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Business Model Ontology (BMO): An Examination, Analysis, and Evaluation

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Abstract

Defining business model constitutes a major challenge. This is primarily because there are many different aspects to a business, hence when we talk of business models; it means different things to different people. Difference lies in the very concept of what constitutes a business (key aspects) and how such a concept can be represented using a common notation. One solution to the problem is to use ontology to communicate. Ontologies are agreed upon frameworks for representing concepts in any domain area. Hence, ontologies are used to represent knowledge, processes, business motivations, business strategies,enterprise structure, and more including business models. The Business Model Ontology (BMO) is one such ontology. Designed and developed by Alexander Osterwalder, it is aimed specifically at representing, understanding, communicating and analyzing business models.

This paper is an evaluation of the Business Model Ontology (BMO).The paper consists of two parts. In the first part the researchers describe the four pillars, the nine elements and their sub-elements comprising the ontology. In the second part the ontology is reviewed and evaluated using nine criteria. The fundamental aim is to examine the ontology capabilities – its strength and weaknesses.

Keyword: Ontology Definition, Business Model Ontology, BMO Evaluation, Ontologies, BMO Analysis

Introduction

Defining business model constitutes a major challenge. This is primarily because there are different aspects to a business, hence when we talk of business models. It means different things to different people. Difference lies in the very concept of what constitutes a business (key aspects) and how such a concept can be represented using a common notation. One solution to the problem is to use ontology to communicate. Ontologies are agreed upon frameworks for representing concepts in any domain area. Hence, ontologies are used to represent knowledge, processes, business motivations, business strategies, enterprise structure and more including business models. The Business Model Ontology (BMO) is one such ontology. It is aimed specifically at representing, understanding, communicating, and analysing business models.

Business Model Ontology (BMO) Overview

The Business Model Ontology (BMO) was developed by Alexander Osterwalder. It is a business ontology developed specifically to represent business models. It is focused on modeling a single enterprise. The BMO provides one of the most comprehensive representation of a business. It "describes the value a company offers (what?) to one or several segments of customers (who?) and the architecture of the firm and its network of partners for creating, marketing and delivering this value

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and relationship capital (how?), in order to generate profitable and sustainable revenue streams (how much?)." (Osterwalder, 2004)

The BMO consists of four major pillars.

- Product
- Infrastructure Management
- Customer Interface and
- Financial Aspects

The four pillars are made of nine building blocks. This is depicted in Table 1.

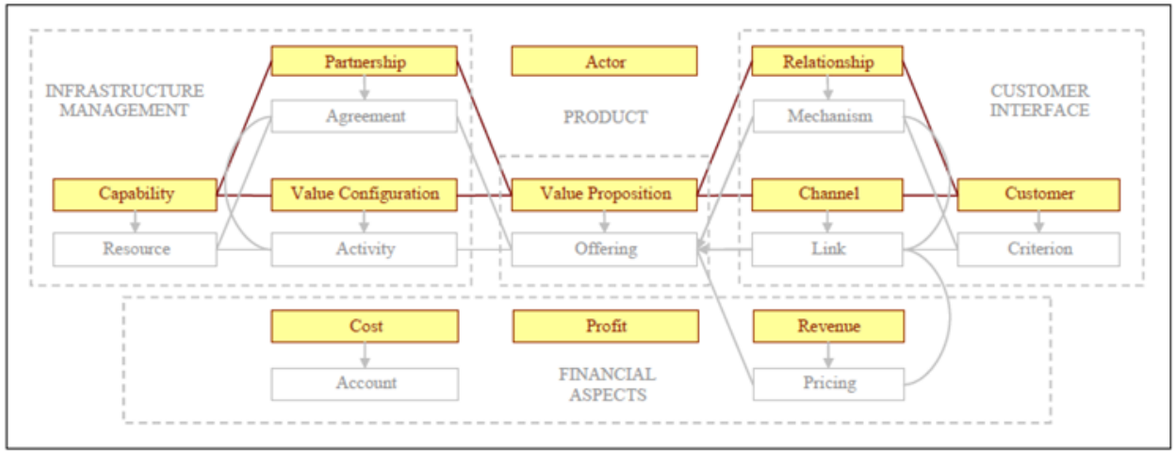
The nine building blocks or elements are interrelated. Together, they can model any business. The nine building blocks are further divided into sub elements. Fig.1 depicts the four pillars, the nine building blocks, and their sub-elements.

Table 1: Four Pillars and Nine Building Blocks of the Business Model Ontology

Pillar	*Building Block of Business Model*	*Description*
Product	Value Proposition	A Value Proposition is an overall view of a company's bundle of products and services that are of value to the customer.
Customer Interface	Target Customer	The Target Customer is a segment of customers a company wants to offer value to.
	Distribution Channel	Distribution Channel is a means of getting in touch with the customer.
	Relationship	The Relationship describes the kind of link a company establishes between itself and the customer.
Infrastructure Management	Value Configuration	The Value Configuration describes the arrangement of activities and resources that are necessary to create value for the customer.
	Capability	A capability is the ability to execute a repeatable pattern of actions that is necessary in order to create value for the customer.
	Partnership	A Partnership is a voluntarily initiated cooperative agreement between two or more companies in order to create value for the customer.
Financial Aspects	Cost Structure	The Cost Structure is the representation in money of all the means employed in the business model.
	Revenue Model	The Revenue Model describes the way a company makes money through a variety of revenue flows.

Adapted from The Business Model Ontology: A proposition in a design science approach by Osterwalder, A. (2004), Université de Lausanne, p.43

Fig.1: The Business Model Ontology(BMO)



Adapted from The Business Model Ontology:A proposition in a design science approach by Osterwalder, A. (2004), Université de Lausanne, p.44.

Table 2: Description of a Business Model Element.

Name of BM Element	*Description*
Definition	Describes the business model element – what it is.
Part of	Identifies the pillar to which a business model element belongs to. BMO consists of four pillars. Alternately, for sub elements it identifies the element it belongs to.
Related to	Identifies other elements and sub elements it is related to.
Set of	It identifies the sub elements to which an element can be decomposed into.
Cardinality	"Defines the number of allowed occurrences of an element or sub-element inside the ontology."
Attributes	Each element and sub element contains unique attributes. These attributes are identified in this section. Attributes can be inherited from one element to another or from a sub element to its parent element. Attributes consists of values. These values are listed between accolades. For example, {VALUE1, VALUE2, etc}. All element and sub-element have two 'standard attributes.' They are NAME and DESCRIPTION. These attributes contain a set of characters as values indicated as such, {abc}.

Adapted from The Business Model Ontology:A proposition in a design science approach by Osterwalder, A. (2004), Université de Lausanne, p.47

All the nine elements and the sub elements are defined using the set of characteristics shown in Table 2.

Evaluation Criteria Overview

In evaluating the Business Model Ontology, the researchers have used nine criteria thatcover all key issues concerning the ontology. Some of the criteria have been borrowed from other sources (Gordijn, Osterwalder, & Pigneur, 2005), while others have been defined by the researchers.

Table 3 provides a summary of criteria used in evaluating BMO and the questions they address.

BMO Evaluation

Ontology Implementation Process

This criterion covers the "how" of the ontology. How is the ontology to be implemented? This is one area of the ontology that I feel is inadequately addressed. In his thesis, Alexander Osterwalder provides a detailed description of the various elements that comprise the ontology. However, he does not address the mechanisms for implementing the ontology.

Business models are created and designed in two main contexts:

- One to create and design a completely new model. Here we are creating business models from scratch.
- Second, to create models to represent existing businesses.

Depending upon the context, the approach to modeling varies. If our aim is to create an entirely new model, the prescribed approach would be to start by defining the customer segment first. The reason being that business models are ultimately aimed at satisfying and exceeding customer needs and expectations. We design business models so that we can better fulfill customer needs and wants. In his book Business Model Generation, Alexander

Table 3: Nine Criteria Used in the Analysis and Evaluation of the Business Model Ontology (BMO)

S. No.	*Criteria*	*Question it answers*
1	Ontology implementation process	Is the method for capturing and creating a business model well defined?
2	Scope	What aspects of a business are modelled?
3	Purpose	Why was the ontology developed?
4	Form/Representativeness:	Is the method for representing concepts/elements are well-defined?
5	User friendly/communicative capability	How easy is it to use?
6	Applicability/usability	Can the ontology be used to model all types of businesses?
7	Granularity	Till what level of detail can businesses be modelled?
8	Analytical capability	How useful is the ontology in terms of business analysis?
9	Feasibility	Does the ontology answer whether a business model is feasible or not?

Osterwalder defines a 'generic process' for designing and creating new and innovative business models (Osterwalder, & Pigneur, 2010). He defines the process as consisting of five phases: mobilise, understand, design, implement, and manage**.** The following are observations regarding Alexander's generic process.

First, it approaches modeling from a macro point of view. These are more of broad guidelines rather than detailed process in terms of business modeling. The process does not specify how one should go about implementing the Business Model Ontology.

Second, the process focuses upon creating new business models. Indeed, he clearly states that the process is aimed at creating new, unexplored, and innovative business models. Is the same approach applicable when it comes to capturing and evaluating existing business models? While the initial phase of the generic process may apply in both circumstances, in the latter case, an approach needs to be defined. This approach is not explicated by Alexander. In his thesis, he defines each individual element and illustrates it with case studies however, he does not specify ***how*** one identifies individual elements. For example,

- How do we identify core Value Propositions and especially the individual Offerings?
- How do we identify and segment the Target Customers?
- How to identify possible Channel options?

Scope

This is undoubtedly one of the strong points of Business Model Ontology (BMO). Since it was designed specifically to depict business models, it provides a holistic solution. Other ontologies face limitations since they have different aims. For example, enterprise ontology,process ontology, business motivation ontology, strategy ontology etc. focus primarily on one particular aspect of business be it the organisational structure, business process, business strategy etc. whereas the BMO covers all key aspects concerning a business. However, what exactly constitutes key aspects of a business is open for debate. Indeed, the argument goes back to the very definition of what constitutes a business model. Alexander Osterwalder understandably has used this specific criteria "definition of business model" while comparing ontologies (Gordijn *et al.*, 2005). As pointed out by many authors there is no consensus on what constitutes a business model (Chesbrough, 2010; Timmers, 1998; Magretta, 2002).In our view, the Business Model Ontology (BMO) does an excellent portrayal of a business. Based on Balance Score Card concept, it addresses all the basic building blocks of an organisation (Osterwalder, 2004). Table 4 provides a quick comparison between BSC and BMO.

Purpose

Purpose answers the question Why? Why was the ontology designed in the first place? Alexander Osterwalder identifies the following generic purposes behind the development of various types of ontologies (Osterwalder, 2004):

- improved communication
- interoperability
- system engineering aspects such as reusability, searching, reliability, specification
- knowledge representation and acquisition

To us, the question is not so much why the ontology is created as why people engage in business modeling since ontology is merely anagreed framework to capture and represent concepts relating to business modeling. Table5

Table 4: BSC and BMO Comparison.

BSC	*BMO*
Finance	Financial pillar consisting of cost structure, revenue stream, and profit.
Process	Management infrastructure pillar consisting of – specifically value configuration element and its sub element activities.
Customer	Customer interface pillar composed of relationship element, target customer element, and channel element.
Innovation &Learning	Product interface.

Adapted from the Business Model Ontology: A proposition in a design science approach by Osterwalder, A. (2004), Université de Lausanne. Pg. 43

lists five common reasons behind business modeling and compares how BMO performs in achieving these purposes.

Form/Representativeness

The researchers define form or representativeness using two criteria:

1. How well does the ontology represent and articulate the concepts and relationships of the specific domain it is representing?
2. To what level of formality is this representation defined?

The Business Model Ontology (BMO) is one of the most comprehensive ontologies when it comes to business modeling. It is an excellent tool that clearly captures and articulates the concepts and relationships that define a business.

In terms of level of representation, the BMO again performs excellently. Ontologies can be represented at many different levels of formality.

- Highly informal - Ontologies are represented in natural language. It is easy to represent and communicate.
- Semi-informal - Ontologies are represented in natural language. However, in this case the natural language has a more rigid structure.

Table 5: Reasons Behind Business Modeling

Purpose	*BMO*
Promote communication & understanding through representation	This is one of BMO's strongest suite. It is able to capture the key aspects of a business. It has well defined structure and framework in terms of concepts, relationships that allows depiction of models at many different levels.
Systems engineering	The BMO is supported by Business Model Modeling Language (BM2L). BM2L is a formal and structured method for codifying the Business Model Ontology developed by Alexander Osterwalder. It uses eXtensible Markup Language XML structure. Because BM2L is based on XML, a widely supported technology, it offers the following advantages. First, it is an open standard and hence platform independent. Second, it is a technology that is widely being adopted and used by application vendors and software developers (Osterwalder, 2004).
Alignment	Aligning vision, strategies, goals, objectives, priorities, values etc. across an enterprise poses a major challenge for businesses. Techniques and methods such as the Balance Score Card (BSC) (Kaplan& Norton,1992), Management By Objectives (MBO)and IT Score Cardare few of the approaches aimed at achieving alignment within an organisation. Likewise,Business Models is a tool that can be used to achieve alignment across enterprise/s. The BMO in particular allows businesses to achieve alignment in the areas of business infrastructure, business value proposition, target customers and business partners.
Business analysis	Although Alexander does not specify how the Business Model Ontology can be used in conducting business analysis, overall BMO is an excellent tool for performing business analysis. The BMO is an ontology that consists of all the key elements comprising a business. The characteristics of each of the element and its sub elements are well defined, including the relationship between the elements. Its ease of use and application allow us to quickly capture, analyse, and interpret various business models.
Interoperability	There are two ways of understanding interoperability (1) interoperability of IT systems and applications (2) Interoperability of business functions, processes, structures resulting from mergers and acquisitions. In both cases, BMO performs excellently. In the first case as highlighted earlier, the BMO is supported by Business Model Modeling Language (BM2L). The BM2L being an open standard facilitates communication and integration between various applications and platforms. In the latter case, BMO can promote clear understanding, communication, and exchange of ideas between stakeholders facilitating interoperability, and integrative efforts.

- Semi-formal - Ontologies are expressed in a formally defined language. Some of the popular defined languages used to design ontologies include the UML, Petrinet, BPMN etc.
- Formal – Ontologies are expressed in a highly rigid and structured method. For example B2ML, Ontolingua, OWL Web Ontology Language(Ontology Made Easy, 2013).

BMO enables representation at multiple levels - Semi-Formal and Formal levels. Fig.2 is an example of BMO at a Semi-Formal level.

Fig.3 shows translation of Business Model into a highly formal level using B2ML.

User Friendly/Communicative Capability

All ontologies share one common trait – to facilitate and improve communication. Hence, ontologies should be user friendly. The researchers have defined user friendliness using the traits listed in Table 6.

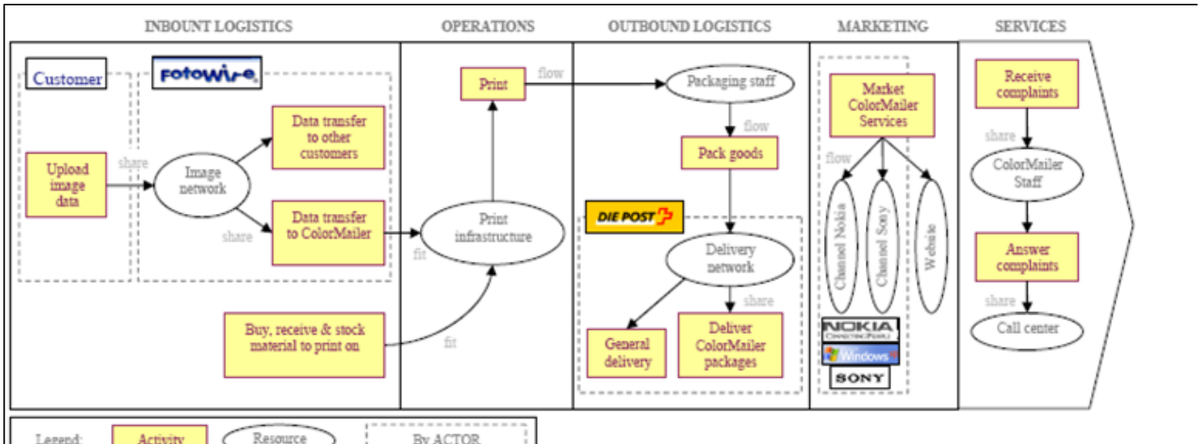
Applicability/Usability

In evaluating theapplicability and usability of Business Model Ontology, the researchers are predominantly considering the type of businesses that can be modeled using the BMO. Businesses can be classified largely as manufacturing organisation, service provider organisation, governments, non-governmental organisations, international organisations, armed forces, charities, not-for-profit corporations, partnerships, cooperatives, universities, and various other types of political organisations (Wikipedia, 2015). BMO is designed to be used by any type of organisation, be it manufacturing firm or service provider. In his thesis, Alexander Osterwalder categorises businesses into three broad categories:

- Manufacturing firms
- Service firms and
- Brokerage firms

The BMO accommodates all the above three types by specifying different type of value configuration for each type of firm. This is illustrated in Table 6.

Fig.2: Color Plaza Value Configuration, Activities and Resources



Upload of digital images & order	Transfer of digital images to the printing facilities	Buy, receive & store material to print on	Print digital images on photo paper or goods	Pack goods for delivery	Deliver packages	Answer complaints	Sell ColorMailer services	ACTIVITY Name
The digital images have to be uploaded from the customer's camera or PC	The digital images have to be transferred from the customer to the printing facilities	The primary material to print on has to be received and eventually stored	The digital images have to be printed on either photo paper or goods, such as t-shirts, cups etc.	The order has to be packaged for home delivery	The orders have to be delivered to the customer's home	Possible complaints have to be answered to the customer's satisfaction	ColorMailer's services have to be marketed to potential customers	ACTIVITY Description
{Primary activity}	{Primary activity}	{Primary activity}	{Primary activity}	{Primary activity}	{Primary activity}	{Primary activity}	{Primary activity}	Level
{Inbound logistics}	{Inbound logistics}	{Inbound logistics}	{Operations}	{Outbound logistics}	{Outbound logistics}	{Services}	{marketing}	Nature
{Shares} image network	{Fits} print infrastructure	{Fits} print infrastructure	{Flows} to packaging staff	{Shares} delivery network	{Flows} to customer	{Shares} call center	{Flows} to channels	Related to RESOURCE
Customer	FotoWire	ColorPlaza	ColorPlaza	ColorPlaza	Postal service	ColorMailer	ColorPlaza Sony Nokia Microsoft Agfa	By ACTOR

Adapted from The Business Model Ontology: A proposition in a design science approach by Osterwalder, A. (2004), Université de Lausanne, p.88.

Fig. 3: Excerpt of the Product Part of the BM2L Document of the MJF

```
<Product>
    <ValueProposition ValuePropositionID="vp1" BasedOnCapabilityIDREF="cp4 cp3 cp1"
    AddressesCustomerIDREF="tc4">
        <ValuePropositionCharacteristics>
            <Name>MJF Concerts</Name>
            <Description>The main attraction and VALUE PROPOSITION of the MJF are its prestigious
            concerts with stars from jazz, pop, rock, hip-hop and more. The MJF has made itself a name
            with the regular by unforgettable jazz musicians like Miles Davis, Keith Jarett, Charlie Mingus,
            Ella Fitzgerald and later from other fields like Bob Dylan, Phil Collins or Guru's Jazzmatazz.
            The 2003 event featured artists across the musical range, such as George Benson, Joao Gilberto,
            Simply Red or Cypress Hill. </Description>
            <Reasoning>
                <Use>For the customer the value essentially lies in going to the concert of the artist of
                his choice.</Use>
            </Reasoning>
            <ValueLevel>
                <MeToo>The MJF may be special because of its quality but it is not substantially
                different from other jazz festivals throughout the world.</MeToo>
            </ValueLevel>
            <PriceLevel>
                <Market>The MJF ticket prices are comparable to the market prices of what is paid for
                other concerts.</Market>
            </PriceLevel>
        </ValuePropositionCharacteristics>
        <SetOfOfferings>
            <Offering OfferingID="off10">
                <OfferingCharacteristics>
                    <Name>MJF evening concerts</Name>
                    <Description>The evening concerts comprise the major event of payable concerts
                    on three different stages, the Stravinski Auditorium, the Miles Davis Hall and the
                    Casino.</Description>
                    <Reasoning>
                        <Use>MJF concerts are of great quality.</Use>
                    </Reasoning>
                    <ValueLevel>
```

Excerpt of the product part of the BM2L document of the MJF. Adapted from The Business Model Ontology:A proposition in a design science approach by Osterwalder, A. (2004), Université de Lausanne, p.122.

Table 6: Traits for Assessing the User Friendliness of the Ontology

Traits	*Business Model Ontology (BMO)*
Ease of representing concepts & defining relationships	The BMO in its semi-formal form is entirely understandable. It uses natural language to represent and depict concepts and define relationships. Simple templates in the form of tables and geometric shapes (ovals, rectangles, arrows etc.) allow users to focus on the concepts rather than the ontology syntax.
Software & technical skills requirements	Some ontologies require software and fairly good technical skills to be able to use it. For example, the e3 ontology is best used with the help of a software (Johannesson, 2006). The Business Model Ontology does not require specialised software ortechnical skills to be able to use it. The BMO in its semi-formal form can be used by business men and entrepreneurs without the aid of software.
Learning curve	The learning curve for BMO is fairly short. Business people can quickly familiarise themselves with the basic concepts and start utilizing BMO within two to three weeks. A much more simplified version of the original BMO is the Business Model Canvas (BMC). The BMC is a tool used to quickly grasp, portray, analyze, and evaluate business models. (Osterwalder, & Pigneur, 2010).

Traits	*Business Model Ontology (BMO)*
Traceability	Traceability refers to "the ability to describe and follow the life of a requirement, in both forwards and backwards direction (i.e. from its origins, through its development and specification, to its subsequent deployment and use, and through all periods of on-going refinement and iteration in any of these phases)" (Céspedes, Filho, Gómez, & Mendoza, 2012). In process models traceability is a key capability that must be built into the model. A model must be capable of tracing processes and artifacts to their source (Holt, 2009). The BMO includes traceability capability.However, it is an area that could perhaps be developed further. In case of Business Modeling we are concerned with tracing the following concepts and relationships within the model. • Customer Requirements • Business Requirements and • Relationships / Linkages between: • Elements and their sub elements • Attributes across elements While the BMO does include mechanisms to trace the latter group (relationships and linkages), it does not address mechanism to trace customer requirements through the model nor does it explicate how business requirements are translated into a business model.
Flexibility	Here flexibility refers to the ability to modify, change, perhaps even further develop the following capabilities: • Concept representation • Relationship definition • Approach to modeling • Attribute modification The BMO in its semi-formal form can easily be modified to incorporate new sets of information specifically in the form of attributes. New relationships can be defined between elements and between their sub elements. Alexander Osterwalder does not specify rules and heuristics to be followed strictly. Indeed, it could be the reason why he has not specified BMO implementation method in detail in order to maintain the flexibility. Hence, how we implementBMO is largely left up to the modeler.

Adapted from The Business Model Ontology:A proposition in a design science approach by Osterwalder, A. (2004), Université de Lausanne, p.85.

Issues arise when we consider other alternate types of organisations such as non-profit organisation. Although efforts are underway to transform non-profit organisations to become more 'business like' (Dart, 2004), non-profit organisations comprise of unique sets of activities quite different from those of for profit organisations. Key activities for non-profit organisations include the following:

- Fund raising and grant writing
- Governance
- Nonprofit Budgeting and Accounting

Table 6: Business Type, Their Value Configuration, and Their Primary Activities

Business type	*Value Configuration Type (BMO)*	*Primary activities (BMO)*
Manufacturing firms	Value Chain	Inbound Logistics, Operations, Outbound Logistics, Marketing and Sales, Service.
Service providers	Value Shop	Problem Finding and Acquisition, Problem Solving, Choice, Execution, Control and Evaluation.
Brokerage firms	Value Network	Network Promotion and Contract Management, Service Provisioning, Network Infrastructure Operations.

Adapted from The Business Model Ontology:A proposition in a design science approach by Osterwalder, A. (2004), Université de Lausanne, p.85.

- Programme Development and Evaluation
- Public Policy
- Volunteer Programmes

Likewise the revenue models for non-profit organisations will be quite different from that of for profit organisations.

Granularity

Much like process modeling, business modeling can be performed at various levels of abstraction. It can be constructed at a very abstract level or at a very detailed level. The modeling standard used must have the capability of depicting models at both these levels. The Business Model Ontology (BMO) as defined by Alexander Osterwalder in his thesis has just such capability. The BMO consists of nine elements which are part of four major pillars. Each of these elements can be decomposed to its more fundamental sub elements. For instance, the element Value Proposition can be decomposed into its sub element Offering. The sub-elements enable the depiction and examination of parent element concept in much more detail. For example, a bank offers its customers online banking facility. The online banking facility may be considered as a single Value Proposition composed of many individual Offerings such as, bill payments, money transfers, customer grievance handling. Hence, the individual Offering element permits the depiction of Value Proposition element at a more granular level. This is absolutely vital to comprehend business models fully.

Analytical Capability

One central role of a business model is its use as an analytical tool. In this regard it plays the role of a strategic tool and a decision making tool. Business models can be used to perform analysis and evaluation of various types of business models that a firm can adopt. It can help firm's evaluate the following aspects of any potential model:

- Profitability and revenue generation
- Overall cost
- Key capability requirements to sustain a model
- Customer behaviour analysis (relationship)
- Value proposition and individual offering analysis
- Channel suitability and cost
- Partnership analysis
- Value configuration, activity, and resource requirement analysis and more

Essentially, we are talking of "What If?" analysis capability. By working with many different scenarios, businesses can evaluate the "sensitivity of e-business models with respect to financial parameters, future trends, and other parameters such as customer behaviour."(Gordijn, & Akkermans, 2001). In his thesis, Alexander Osterwalder does not elaborate on the analytical capabilities of the BMO. His case studies primarily concerns capture, representation and depiction of business models. Of course while such representation provides for excellent analysis of the existing business models, he does not explicate exactly how BMO can be used to carry out what if analysis by considering alternatives, scenarios, and interpreting the findings. The BMO consists of all the key elements to perform such analysis. In our view, limitations of BMO exist in the attributes defining the Parent and Child element. However, this is a topic best covered in separate paper.

Feasibility

Is a particular business model feasible? How do we evaluate feasibility? Of course the defining criterionis financial success defined in terms of profitability. Goderjinn and Akkermans (2001) define a feasible business model as one where all the concerned stakeholders profit from the model or in some way increase their "economic utility."(Gordijn & Akkermans, 2001).One of the defining criteria of a successful business model is that it must be implementable. Theoretical possibilities alone do not yield tangible benefits to the business. Whether a business model isimplementable is a function of many things namely: resource requirement, capability requirement, processes (activities) requirement to sustain and support a model, partner relationship requirement, target customer compatibility, value propositionevaluation and more. Such analytical capability should be built into any ontology. While the Business Model Ontology (BMO) consists of elements and attributes that allow for clear feasibility analysis, nonetheless there are certain aspects of the BMO can be enhanced to smooth out the analytical process.

Conclusion

The BMO, including BMC, is an excellent ontology that clearly meets its purpose and objectives. Since its inception in 2004, the Business Model Ontology (BMO), particularly the Business Model Canvas (BMC) has quickly gained popularity and world wide acceptance across the globe. Today, the BMC is being used to evaluate/examine existing business models and innovate and try out new models by companies such as Microsoft, MasterCard, Adobe, 3M, SAP, Ernst & Young, Xerox, Capgemini, Ericsson, Oracle, Deloitte, Intel, Fujitsu and more. It is a testament of the capabilities, versatility, maturity, of the Business Model Ontology (BMO) and the Business Model Canvas (BMC). Nonetheless, in our opinion there do exist certain gaps in the BMO, especially in areas such as, implementation process, traceability of customer and business requirements, certain forms of business model analysis, and applicability and usability of the ontology. These are potential areas for further study. However, it should be mentioned that the discipline of business modeling is very open and unstructured. Ontological approach to business modeling provides a common framework for representing business concepts and relationships and hence is an attempt to give business modeling form and structure. Thus, the authors might have intentionally refrained from addressing the above areas so as to provide the flexibility to modelers themselves much like the UML standard that provides the requisite framework for modeling systems but does not specify in detail the implementation process, traceability capabilities, and analytical capabilities.

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