

# DEVELOPING AND CODIFYING BUSINESS MODELS AND PROCESS MODELS IN E-BUSINESS DESIGN

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## Abstract

*The development of business models for eBusiness has become increasingly popular within both the academic and business arena. We believe that many of the business models for eBusiness are static in nature and only provide a historical view. In this paper we draw upon the emergent knowledge of eBusiness together with the traditional strategy theory and provide a simple framework for the evaluation of business models for eBusiness. Central to this paper we use dynamic modelling techniques of systems dynamics to evaluate an eBusiness model using the triple pair approach in an effort to capture the causal relationships and rationalise the complexity of organisation's resources and the environment it must compete in.*

*Keywords: Business Models, System Dynamics, Modelling, Business Strategy*

# 1 INTRODUCTION

The field of strategy and strategy formulation is quite fragmented with no one real archetypal unified theory that is capable of drawing together all the concepts that have been expounded in theory or practice. Instead, theory of the strategic concept, and strategy formulation commonly generated, are often subjectively and mono-dimensionally derived. That is, the strategy is taken from a perspective of industry position, value chain position, geographical market(s) of interest, customers or suppliers perspective, industry culture and/or structure, etc. Hence, managers are often unable to formulate effective strategies in the face of a wide range of influencing forces and different perspectives. Similarly, researchers and practitioners are often unable to draw logical boundaries around the current strategy and the perceived environment that they are attempting to understand. Incorporating these into a strategy capable of being communicated effectively is extremely difficult. However, business systems dynamics provides a method to model complex systems (Sterman, 2000). Importantly, the complexity involved in the diversity of strategy perspectives and subjective nature of strategy formulation needs to be described in a manner that is readily communicated to practitioners and researchers. Indeed, business system dynamics allows for the clear definition of the boundaries of the strategy and the environment it is attempting to depict. Curiously, within business research, the concept of a business model is sparsely used. Instead, strategy and strategy formulation research covers many, if not all, of the basic theoretical elements that are included in the business model concept (Hedman and Kalling, 2003).

However, a common challenge in using any form of model-based or -supported thinking is in the surfacing and communication of different actors' mental models. In any thinking about the building of an electronically based business, there are at least three simultaneous views of what it is expected to achieve and how this can be made to happen:

- entrepreneurs have their ideas for successful businesses;
- technologists envisage ways to implement new complex technological or information systems to achieve business value; and
- operational managers have their ideas as to how business processes could be enhanced and extended to benefit from new opportunities.

Each of these views could form the basis for a model of the eBusiness, extending down from the entrepreneur's vision of how to create value in the business environment, or upwards from the views of operational managers and technologists as to what new opportunities could be exploited from new and alternate applications of the company's assets and processes and/or emerging technical capabilities. However, these originating ideas are typically personal and retained in peoples' minds and not made explicit. Any unifying framework must provide a way by which the entrepreneurial mental models can be surfaced and articulated, and then the models shared with other actors in a way that they can see within them the business processes and technological infrastructures that are the basis of their thinking.

Building from arguments that strategy can be distilled into a business model capable of describing to a manager what an organisation is currently attempting to achieve in a particular market, this paper presents a framework that, it is suggested, can capture such broadly-based strategic models for eBusiness design in a way that a chosen model's implications for business process modelling and information infrastructure are also clearly defined. The underlying strategic thinking takes into account the characteristics of the industry being discussed, the resources of the organisation, their current business processes and enabling technology. Moreover, the view of strategy and strategy formulation are used to provide a top down approach in the development of a business model. Similarly, a simultaneous bottom up approach, utilising the business process modelling perspective is also presented.

Specifically the framework applies the stock-flow diagramming convention of System Dynamics to map *business process models* onto *business models*, as originally proposed in Joyce and Winch (2003). The resulting structural models reflect different eBusiness model configurations in such a way that the processes by which service to various actors, and most specifically the final customer, will have to be fulfilled. This viewpoint focuses on the two-way flows of three critical system entities – information, goods and/or services, and money. To show the application and practical value of this cognitive framework, the relational structures of Weill and Vitale's 'atomic models' for eBusinesses (e.g. 2001) are used as a starting point and are extended by making more explicit the nature of each of the critical system flows. These businesses models give a dynamic perspective of the causal links in strategy execution and the organisation's competitive environment, and the critical feedback structures that will determine system behaviour and corporate performance, which is often neglected in the current business models.

## 2 BUSINESS MODELS FOR EBUSINESS

The term business model is one that is a topic of hot debate and draws considerable comment and differing opinion in both academia and practice (Alt and Zimmermann, 2001, Applegate, 2001, Chandra et al., 2002, Chesbrough and Rosenbloom, 2001, Hedman and Kalling, 2003, Oliva et al., 2003, Timmers, 1998, Rappa, 2003, Weill and Vitale, 2001). The main driving force behind the re-evaluation of the (traditional) business model has been the development of eBusiness, eCommerce and eMarketing. The focus of the re-evaluation has been on how new technologies, especially the Internet, alter the business model and subsequent strategy. Interestingly, a deep analysis of the business model concept highlights there is a diversity of views and understanding of the business model for eBusiness. This provides a confusing and incomplete picture of the dimensions, and core issues of these business models (Alt and Zimmermann, 2001). The empirical use of the concept has been criticised for being unclear, superficial and not theoretically grounded (Porter, 2001).

### 2.1 Components of the Business Model for eBusiness

A major criticism of the business model can be seen when we examine the strategy theory in the field of business research. In strategy formulation research many, if not all of the theoretical components of the business model are covered. By focusing on the components of the business model for eBusiness we are able to draw on underlying theory of strategy.

Timmers (1998) defines an eBusiness model as "*an architecture for the product, service, information flows, including a description of potential benefits for the various actors, and a description of the sources of revenue.*" Weill and Vitale (2001) propose a similar definition of: "*a business model is a description of the roles and relationships among a firm's consumers, customers, allies and suppliers that identifies the major flows of product, information and money and the major benefits to participants.*" Underlying the definition we can break these down into the components of the business model: business strategy, organisation form and structure, business process, value chain, core competencies and financial structure. Alt and Zimmerman (2001) presents six components: mission, structure, processes, revenues, legal issues and technology.

Afuah (2001) defines an eBusiness model as "*how a firm plans to make money long term using the Internet.*" Although simplistic in its nature it builds a framework of components including: customer value (low cost or innovative), scope (products/service), price, revenues sources, connected activities, implementation (required resources), capabilities (organisation skills) and sustainability. Interestingly, the proposed list of components is applicable to both e-business models and the traditional business models. However, the causality between the components, processes and change are not addressed.

Applegate (2001) provides a considered business model framework consisting of three basic components: concept, value and capabilities. It addresses the role of the change process and the relationship between the components of the model. Concept, or business concept, describes the

products and services offered, evolutionary business strategy, competitive dynamics, market opportunities and strategy to gain dominant market share. Value of the business model is measured in terms of the revenue to the stakeholders, return to the organisation, market share, brand and reputation, and financial performance. Capabilities are delivered by the organisation's marketing and sales model, management model, development model and infrastructure model and built by people and partners, organisational structure and culture. In components described in the business model are interdependent and traditional strategic framework tools (e.g., value chain analysis, RBV) can be used to evaluate the suitability of the business model. Importantly, the major difference between the traditional business models and eBusiness models are the underlying assumptions and rules of how business will be undertaken in the particular industry.

## 2.2 Description of the Business Models for eBusiness

The wider group of business models for eBusiness provide descriptions for particular scenarios and situations. Moreover, eBusiness models aim to describe specific business models, which explain how businesses use the Internet to interact and how value is created for the customer and the other stakeholders (Applegate, 2001). There has been an explosion in the number of academic papers that outline a wide range of taxonomies for eBusiness models. An early attempt was (Timmers, 1998) who identified eleven eBusiness models: e-shop, e-mall, e-procurement, third-party marketplace, e-auction, virtual community, collaborative platform, value-chain service provider, value-chain integration, information brokerage and trust service. (Rappa, 2003) extended this and classified nine categories for eBusiness models: brokerage, advertising, infomediary, merchant, manufacturer, affiliate, community, subscription and utility. Under these Rappa identifies thirty-six models that can be classified under his nine categories. Interestingly both Timmers and Rappa highlight there is no single comprehensive taxonomy for classifying eBusiness models and yet they do provide taxonomies of eBusiness models.

Applegate (2001) outlines a taxonomy of business models for eBusiness by using: generic market role (i.e., producers, consumers, distributors and customers), digital business (if dependant of the Internet) and platform (i.e., infrastructure provider for 3<sup>rd</sup> party eBusiness). Applegate provides five general categories: focused distributor, portals, producers and infrastructure producers in which there are 22 individual instances of eBusiness models that fit within the classification of the taxonomy.

Weill and Vitale (2001) define eight finite eBusiness models: direct customer, full service provider, intermediary, whole of enterprise, shared infrastructure, virtual community, value net integrator and content provider. These business models are based on a systematic and practical analysis of several case studies. This work describes eight basic structures as 'atomic' models. These eight structures form the 'atoms,' which firms may adopt singly or in more complex arrangements ('molecules') to construct their business model. The models are defined in terms of the actors in the structure of: the firm, complementors, customers, and suppliers and the inter-linkages between them. This includes the movement of product, money and information. These atomic models may be described as an 'analysis agenda' for managers attempting to interpret the complexity of an eBusiness model in terms of the resources required to implement each or a specific business model.

## 2.3 Business Model Strategic Conceptual Framework

In order to provide a framework to evaluate business models for eBusiness we must establish a method to highlight the resources involved and the casual relationships with the organisation and environment. Figure 1, provides a simple business model strategic conceptual framework to highlight the interrelationship with business strategy, business models, business process models and the underlying business processes that are capable of utilising the enabling technology (ie., Information Technology and Information Systems). Joyce and Winch (2003) highlight to be successful in the development of a suitable strategy there needs to be careful consideration of the firm's resources (Barney, 1991), the organisations role and the current value chain the organisation is involved in (Porter, 1985) and the

possible utilisation of a well implemented generic strategy (Porter, 1980, Mintzberg, 1978) which is at the centre of the framework is the business model. It provides a method to create an eBusiness model by examining the particular context based on the industry - organisation environment. The conceptual framework allows managers to bring their thinking together for a common understanding, integrating the strategic formulation within a particular market and the strategic issues specific to eBusiness within the organisation. It provides a conceptual framework to allow entrepreneurs, managers and technologies to vision their particular strategies.

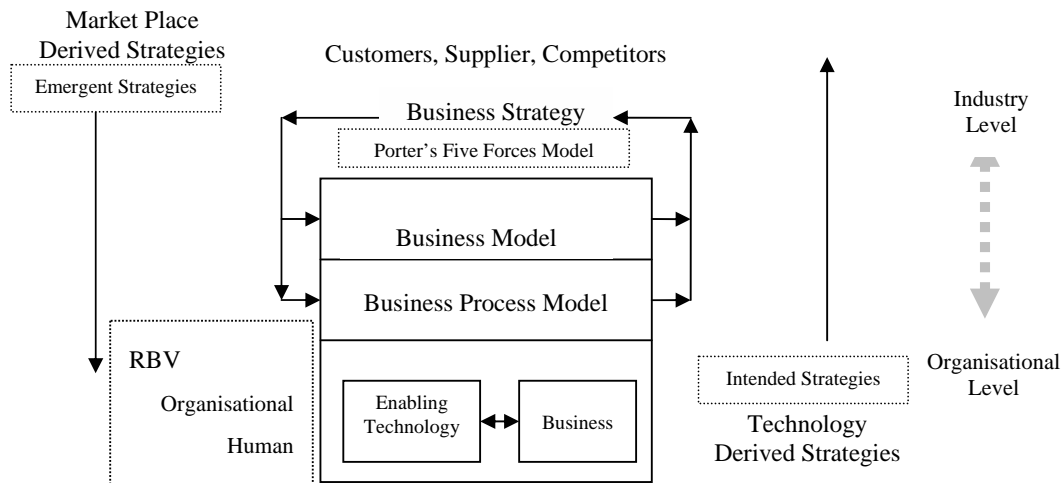


Figure 1: Business Model and Strategy Conceptual Framework

The framework utilises the traditional tools of strategic formulation and provides a foundation of identifying the underlying business model or developing a new business model. Value chain analysis provides a method to identify the business process model that is either in place highlighting its important business processes or could be developed as new an innovative approach. In the eBusiness case we need to consider how enabling technology, especially Internet based technology, can provide new variants of business process models and business processes. RBV provides a method to identify the resources required by the organisation to support the business model under consideration. Importantly, it provides managers with a way to classify them in terms of the strategic importance at an organisational level and industry level. At a business strategy level, Porter's five forces model provides the means to identify the external environment the organisation is attempting compete in and how the actors (customers, supplier, competitors, etc) of this environment interact with the business model under consideration (Porter, 1980).

The conceptual framework identifies market placed based strategies and technology based strategies. From the market placed strategies perspective these are derived from the market itself and are considered to the emergent strategies of the market. Knowledge based entrepreneurs fall into this category. Conversely, technology delivered strategies are derived from within the organisation and often from research and development or a specific resource of the organisation.

RBV has been extended in this framework to include technology capital resources as a part of the resource based view of business models for eBusiness. In this sense, technology can not only be seen as the rare and valuable resource of competitive advantage, as experienced by the early adopter of Web based eCommerce (e.g., Amazon.com), but also as an enabler of business in a new and innovative way that supports an organisation within a particular market (e.g., Porter's Five Force and

Value Chain Analysis) or simply providing effective back office processes and information management (e.g., general strategy). Similarly, market placed strategies often have a strong affect of the emergent strategies of the organisation. Conversely, intended strategies bubble up for the organisation and in the eBusiness area are often based on the use of technology as means to communicate customers, suppliers and competitors. This includes their interaction with their customer and supplier and allowed them to revisit their current market and the possibility of moving to new markets. There is a growing realisation the “economic value from technology can only be derived from the economic and social structure of the situation rather than the inherent characteristics of the technology itself.” (Chesbrough and Rosenbloom, 2001)

A major criticism of business models for eBusiness has been the lack of evaluation techniques for the models that have been generated. Many of these models are anecdotal or retrospective in nature. Moreover, there has been no evaluation of the taxonomies. Therefore, re examination of the activities that form the basis for many of these models must be undertaken. This can only be achieved by utilising innovative modelling approaches to gain a greater insight into the complexity of business models for eBusiness.

### 3 A GENERIC FRAMEWORK FOR E-BUSINESS FULFILMENT MODELLING

All business transactions are in one way or another a supply chain fulfilment system. Orders for goods or services are fulfilled (i.e. satisfied) by the good being delivered and a payment being received in exchange. The chain itself could be viewed as a single aggregate-level fulfilment system or a cascade of individual fulfilments, each representing a stage in the chain. There are effectively, therefore, three flow processes comprising all such systems:

- information flows, primarily the orders;
- money flows, payment for goods or service; and
- delivery of goods or services.

These are just the primary flows, goods may flow via distributors, and similarly money flows may be via credit cards. These may be seen as refinements, alternatives or extensions of the primary flows above. However, an important consideration is that each of these flows can be two-way:

- Reverse information flows might include order acknowledgements, delivery notices, invoices, out-of-stock notifications, etc. It might also include information not directly related to individual order fulfilments, for example, stock position advisories and so on;
- Reverse money flows might be refunds, cash-back, commissions, etc; and
- Reverse goods flows might be returns, trade-ins, etc.

Leaving aside for a moment the complexity of these flows, it would seem therefore that any supply-chain or distribution can be reduced to six main flows: two-way information, two-way goods and services, two-way money flows, as shown in figure 2. This is what might be called the “triple pair” flow model.

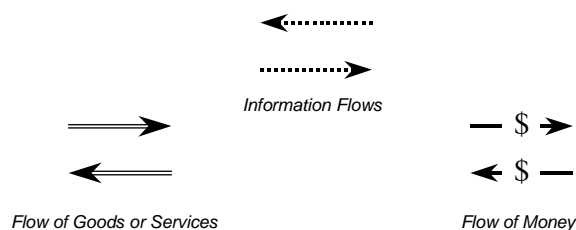


Figure 2: The ‘triple pair’ process flow concept model of supply chain fulfilment

If all the relevant flows relating to a particular supply chain structure could be represented within this *triple pair* model, then the configuration of the six flows can be mapped onto any business model that a company has in place, or wishes to adopt. If the business model is based on e-commerce processes then this is only a further variant – the information flows are carried out mainly or totally by electronic processes, and the good and money flows may need some modification to make them coherent with the information processes.

By using the stock-flow diagramming convention of System Dynamics we will investigate how *business process models* can be mapped onto *business models*. System Dynamics is well suited to this application. There are many excellent texts that describe the principles and processes in system dynamics modelling and Sterman (2000) is a leading example text. From its earliest day of development (Forrester, 1961), has always explicitly reflected industrial and business structures as a complex inter-related set of flows of money, materials and information, (though in some contexts the list may be expanded to included people, and ‘materials’ could include for example livestock, and services). In this sense it was always concerned with the structural relationships that make up business processes as well as the softer processes and has been used explicitly to study business processes (see for example, (Powell et al., 2001)). It has also been used to study supply chain systems within the business process concept; Sterman (Sterman) discusses the role of system dynamics in manufacturing supply chain management, and presents two actual case study applications - the situation of a semiconductor/component manufacturer Symbios and its downstream distribution through OEMs and *Fast Growth Electronics*’ (a pseudonym) up- and down- stream channels (Sterman 2000, pp.449-462).

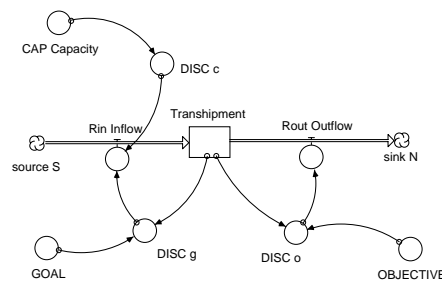


Figure 3: A supply chain network dynamic process model drawn with iThink (after Chandra et al 2002)

chain network dynamic process flow model. Using the system dynamics modelling software *iThink* to re-draft their diagram, their process flow model appears as Figure 3.

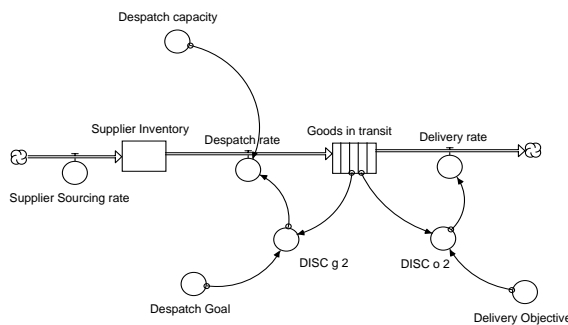


Figure 4: A redrafted depiction of Chandra et al's model

observed or required, and parallel processes could be added to reflect more complex business

System dynamics has also been used effectively to study issues relating to IS system management (Abdel-Hamid and Madnick, 1991, Abdel-Hamid and Madnick, 1989), IS outsourcing (McCray and Clark, 1999) and e-commerce company strategy (Oliva et al., 2003). Chandra and his co-authors also include reference to the potential of system dynamics in their discussion of a generic development methodology for e-management and conceptual modelling of supply chains (Chandra et al., 2002). They include what they describe as an illustration of a supply

This model reflects explicitly the stock-flow structure of the process, with goods being despatched, laying as a level (stock) while they are in transshipment, and then being delivered. This structure can be redrafted using more usual system dynamics nomenclature and the range of icons available in *iThink*. This is presented as figure 4.

Once again, this dynamic process model represents only a very simple process. However, the chain could be readily extended if further stocks or stages are

processes. Using this micro representation of the supply chain network process model leads to the presentation of the *triple* pair model as figure 5. This now reflects that there is structure and complexity in each of the six flows.

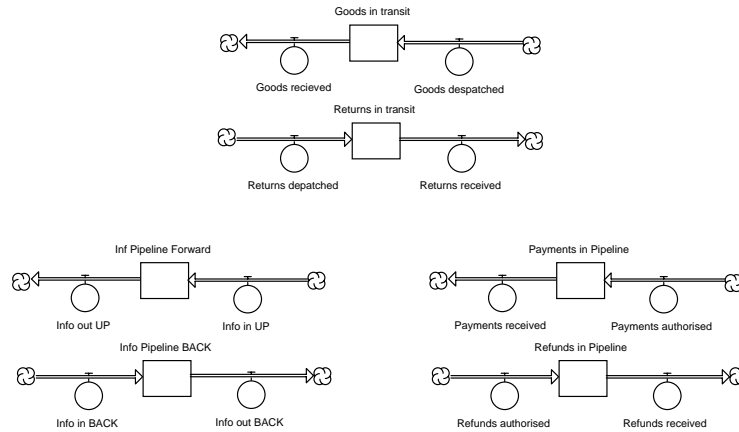


Figure 5: The triple pair model with some minimal detail for each flow process

#### 4 A TRIPLE PAIR INTERPRETATION OF WEILL AND VITALE'S BUSINESS MODELS

In Weill and Vitale (Weill and Vitale), the authors consider the range of IT infrastructure capabilities that are needed in the implementation of these business models, and in the more detailed discussion of four of the eight remark that they 'require surprisingly different IT infrastructure services'. Their detailed analysis raises a number of critical issues in terms of four internal elements or levels - IT Components, Human IT Infrastructure, Shared IT Services, and Shared and Standard Applications – which are in turn linked with public infrastructures, such as the Internet and communications networks, and to external industry-based infrastructures like bank payment systems, reservation systems and supply chain networks. This approach can enable managers to focus their critical attention on the IT infrastructures needed, can guide them in IT investments and, Weill and Vitale (Weill and Vitale) assert, point to situations where the infrastructure gap might be so large as to require major rethinking on their e-business plans. It is suggested here that the 'triple pair' flow model approach offers a practical way by which various e-business models, including those put forward by Weill and Vitale, can be visualised in business process terms. This will then provide a way for specifying the model structure in sufficient detail for information flow models to be envisaged to provide the necessary IT services. To demonstrate this process two of the Weill and Vitale models are re-presented in terms of the 'triple double' flows. The expansion is indicative only, as there is likely to be a wide range of detailed processes possible within this and each of the business models.

##### 4.1 A Triple pair representation of the *Direct to Customer* model

The *Direct to Customer* model is arguably the simplest of the business models, and is characterised by the originators as providing 'goods or services directly to customers, often surpassing traditional channel players'. In this model the primary relationship is directly between the customer and the Direct-to-Consumer Provider (examples given are Dell and Home Depot), with money flowing to the

provider and products and information flowing to the customer. In the Weill and Vitale format this business model is represented visually as in Figure 6.

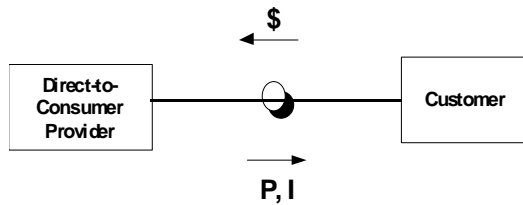


Figure 6: Weill and Vitale's Direct to Customer business model (Weill & Vitale 2001 p. 246)

This characterisation emphasises the major relationship as being directly between the customer and provider and indicates the basic flows between them. This is sufficient to serve the managerial needs identified earlier. However, this model says very little about the actual business processes that would have to be created to enable transaction fulfilment, and is a significant simplification in the sense, for example, that there is no representation

reflecting returns. These would require a flow of product in the reverse direction, possibly, if a refund is given, a reverse money flow, and of course information flows in the reverse direction also. The triple flow model would represent this model in a supply chain perspective and highlight all the necessary flows. Focussing at this point on a good, as opposed to service, type product, the representation of basic flows and some inter-linkages would appear as Figure 7. This captures the primary flows and indicates the action links between the flows. In this version the money flow is represented generically, but would be modified to include further or fewer stages dependent upon the forms of payment the provider chooses to accept – cheques, electronic payment authorisation via debit card, or payment via an intermediary by credit card. The model is also simplified in terms of the product fulfilment process, where the exact representation would depend on whether the product is made-to-order or delivered from stock, and so on.

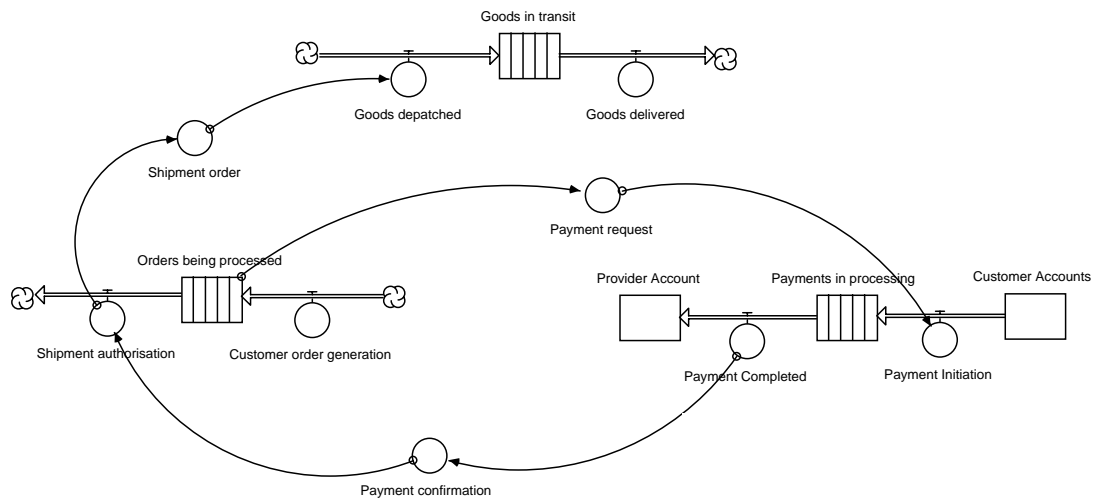


Figure 7: Basic 'triple pair' flow structure of Direct to Customer model

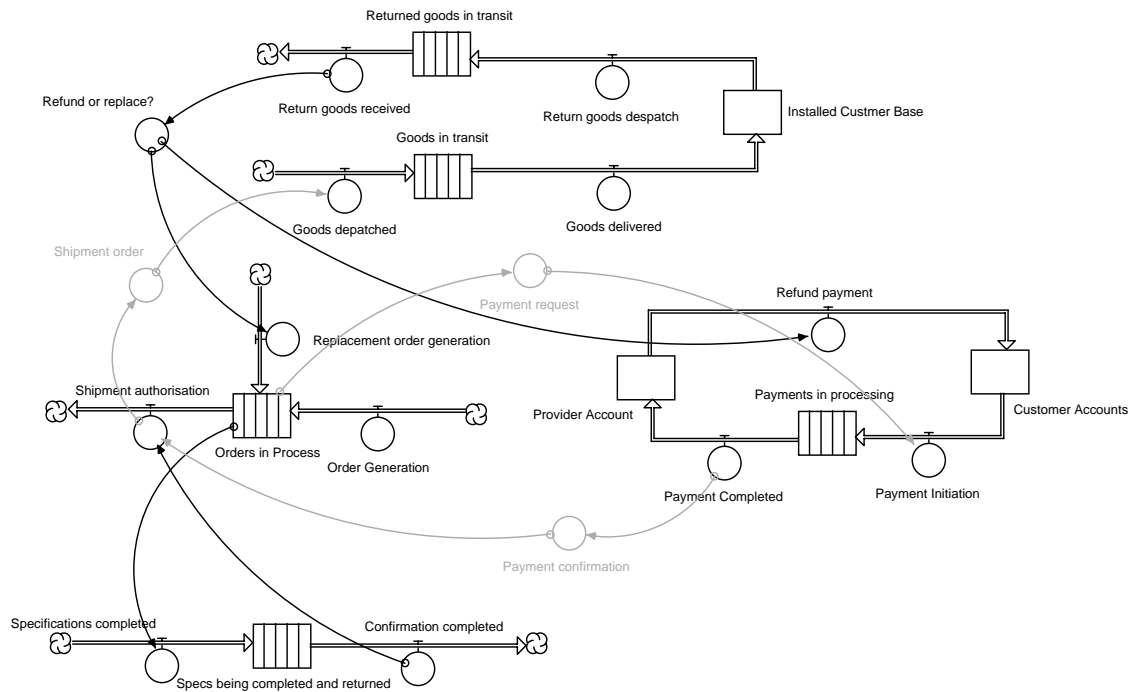


Figure 8: Fuller Direct to Customer model with specification confirmation and goods returns

For a fuller representation with two way flows, the model could incorporate further mechanisms to reflect a possible need for customers to be requested to provide a detailed specification, which might be the case for products such as Dell computers, though this might also be accomplished interactively for web orders. The model could also accommodate goods returns. The expanded model is shown in figure 8, where earlier inter-linkages are muted to grey to highlight new additions. This could be further expanded to model the detail of the actual business processes that a company would wish to adopt and implement, including the evaluation of alternatives and the creation of more complex multiple business model structures. The model could also link to further business processes not related to the original supply mechanisms; these might include, for example, maintenance/service and product guarantee or warranty procedures, customer satisfaction and/or product enhancement suggestion surveys, and marketing for up-grade and/or repeat sales generation, all of which would relate to the installed customer base.

#### 4.2 A Triple pair representation of the Full-Service-Provider model

A second of Weill and Vitale's atomic models is the Full Service (FS) Provider. This business model reflects the situation where access to a range products or services is provided through a primary provider who might not only supply its own products or services, but also promote and facilitate the purchase of related products and services from partner firms. Examples might include a direct to customer product supplier, which offers related insurance, training, accessories and so on. Weill and Vitale characterise this model graphically as Figure 9.

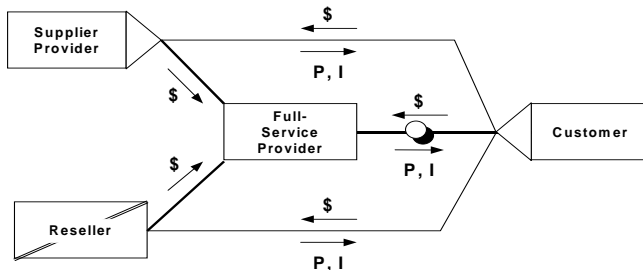


Figure 9: Weill and Vitale's Characterisation of their Full Service Provider Model

Again the primary relationship in this system is between the provider and the customer, but there are additional relationships involving flows of money, product/services, and/or information between the provider and its second-level supply network partners – which Weill and Vitale consider could be suppliers or complementors (resellers) – and between the second-level suppliers and customers.

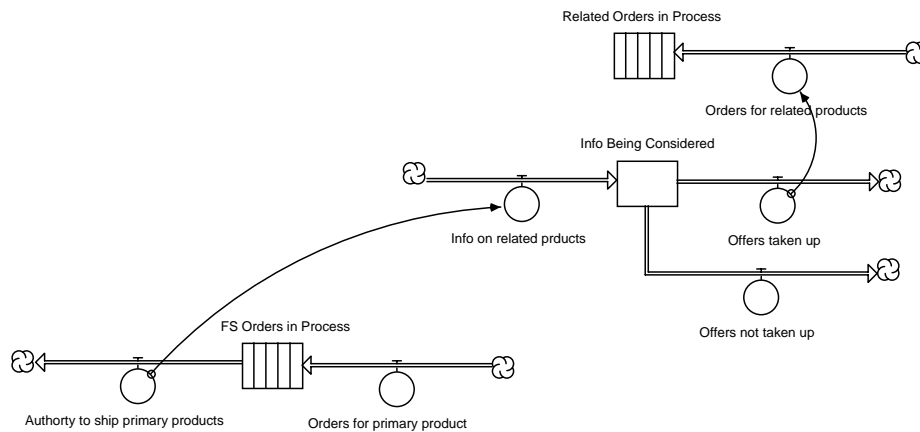


Figure 10: Extension to the Direct-to-Customer model to represent offer of secondary products/services from the Full-Service provider

As this model is essentially an extension of the direct-to-customer model, structures similar to those developed for that model will exist at the core of this model also. For this reason, those common structures will not be included in this model. This model involves the primary purchase with the full service provider being triggering additional supply fulfilment, money transactions, and information flow processes. Figure 10 suggests that this might typically involve the sending to the customer of information concerning services or products related to their purchase and provided by the FS provider's partner companies. In this version, it is assumed that the communication with the customer is triggered as the initial product despatch is authorised, but this could equally be triggered by the initial order or during the order processing. The main net impact of the trigger point would be timing, though if a despatch were not authorised and the initial sale lost, then with the latter versions the customer might still be contacted concerning the secondary products/services.

The trigger impacts upon the information flow pair. Initially information in the form of the offer for secondary products is communicated to the customer who may or may not accept the offers after consideration (for example there might be a 14-day window after initial sale for the purchase of a linked insurance from a partner firm). If an offer is accepted, then information in the form of an order or confirmation is returned to the partner.

Customers must also pay for the related secondary product, and so a money flow is also initiated transferring money from customer's funds to the secondary supplier's. Once the order process for the related secondary products is complete, then a delivery process for those products or services is also initiated and, after the delivery process delay, they are delivered to customers. At some point, typically when the order process is complete, a transfer of funds from the secondary supplier to the full cost provider, by way of commission or introduction fee, is also transacted. These further flows are shown in Figure 11. Similar structures would have to be completed for all secondary suppliers or other complementary resellers, along with reverse processes for returns, refunds and so on.

As before, these are only typical or possible structures, and other configurations are feasible. For example, orders for the secondary products could be returned to the full service provider with payment. Orders would be passed on to the secondary suppliers for order fulfilment, and payments would also be transferred to the secondary supplier, minus the commission element retained by the FS provider. The process model for this would be slightly different of course, while the net result is similar, and could be considered along with other alternatives. In this way entrepreneurs, process managers and system analysts can review the different alternatives, ensuring that the systems they are each envisaging are consistent and evaluating how well the different alternatives would achieve the business model objectives.

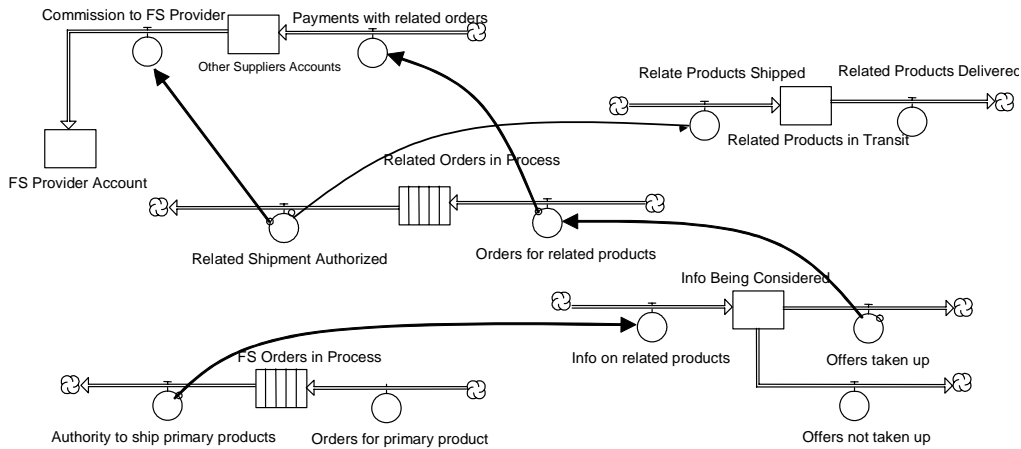


Figure 11: Product Delivery and fund transfer mechanisms added

## 5 CONCLUSION

Criticism of the business models for eBusiness have largely been centred around the fact that they tend to be passive snapshot characterisations of the various ways in which ICT can be exploited profitably in the creation of new businesses. As such the new eBusiness models may be modifications of existing business models but with the advantages of, for example 24/7 access by customers, or may reflect genuinely new and innovative ways of doing creating value. The further criticism is that they have not generally been evaluated in any formal way, in the “so what...?” sense. That is, they have not been

tested to see if they can produce deeper insights into the notion of an effective eBusiness or if they lead to the development of the more detail models or descriptions that would be necessary in the creation of an actual business. If the set of models serves as a form of taxonomy or is intended as a stimulus for further thinking, then this is not necessarily a problem. However, if the models are to be used to support the development of a shared vision for the creation of an actual business and as the basis for designing and implementing the necessary business processes and information infrastructures, then the models must be able to lead to the next phases in business strategy formulation and system operationalisation.

This paper attempts to rectify this by introducing triple pair flow model construct to represent the various business models for eBusiness to support the gaining of a greater insight into the complexity of eBusiness strategy implementation. This approach captures the casual relationships and rationalises the complexity of organisation's resources and its environment. The process maps the strategic vision of different eBusiness models onto a generic double-pair representation of the critical flows of information, products and/or services, and money that would occur in any electronically actuated business. In this way it provides a number of benefits to a team involved in the creation of such a business. Specifically, it:

- acts as a cognitive framework for surfacing the detail of an eBusiness vision, beyond a simple passive characterisation;
- it provides a transparent way for the entrepreneurial model to be visualised as the set of business processes that represent the management of the flows essential to the conduct of the business;
- it demonstrates how ICT systems must be configured to make the business work;
- by serving as a single representation of these three perspectives, it should enable models to be more easily shared, easier evaluations of a company's capability to design and deliver a working system for its own vision, and a more seamless move from strategic vision to detailed system design.

This is achieved by a particular use of system dynamics diagramming techniques that are established in the literature as valuable tools in facilitating the surfacing and sharing of mental models, and as a powerful catalyst in the development of consensus within groups. Using stock flow diagrams, typically used in system dynamics, dynamic simulation models of the triple-pair models could be converted into simulation models without further structural analysis by the quantification of all relationships. The simulators could then be used further to support strategy formulation and evaluation by playing out over time scenarios based on various eBusiness model options, and in the refinement of the actual business processes required once the business model is selected. Importantly though, this approach draws on the foundations of strategy formulation and can provide good theoretical basis for the formulation and implementation of eBusiness strategies that is often lacking in this area.

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