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Deconstructing business model frameworks using a reference model

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Deconstructing business model frameworks using a reference model

Susan C. Lambert

Abstract

Business models are referred to and used in a multitude of academic, professional and practitioner based studies. Many business model frameworks are present in the literature but it is difficult for business professionals and researchers to evaluate the frameworks and decide which one is best suited to their particular needs. This paper proposes a reference model that can be used to analyse and compare existing business model frameworks and provides a structure in selecting a business model framework for a specific purpose. The strengths and weaknesses of the different frameworks are explicated with a view to making them more accessible to researchers and managers.

Key terms

business model, reference model, level of analysis, unit of analysis, conceptual focus, primacy of concept

1. Introduction

The business model construct is used by researchers and by managers as a tool for understanding existing businesses and for exploring the potential of business initiatives. The business model literature harbours many business model ontologies and frameworks that have been developed for varied purposes, each having strengths and weaknesses and suitable for different tasks. Distinguishing between the many well conceived and carefully constructed frameworks is not a trivial task and needs to be approached in a structured manner. In this paper a structure is offered to assist in analysing and comparing business model frameworks and ontologies.

In the next section it is argued that there is a need for multiple business model frameworks because of the ambiguous nature of the business model concept itself. Next, a reference model that can synthesise the otherwise disconnected business model frameworks and ontologies is proposed and explicated. Seven business model frameworks and ontologies, chosen because of their well expounded theoretical underpinning, are then analysed using the

reference model. The paper concludes with an overview of the reference model and the findings of the analysis.

1.1 The Need for Multiple Business Model Frameworks

Business models are abstract, complex concepts, conceived to understand and communicate not only the ways of 'doing business' but the structures and strategies that underlie those ways of doing business. Since business models communicate information about an enterprise to users, the identity of the user and purpose that the business model is to serve should dictate the way the business model is represented. Existing business model research points to three groups of users; business managers, information systems professionals and external stakeholders.

Business managers and decision makers have a diverse range of needs in relation to business models. Managers need a model that promotes the understanding and communication of the business logic of the enterprise (Osterwalder, Pigneur & Tucci 2005), what Al-Debei and Avison refer to as the 'strategic-oriented knowledge capital' function of the business model (2010, p.372). The business model should support decision-making regarding business developments such as innovation and change management as well as investment, finance, and organisational strategy decision-making (Persson & Sterna 2000; Osterwalder, Pigneur & Tucci 2005). Such a business model must depict and align the value adding processes of the enterprise, the information technology infrastructure, human and physical resources, organisational structures, and strategies along with other business elements relevant to the enterprise (Al-Debei & Avison 2010).

Information systems developers require a detailed depiction of the business that facilitates systems requirements engineering, workflow and process goal definition (Eriksson & Penker 2000; Osterwalder, Pigneur & Tucci 2005) and bridges the gap between strategic goals and objectives, and technology innovations and artifacts (Al-Debei & Avison 2010). The business model serves as a high-level enterprise model from which process models can be developed (Terai et al. 2002). Enterprise models explain various business systems, structures, and relationships, map the complexities of the particular business system, and provide a common communication platform between stakeholders (Persson and Stirna 2000).

External users of the business model concept include business consultants, analysts (Osterwalder, Pigneur & Tucci 2005), who require the business model to assist them in understanding the business concept of the enterprise. The legal profession requires an understanding of business models to assess patenting requests and disputes. Researchers, consultants, and analysts may want to compare entities, classify entities according to their business model, and track changes in the business models of enterprises (Eriksson & Penker 2000; Gordijn & Akkermans 2001; Osterwalder, Pigneur & Tucci 2005). Researchers will then be able to develop theories of business models that can explain and predict business phenomena such as profitability, investment and financing.

As a preamble to comparing their ontologies, Gordijn, Osterwalder et al. (2005, p.8) identify eight different purposes of their respective business model ontologies.

> The purposes comprise improving communication, inter-company interoperability, intra-company interoperability, achieving reliability, enhance business model maintenance (i.e. management of business models), knowledge acquisition, provide a basis for scientific research on business models and provide the fundament for enabling support tools (e.g. for business model design and analysis).

The business model information required to build an information system is different to the business model information required to compare the business logic of multiple enterprises. The result is that many very different business model frameworks have emerged each intended to meet needs of divergent users.

In excess of twenty business model frameworks and ontologies have been published in the scholarly literature however only seven possess the necessary characteristics of theory building business model frameworks. Specifically, the selected frameworks are based on prior theory and they comprehensively analyse and articulate relationships between business model components. In addition, the selected frameworks are not industry specific and they have been used in empirical research suggesting they have utility for future research (Whetten 1989; Seppänen & Mäkinen 2005; Mäkinen & Seppänen 2007).

Of the seven frameworks, three reflect strong information science modelling influences (Gordijn & Akkermans 2001; Weill & Vitale 2001; Osterwalder, Pigneur & Tucci 2005) even though they have been adapted for management purposes. The other four conceptual frameworks strongly convey strategic management thinking (Hamel 2000; Hedman & Kalling 2003; Bouwman, Haarker & de Vos 2005; Morris, Schindehutte & Allen 2005).

The modelling approaches reflect the teleology taken to business modelling within each school of thought. The information systems models are highly detailed and precise utilising sophisticated and well established information systems modelling tools that provide the linkage to information systems requirements models. The strategic management models are far more abstract than the information systems spawned models, reflecting their intention to simplify the concept so that it is easily understood by managers. The management models differ in terms of their capacity to elucidate relationships between components and in terms of their levels of abstraction. Most of the information in the management oriented models is presented as semi-structured narrative.

Through an iterative process of comparison and critical analysis, it appears that four critical differentiae distinguish the business model frameworks from each other. The differentiae are the elements of the business model, the unit of analysis, level of analysis and conceptual focus, all of which constitute the dimensions of the reference model. In the following two sections the case is made for a business model reference model and each of the dimensions of the reference model is justified and explained.

1.2 The Need for a Reference Model

By virtue of the many different user groups and purposes for which the concept is required, the business model has become a relatively polymorphic concept, adjusting to meet the immediate circumstance. The business model concept has parallels to the organisation concept in terms of its complexity and dimensions as evidenced by the multitude of business model definitions and frameworks identified in the literature. The following statement in relation to the concept of the organisation is equally true of business models:

> We cannot see organizations with one "blow of the eye"...To grasp their wholeness requires a series of observations made... from different perspectives, and different segments. But such a set of observations is not enough; we also need a mental image, a concept or model through which these partial observations are fitted together. (Warriner 1984, p.34)

The mental image to which Warriner (1984) refers can be facilitated through the use of a reference model. A reference model enables information exchange and integration between heterogeneous sources, in this case business model frameworks, and promote a shared understanding (OGC 2003; ICOM/CIDOC 2009). An increased awareness of concepts for describing and comparing existing and future frameworks and an expanded consensus on the

elements and relationships between elements of business model frameworks are goals of the reference model (OASIS 2006).

> In software engineering reference models serve as a means of comparing different systems in a domain. A reference model provides a guide against which systems in the domain can be evaluated (Nada & Rine 2000, p.225).

Although the literature reveals that there is no widely accepted business model conceptualisation (Zott, Amit & Massa 2011), the alternative views reflected in the business model frameworks are not competing '...ultimate "truths" but rather are alternative cuts of a multifaceted reality' (Poole & Van de Ven 1989, p.563). The reference model is proposed with a view to engendering wide agreement on the business model concept and to highlight the differences and similarities between existing business model frameworks. The reference model provides a structure through which the existing business model frameworks can be described and analysed and embraces the differences between existing business model frameworks. The need for multiple views is recognised whilst providing the means by which the different views can be reconciled and synchronised. In short, a single business model representation is not proposed; what is proposed is a means of incorporating multiple views within a single hierarchical framework, or to use Warriner's (1984) term 'mental image'. The merit of all of the well conceived, theoretically constructed business model conceptualisations is recognised and, rather than pursuing a generic conceptualisation that can only condense and loose valuable insights into the business model concept, a means of accommodating them is proposed.

2. The Dimensions of the Reference Model

2.1 Elements of the Business Model

Business strategy, resource-based theory, strategic network theory, cooperative strategies and transaction based economics have guided the selection of business model components (Morris, Schindehutte & Allen 2005) resulting in a wide array of components being recognised in the literature. As evidenced in the literature, the existing business model research has produced a plethora of lists of components of business models. A number of scholars (Osterwalder 2004; Morris, Schindehutte & Allen 2005; Shafer, Smith & Linder 2005) have built on the research that has gone before them by synthesising the component lists and extracting components commonly found in the prior research. Al-Debei and Avison (2010) apply content analysis to the business model literature and determine four overarching business model elements, value proposition, value architecture, value network and value finance, that they label *V^4 BM Dimensions*.

An alternative to the approaches used to determine business model elements outlined in the previous paragraph, the enduring elements of business models can be deduced using the notion of primacy of concept. The result is a highly abstract, all inclusive set of basic business model elements.

To develop a coherent and internally consistent business model conceptualisation, the element that commands primacy must firstly be identified. The element that holds primacy is then used to identify the other elements that make up the problem domain.

> Every conceptual structure builds on a concept that has primacy. That is simply another way of saying some element must be given meaning before meaning can be attached to others (Gellein 1992 p.198).

> All coherent and cohesive sets of rigorously defined concepts, regardless of the field of knowledge to which they apply, attach primacy to certain concepts. Those are the concepts that are used to define other concepts. Those concepts provide unity and prevent the set of concepts from being internally inconsistent. Those concepts are said to have conceptual primacy (FASAC 2004, p.3).

In accounting, 'primacy of concept' is afforded to assets, which puts the focus of financial reporting on the economic wealth of the entity. All other elements are defined according to how they affect the assets (economic wealth) of the entity (Gellein 1992; Storey & Storey 1998; FASAC 2004; Bullen & Crook 2005). In mathematics, the assumption of the existence of zero is equivalent to assigning conceptual primacy to zero. Nothing else can be defined until zero is defined.

It will be argued here that the value proposition holds primacy over the other business model elements. The value proposition is synonymous with the terms value offering, value element, product, service, value cluster and customer value and these terms appear in almost all lists of business model components (Timmers 1998; Linder & Cantrell 2000; Gordijn, Akkermans & Vliet 2000b; Rayport & Jaworski 2001; Afuah & Tucci 2003; Morris, Schindehutte & Allen 2005; Shafer, Smith & Linder 2005; Tikkanen et al. 2005; Osterwalder & Pigneur 2009). Morris et al. (2005) located the value offering component in 11 of the 18 lists of components that they discovered in the literature and Al Debei and Avison (2010) conclude from their content analysis of the business model literature that all four dimensions of the business model are value oriented. The presence of the value proposition in most business model conceptualisations and lists of components, regardless of the level of analysis, unit of analysis or conceptual focus is testimony to its importance.

Assigning primacy to the value proposition is equivalent to placing the value proposition at the heart of the business model concept. Without the value proposition the entity would not exist or at least would have no reason to exist. The value proposition is the element of value that the enterprise offers customers. The value proposition can be a product, a service, information or a combination of all three and includes the means by which transactions take place; since this is inextricably linked to the product, service or information being offered and represents a form of value to the customer.

Defining the basic elements of the business model begins by defining the elements that holds primacy, the value proposition. The remaining elements are discovered by answering questions in relation to the value proposition. These questions are implicit in much of the business model literature that attempts to conceptualise the business model.

Table 1: Questions that Relate to the Value Proposition Elements

Questions Relating to the Value Proposition	Business Model Element
What is the value proposition?	Value proposition, product, service, information or combination
To whom is the value proposition offered?	Customer segment or type
What is received in return?	Value in return such as rent, commission, sales revenue, advertising space, future contracts
How is the value proposition offered?	Channel of value transmission
How is the value proposition created?	Value adding processes and related activities, resources, capabilities, strategies and organisation structure
What other entities contribute to creating and delivering the value proposition to the customer?	Financiers, suppliers, allies and regulatory bodies

Table 1 presents a set of questions which, when answered, identify, and define, the basic business model elements from which more specific components can be identified. The basic business model elements that provide a point of reference for all business model elements are:

Value Proposition: The object(s) of value offered to the customer. It can take the form of products, services, information or a combination of each. The channel through which it is offered can be an important part of the value proposition.

Customer: The entity (entities) targeted with the value proposition. It can be a group of consumers or other businesses. Where differences exist in terms of demand or servicing requirements, a new customer group needs to be recognised.

Value in Return: This is what the entity receives in return for the value proposition. It can be money (e.g. in the form of rent, sales revenue, commission) or other non-monetary elements of value (e.g. advertising space or future contracts). The Value in Return can be realised at different points of time.

Channel: The channel describes how the value exchanges take place. It transmits one, or more, of the value propositions and the value in return. More than one channel can be used to effect a transaction.

Value Adding Process: This element ties together the resources, activities, and capabilities of the entity to create the value proposition and/or the channel. It can be a manufacturing process, a retailing operation, or a service process. It describes how the value proposition is provided. At the most detailed level the value adding processes can be defined precisely (a process model can be constructed). However, at the external user and management levels, all that will be depicted, are the inputs and outputs of the value adding processes.

Other Entity: Other entities represent third parties that assist the enterprise to create or provide the value proposition to the customer, have some influence on how the enterprise creates or provides the value proposition, or they are involved with determining or providing the value in return. Common examples of other entities include suppliers of inventories, machinery and consumables and regulatory bodies that have some form of control over the operations of the enterprise. Other allies assist the entity in providing the value proposition to the customer, by providing the channel or becoming an outsourcing partner for various parts of the value adding process (Weill & Vitale 2001).

Figure 1 displays the basic business model elements and their relationship to the value proposition. The value proposition is offered to a customer, via a transmission channel, for some sort of value in return. Other entities might assist in delivering the value proposition to the customer or even creating the value proposition. The other entities include suppliers, regulating bodies, Internet service providers, commissioned agents. The value proposition is created via one or a number of value adding processes. Each of the elements can be specific or wide reaching. For example the value adding process might be construed as a manufacturing paradigm such as mass production or mass customisation, or it can include enterprise-wide operational and strategy factors such as information management, innovation leadership and research and development. The basic elements are adequate for describing a business concept and for comparing business models. However, to understand the requirements of the business, or to evaluate the potential of new business initiatives more needs to be known about the Value Adding Process element. The Value Adding Process element consists of the following elements:

Resources: Include information technology hardware and software, intellectual property, financial, physical and human resources and may be provided by suppliers or generated internally.

Activities: Are actions undertaken to convert resources into Value Propositions, or to operationalise a channel of transmission using the capabilities of the entity and its allies.

Capabilities: Are the expertise required by the entity to perform the activities. They are provided by resources (both human and other). Capabilities can be provided by an ally.

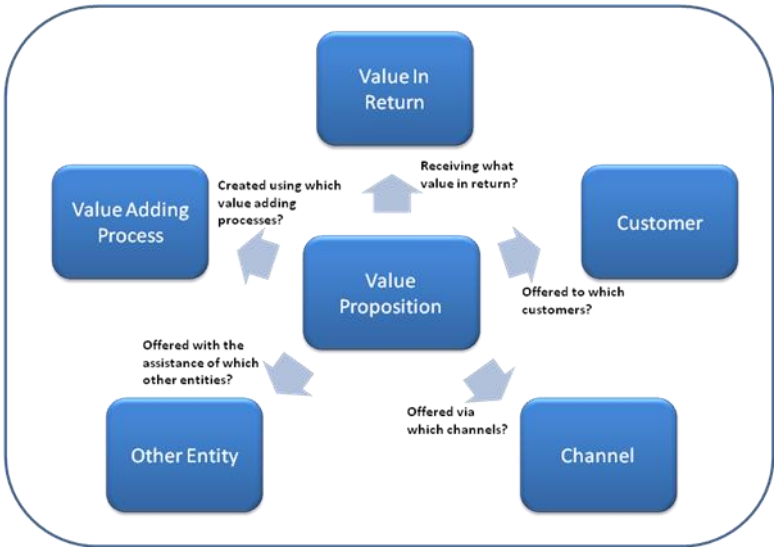

Figure 1: Basic Business Model Elements

The basic business model elements subsume all business model elements currently used in business model frameworks even though they take on different names, are described differently and at different levels of detail depending on the level of analysis, unit of analysis and conceptual focus that the framework adopts. The set of basic business model elements represent the most abstract depiction of the business model which can be made more detailed by decomposing each element into its sub-elements.

2.2 Unit of Analysis

The unit of analysis dictates the scope of the concept in question; it can be the whole system or phenomenon, part of it or a sub-part (Mäkinen & Seppänen 2007). Choice of the unit of analysis has multiple implications for the research that follows (Singer 1961). The scope of business model conceptualisations includes the enterprise (internal view) and external or value network objects.

The broadest unit of analysis is the whole value network including the enterprise of interest and all other entities within the value network, i.e. suppliers, allies and customers. Alternatively the unit of analysis can be restricted to the enterprise of interest thereby excluding interactions with other entities and focusing only on internal operations and management, infrastructure and financial aspects of the enterprise. The unit of analysis can be restricted even further by including only parts of the internal or external sectors.

Business model definitions that embody a narrow scope take either an inward looking view that focus on the internal aspects of the enterprise such as resources, processes and strategies,

or an outward looking view that focuses on the relationships that the enterprise has with others in their value network.

2.3 Level of Analysis

The level of analysis refers to the level of abstraction at which the concept is defined. The more highly abstract the concept, the more versatile and generalisable it is, however there is a risk of it being so broad that it becomes meaningless. At the other extreme, a concept that is defined at a very low level of abstraction becomes context-dependent and therefore loses its potential for universality (Chimezie & Osigweh 1989). Highly abstract definitions and frameworks make no attempt to specify the attributes that make up the concept and those that are very granular (at a low level of abstraction) specify attributes in detail.

Level of analysis is important not only for describing business models but also for distinguishing between business models. Whether or not two business models are judged to be the same or different depends on the level of abstraction used in the analysis of the business models. At a very low level of abstraction where minute details are taken into account, no two business models would be judged the same. At the other extreme, at highly abstract levels of analysis all business models would be deemed the same (Murmann & Frenken 2006).

A hierarchically structured business model framework shows nested relationships between the different levels of analysis (Murmann & Frenken 2006). The inclusive hierarchy systematically organises parts of a system or complex concept into levels that are related to each other via class inclusion (Coley, Medin & Atran 1997). This means that broad concepts are defined at the top of the hierarchy of classes and are refined into more specialised concepts at lower levels of hierarchy (Taylor 1981). Such hierarchically structured frameworks facilitate varying levels of abstraction whilst maintaining data integrity. The lowest level of the hierarchy offers rich descriptions of the object and relationships between objects, and the highest level reveals the least amount of detail and equates to the basic business model elements.

For example, the value adding process can be decomposed into individual activities, then each activity further decomposed into capabilities and resources. Likewise, the value in return component can be unpacked to reveal the pricing model details. The ability to choose the level of analysis has significant implications for the versatility of the business model framework.

2.4 Conceptual Focus

The conceptual focus refers to the lens through which the researcher views the business and determines the components that are eventually modelled. The researcher perspective dictates the conceptual focus. In modelling a physical object such as a motor vehicle, the conceptual focus might be the performance of the vehicle, or it might be the physical appearance of the vehicle. Each model depicts different aspects of the vehicle, however they are both models of the vehicle. The same can be said of business model conceptualisations. The conceptual focus of a business model can be value exchanges, activities or transactions. The conceptual focus can be acute or it can be multi-facetted. An acute conceptual focus is one which focuses on a single, specific aspect of the object or concept. For instance the e^3-value™ ontology (Gordijn & Akkermans 2001; Gordijn 2002) has an acute conceptual focus being the value exchanges. Conceptualisations that have multiple foci (that model more than one aspect of the object) are more versatile than those with an acute focus because they provide more information and

therefore have the potential to serve more needs. The BMO (Osterwalder, Pigneur & Tucci 2005; Osterwalder & Pigneur 2009) and MSA (Morris, Schindehutte & Allen 2005) have multiple foci.

Figure 2 is a depiction of the basic business model elements showing alternative units of analysis. The pink shaded area includes only the internal elements of the business model, the value propositions and the value adding process. The green shaded area includes the value proposition, the customer aspects and the value that the entity receives in return for the value proposition. The grey shaded area is concerned not with the value in return or the value adding process but with how the value proposition is offered to the customer which includes the value proposition, the channel through which the value is offered and other entities that might be involved with offering the value proposition to the customer. The overlapping areas of Figure 2 show that all of the units of analysis include the value proposition and two of the units of analysis (the green and grey areas) include the customer aspects.

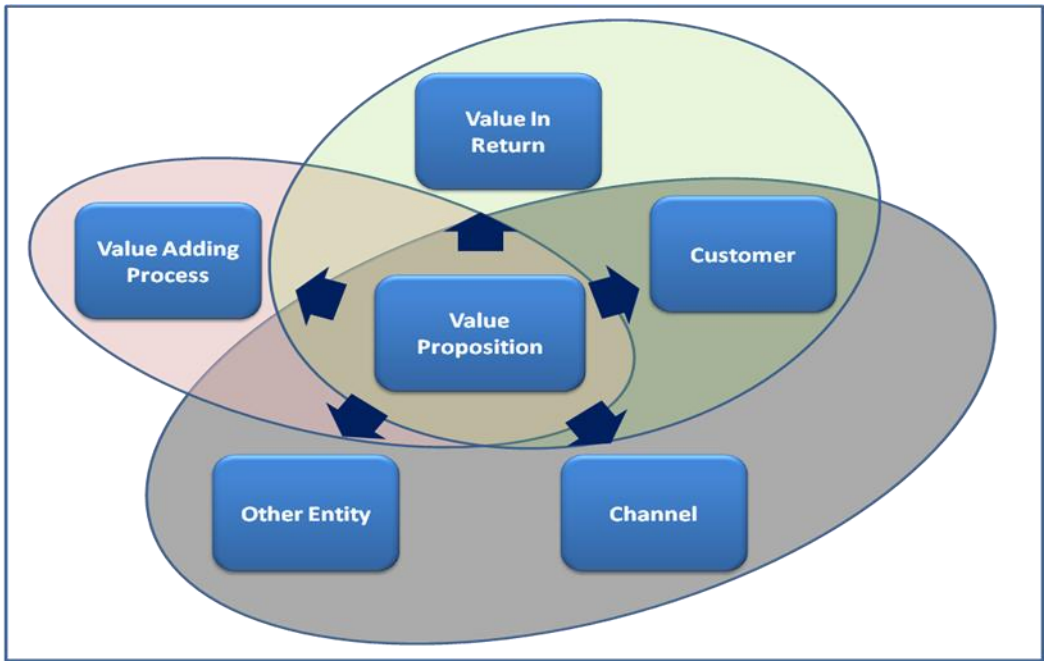

Figure 2: Examples of Units of Analysis

2.5 Relationships between the Dimensions of the Reference Model and Business Model Elements

A factor that distinguishes a framework from a simple list of components is the statement of relationships between components (Whetten 1989). This is an aspect of business model conceptualisations that remains underdeveloped and yet is recognised as an important research issue (Zott, Amit & Massa 2011). The Reference Model implies both horizontal and vertical relationships between the business model elements. The horizontal relationships between the value proposition and the other five elements of the basic business model are inherent in the method of identification of business model elements explained in Table 1 and illustrated in Figure 1. Individual business model frameworks will specify the horizontal relationships between all components according to the particular unit of analysis, level of analysis, conceptual focus and context in which the framework is being used.

The vertical relationships between the basic business model elements and the individual framework components are hierarchical and depend on the levels of analysis inherent in the business model framework. A highly abstract framework will resemble more closely the basic business model elements than a granular, less abstract framework. The framework that adopts a low level of analysis will include many more business model elements that are sub-elements of the basic elements and will describe those elements in more detail.

To illustrate the level of analysis, consider the grey shaded area. At a high level of abstraction, the business model conceptualisation may depict no more than is included in the shaded area and add narrative to describe the components. If a more detailed, less abstract depiction is required, the customers, value propositions, and channels can be divided into different types and then described individually, applying the lens or perspective relevant to the objective. For instance, if the objective is to inform information systems design, data sharing and information access detail will need to be modelled. If the framework is to inform marketing planning, demographic details, advertising strategy and external sales agent detail will need to be modelled.

By applying different conceptual foci to the business model different depictions of the same business model can be extracted. A resource view can be emphasized, activities can be stressed, financial significance can be elucidated or evidence of strategy execution can be expounded. All of these lenses can be applied to the one set of business model elements, simply using different attributes with which to describe those elements.

3. Using the Reference Model to Analyse Existing Business Model Frameworks

In this section the seven business model frameworks referred to earlier in the paper as having theory building properties are analysed and compared according to the four dimensions of the Reference Model. The components of each of the seven business model frameworks are mapped to the basic business model elements in Table 2 whilst the unit of analysis, level of analysis and conceptual focus of the seven business model frameworks are detailed in Table 3.

Table 2: Components of Existing Business Model Frameworks Mapped to the Basic Business Model Elements

Model Name	Value Proposition	Value in Return	Customer	Channel	Other Entities	Value Adding Processes
Business Model Framework (BMF) Hamel (2000)			Customer Interface		Value Network	Core Strategy Strategic Resources
Atomic e-business Model Weill & Vitale (2001)	Value Proposition Flows of Value	Revenue source Flows of Value	Customers	Channels	Entity of Interest Suppliers Allies	Strategic Objectives Success Factors Core Competencies IT Infrastructure
e3-value™ ontology Gordijn et al. (2000; 2001; 2002)	Value Offering Value Interface Value Port	Profitability Calculation	Actor		Actor	Value Activity Value Exchange Value Object

Model Name	Value Proposition	Value in Return	Customer	Channel	Other Entities	Value Adding Processes
Generic Business Model (GBM) Hedman & Kalling (2003)	Offering		Customer		Competitors Supply & Factor of Production Inputs	Activities & Organisation Resources Longitudinal Process Component
Business Model Ontology (BMO) Osterwalder et al. (2009)	Value Proposition	Revenue Streams Cost Structures	Customer Segments Customer Relations	Distribution Channel	Key Partnerships	Key Resources Key Activities
MSA Morris et al. (2005)	Factors Related to the Offering	Economic Factors	Market Factors Competitive Strategy Factors		Internal Capability Factors Competitive Strategy Factors	Internal Capability Factors Personal Investor Factors Competitive Strategy Factors
STOF Business Model Framework Bouwman et al. (2005)	Service Domain	Finance Domain	Service Domain		Organisation Domain	

3.1 Basic Business Model Elements and Components of Existing Business Model Frameworks

All of the components in existing models are able to be identified with one of the basic business model components. The MSA (Morris, Schindehutte & Allen 2005) and e^3-value™ (Gordijn & Akkermans 2001) ontology have components that associate with more than one basic business model element however their sub-components do fit within a single basic business model element. The e^3-value™ ontology (Gordijn & Akkermans 2001) includes a component called *Actor* that includes customers, suppliers and other entities that partake in the transactions. The MSA (Morris, Schindehutte & Allen 2005) has two components that map onto multiple basic business model components. The component *Internal Capabilities* includes networking and supply chain management that relate to the *Other Entities* basic business model element and it includes production and operating systems and other sub-components that relate to the *Value Adding Processes* basic business model element. Likewise the *Competitive Strategy Factors* have sub-components that relate to the *Other Entities*, *Value Adding Processes* and the *Customer* basic business model elements.

The BMO (Osterwalder & Pigneur 2009) and the Atomic e-Business Model (Weill & Vitale 2001) components map very closely to the basic business model elements, each having one or more components that match the 6 basic business model elements. Weill and Vitale (2001) refer to the *Value Adding Process* component as flowing from the Atomic e-Business Model so it could be argued that these components are separate from the Atomic e-Business Model. The *Value Adding Process* basic business model element represents the means of creating the value proposition and consists of activities, resources and capabilities however it also includes enterprise-wide elements that can extend beyond the creation of a single value proposition. Enterprise wide elements include organisational issues and strategy factors, some of which introduce a dynamic aspect to the business model (Hedman & Kalling 2003; Morris,

Schindehutte & Allen 2005). The *Value Adding Process* basic business model element is represented by the most diverse range of components in other business model frameworks.

3.2 Level of Analysis of Existing Business Model Frameworks

Level of analysis is a relative concept therefore the business model frameworks need to be compared to each other to determine their level of analysis.

The seven business model frameworks under review permit varying degrees of abstraction in that elements are, in most cases, defined through rich narrative. The problem with the descriptions taking the form of unstructured narrative is that it makes comparison of one business model to another difficult. The level of analysis of the frameworks can be judged according to the number of elements and sub-elements that are described in the model and the detail with which they are described. Table 3 provides this information. For example customers can be described at a high level of analysis by designating the customer segment name and description as required in the BMO (Osterwalder 2004). Customers can also be described at a low level of analysis as in the MSA (Morris, Schindehutte & Allen 2005) by requiring six specific descriptive pieces of data about customers. These descriptors are stated as the following variables:

- type of organisation, B-to-B / B-to-C / both
- local/regional/national/international
- where customer is in the value chain, upstream supplier/downstream supplier/ government/institutional/wholesaler/retailer/service provider/final consumer
- broad or general market/multiple segment/ niche market
- transactional/relational.

All frameworks except the MSA (Morris, Schindehutte & Allen 2005) portray the business model at a high level of analysis through a schematic representation that also depicts, in broad terms, the relationships between the elements of the model. The MSA (Morris, Schindehutte & Allen 2005) does not provide a schematic whereas the e^3-value™ ontology (Gordijn & Akkermans 2001) relies heavily on diagrammatic representations of the business model at multiple levels of analysis and from multiple perspectives. In all frameworks, apart from the MSA that treats the descriptors as variables, data is collected about each of the components of the framework in the form of rich narrative.

None of the frameworks are structured hierarchically and are therefore limited as to the level of complexity they can handle. The ability to hide detail through a hierarchical structure and provide it only when required is a recognised way of dealing with complexity (Murmann & Frenken 2006). Mäkinen and Seppänen (2007) also recognise the importance of a hierarchical structure of business models in terms of taxonomical requirements. However they conclude that as long as the model describes the relationship between two or more levels of sub-systems, it is hierarchical.

3.3 Unit of Analysis used in Existing Business Model Frameworks

The unit of analysis for the business model concept has two aspects. The first relates to whether the business model is bounded by the enterprise or by the value network (also referred to as market space, value constellation or value domain). The second aspect relates to the components of the enterprise or value network included in the business model; the whole enterprise or just part of it; the whole value domain or just part of it. It is not unusual for the

enterprise bounded business model to exclude the value creating components and to include only the value exchange components.

The business model frameworks vary in terms of their unit of analysis. At one extreme are the e^3-value™ ontology (Gordijn & Akkermans 2001) and the STOF model (Bouwman, Haaker & Vos 2008) that aim to identify and measure value and evaluate potential e-business initiatives. These frameworks use the whole value network as the unit of analysis and model value for all actors in the value network. At the other end of the spectrum the MSA (Morris, Schindehutte & Allen 2005) and the GBM (Hedman & Kalling 2003) have the enterprise as the unit of analysis, focusing on components internal to the enterprise and paying little attention to other parties in the value network. The BMO (Osterwalder 2004) and BMF (Hamel 2000) have more balanced units of analysis, including both internal and external components.

None of the models completely ignore internal components or components external to the organisation but, as can be seen from Table 3, they all vary in terms of their emphasis and in terms of the specific components.

3.4 Conceptual Focus of Existing Business Model Frameworks

What the researcher sees when visualising a business model depends as much on the frame of reference of the researcher as it does on the purpose of the model.

The conceptual focus of the e^3-value™ ontology (Gordijn & Akkermans 2001) and the STOF model (Bouwman, Haaker & Vos 2008) is value exchanges, and in a similar vein, Weill and Vitale (2001) focus on transactions and relationships between actors. Strategy is the focus of the GBM (Hedman & Kalling 2003) and BMF (Hamel 2000). Recognising the multifaceted nature of business models the BMO (Osterwalder 2004) and the MSA (Morris, Schindehutte & Allen 2005) adopt a multiple focus for their conceptualisations. The multiple focus makes the BMO (Osterwalder 2004) and the MSA (Morris, Schindehutte & Allen 2005) relatively more versatile than the other frameworks. In contrast the specific focus of the other frameworks make them user specific and purpose specific. The e^3-value™ ontology (Gordijn & Akkermans 2001), the STOF model (Bouwman, Haaker & Vos 2008) and atomic e-business models (Weill & Vitale 2001) are designed specifically for analysing and evaluating e-business initiatives whereas the GBM (Hedman & Kalling 2003) and BMF (Hamel 2000) are specific, not in terms of the type of business initiative but in terms of the purpose; to identify business concept innovation and manage the business model.

3.5 Summary of the Analysis of Existing Business Model Frameworks with Respect to the Reference Model

A comparison of business model frameworks reveals that all frameworks include both internal and external business model components however they vary in their emphasis. Three conceptual foci are present in frameworks; value exchange, strategy and a multi-focus. The most subjective dimension to analyse and compare is the level of analysis since all frameworks permit narrative analysis of the model at any level. The MSA (Morris, Schindehutte & Allen 2005), the BMO (Osterwalder 2004) and the e^3-value™ ontology (Gordijn & Akkermans 2001) provide a structure for granular analysis of the business model than the other frameworks.

Table 3: Structural Attributes of Existing Business Model Frameworks

Model	Unit of Analysis (Scope)		Level of Analysis (Abstraction)		Conceptual Focus
	Internal	External	Low	High	
Business Model Framework (BMF) Hamel (2000)	Equal weighting to internal and external factors • Core Strategy • Strategic Resources • Configuration • Company Boundaries	• Value Network Partners • Customer Interface • Value Network • Customer Benefits	Narrative • 16 sub-elements • 3 bridges	Schematic • 4 elements • 3 bridges	Strategy and the links between strategic aspects of the business.
Atomic e-business Model Weill & Vitale (2001)	• Strategic Objectives • Value Proposition • Revenue source • Success factors • Core competencies • IT infrastructure	• Entity of Interest • Channels • Customers • Suppliers • Allies • Flows of Value	Narrative • external factors • internal factors	Schematic • 6 external factors	The relationships and transactions between the enterprise and the other network actors (suppliers, customers and allies).
e3-value™ ontology Gordijn et al. (2000; 2001; 2002)	• Value Object • Profitability Calculation	• Value Interface • Value Port • Actor • Value Activity • Value Exchange • Value Object	Multiple schematics • 8 main components and the relationships between components	Multiple Schematics Using combinations of components	Value exchanges and economic feasibility of the initiative.
Generic Business Model (GBM) Hedman & Kalling (2003)	Emphasis on internal aspects of the business • Offering • Activities & organisation • Resources • Longitudinal process component	• Customers • Competitors • Supply of factor & production inputs	Narrative • 7 factors	Schematic • 7 factors	Business strategy aiming to link entity resources, activities and product offerings to market related factors.
Business Model Ontology (BMO) Osterwalder et al. (2009)	Emphasis is on the company itself. • Value Propositions • Channels • Key Activities • Cost Structure	• Revenue Streams • Key Resources • Customer Segments • Customer Relations • Key Partnerships	Structured narrative and numerical data • 16 sub-elements	Schematic • 9 building blocks	Multiple foci
MSA Morris et al. (2005)	Economic, operational and strategic levels include internal aspects.	Strategic level includes external aspects.	Structured narrative • 32 variables	No schematic • 6 components	Multiple foci Decision variables
STOF Business Model Framework Bouwman et al. (2005)	Parts of • Organisational Domain • Financial Domain	Service Domain • Technology Architecture • Organisational Domain • Financial Domain	Narrative • 4 domains and multiple elements	Schematic • 4 domains	Creating and capturing value from technological innovation

4. Conclusion

It was established earlier in this paper that there is a need for multiple business model frameworks because of the various purposes for which the business model is used. It was also established that there is a need for a mechanism that integrates or at least positions the diverse business model frameworks relative to each other. The reference model that includes the set

of basic business model elements, recognises the various units of analysis, levels of analysis and the conceptual focus, provides such a mechanism. Validation of the reference model was achieved through an analysis and comparison of existing business model frameworks. The analysis of existing business model frameworks might assist practitioners and academics to select the business model framework that best suits their specific purpose.

The reference model has the potential to guide future business model research in several ways. An immediate need exists to develop a hierarchical business model framework that uses the basic business model elements as the most abstract (top) level of the hierarchy. Such a hierarchically structured business model framework will permit users to view the business model from multiple levels of analysis, applying varied units of analysis. Opportunities present to explore the application of potential conceptual lenses such as social and environmental sustainability to the business model. Managers and other stakeholders will be able to view the business model from a multitude of perspectives without changing the modeling framework.

It has been recognised for some time now that the business model has value for describing existing business concepts, for translating strategy into process and for matching technology to strategy (Al-Debei & Avison 2010; Casadesus-Masanell & Ricart 2010; Zott, Amit & Massa 2011). The dimensions of the reference model highlight and separate the choices that are implicit in the business model frameworks making them freely accessible for future research.

5. References

Afuah, A & Tucci, C 2003, *Internet Business Models and Strategies*, 2 edn, McGraw-Hill, Boston.

Al-Debei, MM & Avison, D 2010, 'Developing a unified framework of the business model concept', *European Journal of Information Systems*, vol. 19, no. 3, pp. 359-376.

Bouwman, H, Haaker, T & Vos, HD 2008, *Mobile Service Innovation and Business Models*, Springer, Berlin.

Bouwman, H, Haarker, T & de Vos, H 2005, *Designing Business Models: a practical and holistic approach*, Telematica Institute, Enschede.

Bullen, H & Crook, K 2005, *Revisiting the Concepts: A New Conceptual Framework Project*, FASB/IASB.

Casadesus-Masanell, R & Ricart, JE 2010, 'From Strategy to Business Models and onto Tactics', *Long Range Planning*, vol. 43, no. 2-3, pp. 195-215.

Chimezie, AB & Osigweh, YG 1989, 'Concept Fallibility in Organizational Science', *Academy of Management Review*, vol. 14, no. 4, pp. 579-594.

Coley, JD, Medin, DL & Atran, S 1997, 'Does rank have its privilege? Inductive inferences within folkbiological taxonomies', *Cognition*, vol. 64, no. 1, pp. 73-112.

Eriksson, H & Penker, M 2000, *Business Modeling with UML - Business Patterns at Work*, John-Wiley & Sons, New York.

FASAC 2004, *Revisiting the FASB's Conceptual Framework, Attachment D*, Financial Accounting Standards Advisory Council.

Gellein, O 1992, *Primacy: Assets or Income?*, JAI Press Inc, Greenwich, Connecticut.

Gordijn, J 2002, 'Value-based requirements Engineering: Exploring innovative e-Commerce Ideas', Dutch Graduate School for information and Knowledge Systems, PhD thesis, Vrije University.

Gordijn, J & Akkermans, H 2001, 'Designing and evaluating E-business models', *IEEE Intelligent Systems,* vol. 16, no. 4, Jul/Aug 2001, p. 11.

Gordijn, J, Akkermans, H & Vliet, Hv 2000b, 'What's in an electronic business model?', paper presented at the 12th International Conference on Knowledge Engineering and Knowledge Management, Juan-les-Pins France.

Gordijn, J, Osterwalder, A & Pigneur, Y 2005, 'Comparing two Business Model Ontologies for Designing e-Business Models and Value Constellations', paper presented at the 18th Bled eConference, Bled Slovenia, June 6-8 2005.

Hamel, G 2000, *Leading the Revolution*, Harvard Business School Press, Boston.

Hedman, J & Kalling, T 2003, 'The business model concept: theoretical underpinnings and empirical illustrations', *European Journal of Information Systems,* vol. 12, pp. 49-59.

ICOM/CIDOC 2009, *Definition of the CIDOC Conceptual Reference Model*.

Linder, JC & Cantrell, S 2000, *Changing business models: surveying the landscape*, Accenture Institute for Strategic Change.

Mäkinen, S & Seppänen, M 2007, 'Assessing business model concepts with taxonomical research criteria', *Management Research News,* vol. 30, no. 10, p. 735.

Morris, M, Schindehutte, M & Allen, J 2005, 'The entrepreneur's business model: toward a unified perspective', *Journal of Business Research,* vol. 58, no. 6, Jun 2005, p. 726.

Murmann, JP & Frenken, K 2006, 'Toward a systematic framework for research on dominant designs, technological innovations, and industrial change', *Research Policy,* vol. 35, pp. 925-952.

Nada, N & Rine, DC 2000, 'Three Empirical Evaluations of a Software Reuse Reference Model', *Annals of Software Engineering,* vol. 10, pp. 225-259.

OASIS 2006, *Reference Model for Service Oriented Architecture 1.0 Committee Specification 1*.

OGC 2003, *OGC Reference Model*.

Osterwalder, A 2004, 'The Business Model Ontology: A Proposition in a Design Science Approach', PhD thesis, University of Lausanne.

Osterwalder, A & Pigneur, Y 2009, *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers*, Self published,

Osterwalder, A, Pigneur, Y & Tucci, C 2005, 'Clarifying Business Models: Origins, Present and Future of the Concept', *CAIS,* vol. 15, May 2005.

Persson, A & Sterna, J 2000, 'An explorative study into the influence of business goals on the practical use of enterprise modelling methods and tools'.

Poole, M & Van de Ven, AH 1989, 'Using Paradox to Build Management and Organization Theories', *Academy of Managment Review,* vol. 14, no. 4, pp. 562-578.

Rayport, J & Jaworski, B 2001, *e-Commerce*, McGraw-Hill Irwin MarketspaceU,

Boston,MA.

Seppänen, M & Mäkinen, S 2005, *Business model concepts: a review with case illustration*, IEEE Xplore, pp. 376-380.

Shafer, S, Smith, H & Linder, J 2005, 'The power of business models', *Business Horizons*, vol. 48, no. 3, May/Jun 2005, p. 199.

Singer, JD 1961, 'The Level-of-Analysis Problem in International Relations', *World Politics*, vol. 14, no. 1, pp. 77-92.

Storey, RK & Storey, S 1998, *FASB Special Report: The Framework of Financial Accounting Concepts and Standards*, Financial Accounting Standards Board, Norwalk, Connecticut.

Taylor, D 1981, *Object Technology: A Manager's Guide.*, Addison-Wesley Publishing Company, Reading, Massachusetts:.

Terai, K, Sawai, M, Sugiura, N, Izumi, N & Yamaguchi, T 2002, 'Business process semi-automation based on business model management', *International Journal of Intelligent Systems in Accounting, Finance and Management*, vol. 11, no. 4, Oct/Dec 2002, p. 215.

Tikkanen, H, Lamberg, J-A, Parvinen, P & Kallunki, J-P 2005, 'Managerial cognition, action and the business model of the firm', *Management Decision*, vol. 43, no. 5/6, p. 789.

Timmers, P 1998, 'Business Models for Electronic Markets', *Electronic Markets*, vol. 8, no. 2, pp. 3-8.

Warriner, CK 1984, *Organizations and Their Environments: Essays in the Sociology of Organizations*, JAI Press, London.

Weill, P & Vitale, M 2001, *Place to Space*, Harvard Business School Press, Boston.

Whetten, DA 1989, 'What Constitutes a Contribution to Theory?', *Academy of Management Review*, vol. 14, no. 4, pp. 490-495.

Zott, C, Amit, R & Massa, L 2011, 'The Business Model: Recent Developments and Future Research', *Journal of Management* vol. 37, no. 4, pp. 1019-1042.