An Extensive Review of the Frameworks used for the Change and Development of Business Models

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Abstract

This paper provides the findings of an extensive review of the *Business Modelling* research and practice i.e. of the frameworks designed for the development of a business model for e-commerce. This comprehensive study reveals that traditional solutions do not provide full and complete support (at not enough level of detail), but only provide general guidelines or steps described in quite brief terms. Also, it concludes that now days, the business modelling research interest emerges in other aspects of business model, for example the organisational, operational, product/service, and technological. Summarising the various findings, three main axes are proposed for the design of a complete and appropriate solution.

Keywords: (E-Commerce, Business Modelling, Frameworks)

1.0 Introduction

Several frameworks for business modelling are presented across the literature in the last 15 years. Not all of them are referred to as frameworks. Each researcher or practitioner uses a different term; some present their work simply as steps or stages, others as an approach, or as a method, or as ontology, or sometimes even as a tool. And although that all works aim to the transition from the current to a future business model, mainly to an e-business model, it has been considered by different perspectives such as to *extent* a business model [1], to *select* one [2], to *guide* the change [3], to *build/contract* [4], to *evolute* [5], to *renew* [6], to *transform* [7].

2.0 Theoretical Foundation

The Business Modelling literature can be seen as having progressed through various phases [8]:

Phase 1: Selection of an E-business Model

Early works on business modelling research simply concentrated on either providing criteria for the selection of an e-business model [2, 9] or providing guidelines for extending one or more of the dimensions of the existing business model [1]. For example, Tapscott & Lowi [2]'s work focuses only on the how the value exchanges among the participants (partner, customer, and supplier) are managed providing six steps that finally lead to the selection of one of the five suggested web type business models. Similarly to Tapscott & Lowi, Mahadevan [9]'s work is also limited to the selection of an appropriate e-business model that involves picking up the right mix of alternatives. According to Mahadevan a business model consists of a configuration of three streams - *Value*, *Revenue*, *Logistical* - considered by the author as critical to the business. The alternatives are presented under the three streams indicating the possible options available to an organisation, based on the market structure - *portals*, *market maker*, *product/service provider* - that the organisation has adopted.

In the same vein, Linder & Cantrell [1]'s work does not include a real change but a perspective alteration; it describes the path which a company should take in order for its current business model to become a better business model. They provide questions that target the identification of the current business model's sources of revenue, and by giving possible answers to extending them in order to sustain the organisation's competitiveness. They introduce four basic types of change model - *Realisation Model*, *Renewal Model*, *Extension Model*, and *Journey Model* – that indicate the degree of the core logic change in a business model [1]. By acknowledging this degree they support that a company can estimate the existing potential for change and predict the impacts of a change, but from the practical point of view, the logic of the current business model does not change.

Phase 2: Analysis of the factors and formulation of an e-business strategy

During the second phase of business modelling research, the scope of works is limited to a future possible change of the business model analysing the internal, external and competitor, and critical factors in order develop an action plan for change. Priority is the modelling of the business logic and the analysis of components regarding the value creation process. Van Hooft & Stegwee [10] suggest that the analysis of internal, external and competitor factors will clarify the strategic e-business vision of an organisation. Stockdale & Standing [11] in their proposed work for organisations seeking to participate in an e-marketplace, support that issues such as the internal company factors, the business drivers of the electronic marketplaces and the facilitators that contribute to the likely success of an e-marketplace, should be used as the main critical issues for decision making. Lee [12] equally emphasises that these factors are important for e-commerce

success. In short these works aim to intepret the critical factors and to faciliate the decision making process without recommending ways for changing or developement of a business model.

Similalry Petrovic, et al. [3] adapt and modify a problem solving appoarch in order to a) identify the problem of the current business model and its factors, and b) identify the possibilities for changing the problem situation developing an action plan. The aim is restricted to the process of formulating an action plan considering the analysis of the micro and macro business enviroment, and to clarify some possibilities for changing a business model rather than to guide the real change. Papakiriakopoulos, et al. [4] also concentrate on the analysis of several issues associated with the business enviroment.

In summary, the above proposed works are aligned with the strategic aspect of business model change. Papers typically presented what is believed to be the critical factors about what makes business model change possible - in some cases they focus so much that they are restricted to identifying the possibilities for changing but not the change itself. They give the impression that presents a business model, although only the value creation part of business is presented. Investigating one aspect of how a company does business without looking at the entire picture is, however, dangerous and does not make sense [13].

Phase 3: Identification of Business Model Components

During the same period, some scholars' work shifts from the analysis of the factors for the formulation of a strategy to the identification of business model components using a list of questions. Although they go a step further in introducing more components considering also other aspects of a business model (e.g. legal issues and technological changes) they do not describe the interrelationships among the components. For example, Afuah & Tucci [14] introduce a strategic approach in which the business model is conceptualised by means of a set of components that correspond to the determinants of company profitability. Their work defines the components answering a number of questions. On the same track, Stahler's [15] work defines four main business model components, answering four key questions.

Synthesising previous research works [3, 16, 17] with a scenario based approach for designing an IT strategy [18], Pateli & Giaglis [19] propose a stepwise work for design alternatives scenarios for business model evolution or extension. In particular, they present an extension of Alt & Zimmermann's [17] work categorising into a) the horizontal dimension which includes all the primary components of a business model, and b) the vertical dimension which includes the underlying components of business models and the issues that outline the wider business and social environment of a business model.

Summarising, nevertheless the above works attempt to identify the business model components by synthesising theoretical perspectives from previous works on

strategy, business modelling, and e-business research. But they do not provide theoretical definitions - each component is presented by a simple term supported only by a simple question without a description or an explanation of the meaning of the term. Also they do not theoretically integrate these components. According to Shaw [20] this can have two implications in the business modelling; firstly, there is no theoretical justification for the completeness of the business model while there may be other components that could be added and there could be other levels that contain components, e.g. components that business model substitutes and compliments and sub-component constructs. Secondly, it cannot be clear how the components interrelate below a certain level of changes. The relations between the components are only described in terms of causes produced by one component and effects upon another component. The actual relations are not described or explained and so it does not model how changes are transmitted between the components or why this is so.

Phase 4: Conceptualisation of Business Model

In a fourth phase researchers started to model the components conceptually culminating in business model ontologies. They define the business model components and use them as *buildings blocks* to conceive a business model. Initially, Gordijn & Akkermans [21] during 2000 to 2003 proposed a lightweight ontology called *e^{3}value* ontology; it is a conceptual and graphical approach for the design of the value creation process of a business model. The aim is to define how economic value is created, interpreted and exchanged within a multi-actor stakeholder network of enterprises and customers. To enhance understanding of these *e^{3}value* concepts, they are represented graphically. It uses notation inspired by UML class diagrams to initially present the core concepts and their relations. In the meantime, Osterwalder & Pigneur [22] also embraced the idea of building ontology where every business model component is decomposed into a set of defined sub-components, related to each other. According to the later version of business model (BM) ontology [23] the main priority is the value configuration and the business model components presented onto a canvas, a conceptual tool to help companies to develop their business models.

The finding of phase 4 of *Business Modelling* literature review, reveal that business model ontologies are lightweight approaches meaning that only a limited view of a business model is presented. They seek to support the design of a business model, representing conceptually the way that a company does business and its logic as to earning revenues. They are concerned with company level analysis when managers are increasingly concerned with additional aspects such as supply chain management [20]. According to Laudon & Traver [24] most authors focus on the value proposition and on the revenue model, but that while *"these may be the most important and most easily identifiable aspects of a company's business model, the other elements are equally important when evaluating business models or plans, or when attempting to understand why a particular company has succeeded or failed"*.

Phase 5: Organisational, Operational, Technological aspect
During the last phase, the business modelling works have evolved from the focus on the value creating processes to the focus on other aspects of the business model like organisational, operational, and technological. Researchers recognise that the business model is not for a single company as it was in the past, but it is for the network of suppliers, manufactures, partners, investors and customers that ingrate using new technologies and information systems [25, 26].

Thus, Braet & Ballon [27] develop a business modelling process for a remote management system categorising the actors and roles that are active within a given value network. They proposed four business modelling design phases giving equal emphasis to the organisational, technological, service, and finance aspect of a business model; and they use business model scenarios to describe each aspect. Also, Wirtz [28] defines four business model levels i.e. the *industry level, corporate (company) level, business unit level* and *product level*. In this work, Wirtz focuses on design process related to business model innovation and includes a strategic aspect that is developed during the process. This means that this process assumes that a business model designing is related to strategy.

Some authors like Sandstrom & Osborne [29] describe only one aspect of the business modelling process, namely on how to handle a product innovation process involving a business model renewal and multiple actors working as a network. Similarly, Heikkila et al. [30] focus more on product/service understanding, adopting an agile way of developing business models. They argue that business model design needs to start in the early phases of ideation of new products and services. Bouwman et al. [31] suggest that the principles of agile software development can lead to fast iterations. In most recent research, scholars recognise that the role of technology innovation and its relationship to the businesses has shifted. Business models have become more digital. Thus, Baden-Fuller & Haefliger [32]'s work takes into account the influence of technology innovation on business model innovation. They depict the business model system as a model containing cause and effect relationships, and it provides a basis for classification.

In summary the above works restrict to considering only one aspect of the business model. This can be dangerous because a company cannot be aligned just pinpointing one distinguishing element, because other, less visible elements can also be important. Therefore, changes in one aspect of the business model can have significant influences on another [33].

3.0 Summary of the Findings

A consolidated and organised summary of the works presented in section 2 above is presented in Table 1 which highlights the attributes of the business modelling frameworks. The table shows the *philosophy* and the *scope* of each work, the *objective* of each framework, the *approach* used by each framework to achieve its

objective, the *technique*(s) used by each framework, the *output delivered* by each framework, the *component*(s) proposed by each work.

Table 1: Summary of the Business Modelling Frameworks

Author(s)/ Year	Philosophy	Scope	Objective	Approach	Technique	Output	Component(s)
Tapscott et al. (2000)	The new business model corresponds to one of the five b-web types: Agora, Aggregation, Value Chain, Alliance or Distributive Network.	Select an e-business model	Disaggregate and re-aggregate the value proposition from a customer perspective	Sequence of steps, Questions/Answers	Value Map. To visualise the new business model	Selection of one of the five five b-web type business models	Customer Value
Mahadevan (2000)	Internet economy is divided the overall market space into three broad structures: portals, market makers, and product/service providers	Select an e-business model	Select a possible option available to an organisation, based on the market structure that it has adopted	General guidelines	Presentation mix of alternatives	Selection of the right mix of alternatives	Value Stream, Revenue Stream, Logistical Stream
Linder & Cantrell (2000)	Construct an alteration to the current business model to become a good business model	Change one or more of the dimensions of the existing business model	Extend business model by creating new positions on the price/value curve	Questions and possible Answers	Presentation of the questions/answers in a structured way	Degree to which business logic will change	Sources of Revenue v Value Propositions, Assets, Capabilities, Relationships
Van Hooft & Stegwee (2001)	Clarify the strategic e-business vision of an organisation	Formulate and e-business strategy	Analyse of the internal, external and competitor factors	Decision Making Process	Critical success factors analysis	Strategic e-business vision	No
Petrovic et al. (2001)	Solve the problem of the current business model	Develop an action plan for possible future change	Understand the current business model, develop an action plan.	Problem Solving	No	Action Plan	No

Table 1 (continue): Summary of the Business Modelling Frameworks

Author(s)/ Year	Philosophy	Scope	Objective	Approach	Technique	Output	Component(s)
Papakiriako-poulos & Poulymenakou (2001)	Examine and collect information resources that could help and empower processes placed on the value chain	Investigate the evolution of the market structure	Analyse four elements: Coordination, Collective/Competition, Customer value, Core Competence	Sequence of steps	Communication Augmented Value Chain to present new business model's structure	Analysis of the four elements	Coordination Competition Customer Value Core Competence
Afuah & Tucci (2001)	Explain competitive advantage and company performance	Describe the business model's components	Determine the company's profitability	List of Components	Questions - Answers	Answers to the questions	Customer Value Scope Pricing Revenue Source Connect Activities Capabilities Sustainability
Stahler (2002)	Simplify the complex reality.	Describe the business model's components	Determine the company's value and sustainability	List of Components	Questions - Answers	Answers to the questions	Value Proposition Product or Service Architecture Value Revenue Model
Pateli & Giaglis (2003)	Choose from a group of possible scenarios	Evolution of business model	Design of alternatives scenarios for business model	Create Scenarios	Representation of the business parties and their relationships	Distinguish between horizontal and vertical components	Mission, Target Market Value Proposition Resources Key Activities Cost and Revenue Model Value Chain/Net s Market Trends Regulation Technology

Table 1 (continue): Summary of the Business Modelling Frameworks

Author(s)/ Year	Philosophy	Scope	Objective	Approach	Technique	Output	Component(s)
Gordijn & Akkermans (2003)	Analyse whether the business model is viable or not	Conceptualise the business model	Define how economic value is created, interpreted and exchanged within a multi-actor stakeholder network of enterprises and customers	List of Components	Conceptualisation, Graphical Presentation and Scenario (inspired by UML Notation), Scenarios	Visualisation of the value model	Actors Value Objects Market Segment Value Port Value Interface Value Exchange Value Activity
Osterwalder (2004)	Depict company's strategy and business opportunities. It can be used to describe the current state and the „where we want to be" state	Conceptualise the business model	Capture, understand, communicate, design, analyse, and change the business logic of a company	Categorised components decomposed into a set of defined sub-components	Business Modelling Canvas to present the business components	Conceptualisation of the value model	Value Proposition Offering Target Customer Criterion Distribution Channel Link Relationship Mechanism Value Configuration Activity Capability Resource Partnership Agreement Cost Structure Revenue Model Pricing Actor
Braet and Ballon (2007)	Create four designs Organisation Technology, Service, Finance	Develop business modelling scenarios for Remote Management	Categorise the actors and roles that are active within a given value network using business modelling designs	Sequence of phases	Scenarios	Four designs: Organisation Technology, Service, Finance	Business Actors, Business Roles Business Relationships Value Chain Value Network

Table 1 (continue): Summary of the Business Modelling Frameworks

Author(s)/ Year	Philosophy	Scope	Objective	Approach	Technique	Output	Component(s)
Sandstrom & Osborne (2010)	Business model renewal and multiple actors working as a network	Product Innovation	Provide guidelines to managers to handle a product innovation process	Sequence of steps	No	Guidelines to manage product innovation	Actor Resources Product
Wirtz (2011)	Business model designing is related to strategy designing	Business model innovation	Develop a strategy related to business model innovation	four phases, namely idea generation, feasibility study, prototyping and decision-making	Business Model Prototype	Create a business model prototype and a business plan	Strategy Market Customer Value Added
Baden et al (2013)	Used classified business model components to depict the business model system	Take into account the influence of technology innovation on business model innovation	Depict the business model system as a model containing cause and effect relationships	Develop a classification with four business model components	None	Description of the business model based on the classification of the components	Customer Identification Customer Engagement Value Delivery Monetisation
Heikkilla (2015)	An agile way of developing business models	Product/Service Innovation	Understand the product/service development position	Follow the principles of agile software development	Design Case Approach	Brief description of the business model process	None

Summarising the extensive literature review of the business modelling frameworks the following findings are revealed:

Early works of business modelling research:

- focus on selecting one of the existing possible e-business models, not on changing the current business model, or developing a new business model;
- address the business logic of a company taking into account the value creation process;
- use a short list of business model components providing only examples and no descriptions.

Midpoint works of business modelling research:

- give priority only to the strategic aspect of business model change, evaluating the critical factors about what makes business model change possible;
- give the impression that presents a business model, while only the value creation part of business more is presented;
- add only two new business model components *actor* and *relationship* to capture better the value chain concept.

Later works of business modelling research:

- introduce more components considering also other aspects of a business model (e.g. legal issues and technological changes);
- do not provide theoretical definitions - each component is presented by simple term supported only by a simple question without a description or an explanation of the meaning of the term;
- do not describe their relationships among the components.

Recent works of business modelling research:

- support the change of a business model, representing conceptually the way that a company does business and its logic as to earning revenues;
- present only a limited view of a business model;
- focus on the value proposition and on the revenue model, missing other components equally important;
- attract criticism for the lack a common theoretical basis and for the many different definitions used to describe the same terms.

Most recent works of business modelling research:

- focus on other aspects of the business model like organisational, operational, and technological;
- include business model components that are related to the product concept;
- recognise that the role of technology innovation and its relationship to the businesses has shifted;
- agree that components are still multifaceted without agreed unified definitions;
- conclude that the domain is fuzzy and vague and still in its conceptualisation phase, despite its perceived significance.

4.0 Conclusions and Further Research

The findings reveal that a complete and appropriate solution for the transition from the current to a future business model need to cover the following aspects:

a) Business Model Conceptualisation
As it was explained earlier in this paper, various business model components have been suggested by researchers and practitioners creating a Babel tower of concepts with the same meanings but different names. The findings reveal that there is not a standard language or conceptual notation to describe the business model architecture. Therefore, further research is required to go one step further by integrating and systematising the existing work, and standardising and rationalising the existing concepts to propose a set of concepts for the description of the Business Model Architecture; namely the components of a business mode each one addressing one specific set of concern.

b) Business Model Representation/Visualisation
Furthermore, the conceptual view needs to be supported by a representation view; a template to present the high level structure of a business model. Sometimes the architecture of a business model suffers from extended presentation that goes too far into prematurely partitioning of business model or from an overemphasis on one aspect of the business model. A single architecture style is therefore necessary to assemble only a certain number of business model's components in an abstracted form. This will be used as blueprint to capture the initial architecture of a business model and to build an extended view. In the case of transformation of business to e-business this will help to capture the key architectural components of the current business model, and in case of development of e-business to visualise fundamental aspects of the e-business model.

c) Business Model Construction/Reconstruction
Business model cannot be considered as static. New and existing businesses have to revise their business model according to the changing external environment. Changes in technology, new customer needs, new regulatory conditions, need to remain competitive, etc. put companies under the pressure to adapt their business model constantly in order to respond to the fast-changing environment. According to the existing research and practice, presented in this paper, the transition from the current to a future business model has been considered by different perspectives and been described with different terms. Business model literature often refers to the strategic innovation renewal for adjustment of strategies and business models to the changes in the external environment. According to Hamel [34], "*Strategic renew is creaive reconstruction*" during which a traditional business model is decomposed, and using innnovative ways, aims to reconstuct the business model in order to create new value for the company and its customers. This reconstruction process usually includes business model redesign in combination with product(s), service(s), experiences, and technology innovation [35]. In conclusion, a company is innovated strategically and the business model is reconstructed.

5.0 References

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