets
	Appropriability regime	Decision to access or acquire complementary assets
	Relational view	Preserve adequate share of relational rents
	Transaction cost economics	Considerations of transaction integration vs contract or alliance

Note: RBV = resource based view.

The market segment is substantially decided by the value proposition which targets the firm's offering to a particular group of consumers. As for the value proposition, the RBV and the relational view are relevant to the choice of market segment. In

doing so, the pricing structure, costs and profitability are likely to be substantially determined, because the choice of market segment is likely to establish, given the value of the offering to the customer, how much the customer will be prepared to pay (Chesbrough and Rosenbloom 2002). The revenue model is likely to depend on appropriability factors. The revenue model is primarily concerned with how the firm charges for its product in such a way as to appropriate value (Amit and Zott 2002). This effects the options available for the pricing structure, such as whether to license the technology, sell outright, etc., so as to maximise the firm's share of relational rents.

Analysis of the firm's value chain is instructive from a number of theoretical aspects. One is to assess the efficiency of its existing activities using value chain analysis. This may be helpful in identifying which of its strategic assets it possesses and which it needs to access by alliances or to acquire outright. The RBV would predict that it would form alliances to gain missing complementary assets. Whether these were specialised, co specialised or generic would be expected to have a bearing on the form of alliance and the likely distribution of relational rents. The RBV would predict that access to generic assets would be acquired through market transactions. On the other hand, transaction cost economics would be concerned with opportunism and asset specificity in predicting whether such assets would be accessed through alliances or integrated.

Value chain analysis would suggest that the efficiency of activities in the value chain would deliver competitive advantage through lower cost structure and therefore higher profit potential. The relational view is concerned with the need to ensure an adequate share of relational rents for the firm to achieve sustainable profitability.

The importance of the firm's value network and the theoretical reasons for its existence have been the subject of most of Rasmussen (2007) which examined the theoretical reasons for firms to form alliances and those arguments will not be repeated here. Each of transaction cost economics, the resource based view, dynamic capabilities and the concept of absorptive capacity contributed to various aspects of that analysis. In summary, the reasons for firms to participate in alliances or a network are to acquire access to complementary assets and/or form a governance structure that reduces the costs or risks of innovative activity. Dynamic capabilities emphasises that this alliance formation is dynamic, in that firms need to be constantly adjusting their competencies in the light of a rapidly changing environment. Firms with a greater complementary knowledge base are likely to have a greater absorptive capacity and therefore to have a greater capability to benefit from this participation.

Gaining an appropriate share of the relational rents becomes a central issue for competitive strategy of an innovative start up firm. Positioning the firm's offering in relation to its network partners is as important as positioning the product in relation to its competitors. The RBV however suggests that it is the value of the firm's strategic assets which are vital to the capacity to gain and hold competitive advantage. These views are not necessarily in conflict, but there is a tension between the need for the firm to develop strategic assets which are inimitable and the need to contribute these assets to an alliance or value network, which increases the risk of them being copied unless the appropriability regime is tight. This may have a bearing, as discussed by Teece (1986) as to whether the firm should acquire the complementary assets rather

than risking diminution of the value in its strategic assets. Transaction cost economics would also suggest that if there was risk of opportunism or the assets were highly specific then they should be integrated rather than accessed through alliances or contracts.

## **Conclusions**

From its origins as a tool of business, some progress has been made in defining the business model in an academic sense. Its purpose has been described by Chesbrough and Rosenbloom (2002) as providing the construct that mediates the value creation process between the technical and economic domains, selecting and filtering technologies and packaging them into particular configurations to be offered to the market. Its six functions offer a framework that can be enriched by integrating the theories of the firm. From this framework a set of hypotheses about value creation and its capture by the networked firm can be developed and tested.

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