BUSINESS MODELS AND E-SERVICES: AN ONTOLOGICAL APPROACH IN A CROSS-BORDER ENVIRONMENT

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Abstract *In business practice and in scientific research business models seem to have caught much attention as this phenomenon has been investigated by many disciplines, with different objectives and point of views. Researchers' general opinion on business models is based on value and information technology in an organization or a set of linked ones. Anyhow, a common agreed theoretical background and even a shared definition of business models are still missing. In this paper we will analyse the relevant literature on business models to increase understanding on this topic and identify future research directions. By discussing results of this analysis we will introduce an action research study on business models in cross-border e-services environment.*

1. Introduction

In business practice and in scientific research business models seem to have caught much attention. It is not so easy to estimate an exact measure of this phenomenon. Searches in Google and in databases of scholarly peer reviewed journal have been used in literature to estimate this size [1, 2]. The same searches repeated

now show the attention is high. In spite of this great interest there seems to be not so much shared understanding of the BM concept as a theory and even a common definition are missing.

BMs have been studied with diverse research interests and objectives in mind facilitating overlaps and conflicts [3]. Authors usually show the tendency to start from scratch instead of supporting established researches: this is partially due to the large amount of disciplines and point of views used to study and describe this phenomenon [4]. The poor understanding of such a broad phenomenon is cited by Porter as a cause of the wrong approach to competition by dot-coms [5].

Attempts to summarize all the contribution given in this research field produced frameworks, categories, taxonomies and ontologies of BMs [6, 7, 1, 3, 4].

Researcher's general opinion on BMs state these concern value and information technology in a single, or a group of linked entities.

Adopting an interdisciplinary point of view we analyse and explore this phenomenon by reviewing the relevant literature in the field. The aim of this paper is to increase the understanding on BM research in order to identify possible future research directions which could provide a relevant contribution in the Information System area. Of course several studies agree on the role of BMs as communication tools for knowledge sharing among stakeholders, our objective is to understand to what extent this concept can be helpful in the design process of an information system. This could be for instance the case of complex business scenarios where e-services are in place among multiple partners in a cross border environment.

The structure of the paper is as follows: § 2 shows the research methodology used to select and analyse the relevant literature, § 3 includes the main results of this review, § 4 discuss the results emerging from the literature review and § 5 contains our conclusion and our future research project presentation.

2. Research methodology

BM research field is vast and occupied by many disciplines and areas of interest. To trace the most prominent contribution we used the Business Source Premiere database of scholarly reviewed journal.

We searched using the terms “Business Model(s)” in title and keywords of papers published in peer reviewed journal from 1990 till now. The search returned two sets of 210 (title) and 108 (keywords) papers, with a certain amount of overlap. To avoid redundancy these were joined: the final contained 261 papers. Given the objectives of our research we were interested only in papers dealing mainly with BMs which we define as research on BM. We read through the abstracts to reject every contribution not directly linked to our research interest, reducing the original sample to 79. We took only the most relevant and included some out of this sample but remarkable for us, the total number of selected papers was 42.

We classified each paper in a thematic area given the orientation of the journal where it was published and traced the given definition of BMs and the position of the author(s) in the research field by distinguish between integrationist and isolationist approaches [8].

Papers grouped in thematic areas were then analysed using the Burrell and Morgan’s framework, widely used in the Information Systems literature as a conceptual map to trace the intellectual origins of research contributions when different paradigms are involved [9]. Discussions about the validity and legitimacy of this framework are out of the scope of this paper and can be found in the literature [10]. We came out with the decision to adopt this conceptual framework as we believe it can help to increase the understanding of BMs research trends in such a variety of disciplines and approaches.

3. Literature reviews

Results of the literature review are shown in table 1. The columns indicate: the thematic area (*Area*), the number of papers in it (*Num)*, the position of the contribution in the research field (*Isolationist and Integrationist*) and the characteristic of the given BM definition (*Macro*: without components, *Micro*: with components, *None*: no definition at all).

Area	**Num**	**Isolationist**	**Integrationist**	**Macro**	**Micro**	**None**
E-Commerce	7	1	6	4	1	2
Management	8	7	1	2	3	3
Business	5	1	4	3	1	1
Computer Science	4	4	-	-	1	3
Finance	3	3	-	1	-	2
Organisation	3	2	1	1	1	1
Information Systems	3	1	2	1	1	1
Strategy	3	2	1	1	2	-
Economics	2	2	-	2	-	-
Technology	2	2	-	2	-	-
Other	2	2	-	1	-	1
Total	**42**	**27**	**15**	**18**	**10**	**14**

Table 1. Literature review results

First of all our literature review shows fields interested in BMs research are numerous. Again these confirm BMs research is a highly interdisciplinary field.

Looking at the total we can say isolationist approaches are predominant. Until now there seems not to be an unambiguous tendency in this research field. This consideration is also supported by the numbers for the definition of the term BM. A macro definition is the most common but a relevant portion of the selected pa-

pers do not give one at all. Further considerations could be formulated by examining each thematic area individually.

Along with Management, E-Commerce is the most frequent area in our sample. Papers classified here mainly consider the impact of ICTs on the traditional way of doing business. Contributions in the E-Commerce field are mainly integrationist as clearly state their position in the BMs research field but at the same time fail to refer to the same concept. They perceive the fragmented nature of research on BMs too. None of the papers classified in this area share the same definition and there is a wide abundance of macro definitions which are, by nature, less precise. Understanding of BMs often remains unspecific and implicit [11]. Four out of seven papers in this area refer directly to BMs [12, 7, 13, 14] and deal with new flows of value derived by the introduction of ICTs in business. The rest is more focused on the research on BMs [11, 6, 3].

Awareness of BM concept essence is less perceived in Management area. Apart from the only integrationist approach which gives a detailed definition and traces the evolution of the concept in the relevant literature [15], others do not describe the term or provide only a general macro definition. Absence of definition is common in E-commerce area too, but it belongs to contributions which review the relevant literature. In Management field, BM is often referred to as a synonymous of strategy [16, 17, 18, 19].

The Business field is widely centred on the research on BMs. Excluding the only isolationist approach, the rest of the papers try to clarify different aspects of BMs research. In this field there are attempts to define relationships between strategy and BMs [20], to review past literature, to clarify the concept and to identify its components [21, 4]. Relevant is the critic against methodologies used to derive classifications and taxonomies of BMs [22].

Technology, Computer Science and Finance areas are the most representative candidates for isolationism in BMs research because usually the term is not defined and considered as given. Authors who define it use a macro definition based on a description of activities to be done to obtain value from a technology [23] or

are even more general. Some of these papers refer BMs not to a single organization but to an industry sector [24, 25].

Similar considerations are still valid for the isolationist Economics field. Anyhow here a BM is more referred to an economic system [26].

Positioning Organization was quite an issue, given the small number of papers in the sample and the equal presence of micro and macro definitions as well as its total absence. In this area a BM is usually described using case studies or examples taken from empirical cases [27].

In the Information Systems field the need to have a foundation for the research on BMs is clear. In spite of the paucity of research contributions found in this area, there are attempts to define and clarify the relationship between BMs and strategy [2] and to have a more rigorous definition of the term with the development of a BM ontology [1].

Finally in the Strategy group, approaches are mainly isolationists in nature and all the papers here classified refer to different definitions and concepts of BM but are centred on the core of value creation and destruction [28].

4. Discussion

Given the number of disciplines involved and the totally different approaches adopted in cited works, in order to understand research trends on this topic we try to depict the conceptual basis and the underpinning philosophical assumptions. With this aim we adopt the Burrell and Morgan's framework as an intellectual map to analyse socio-philosophical concerns in selected contributions. The diagram below shows the results of the analysis. To increase readability, considering that some areas shared the same position, they have been grouped by creating the following categories: E-commerce and Finance, Business and Management, ICT (formed by Computer Science and Technology). Shape and dimension of areas reflects the total amount of papers classified and their individual position.

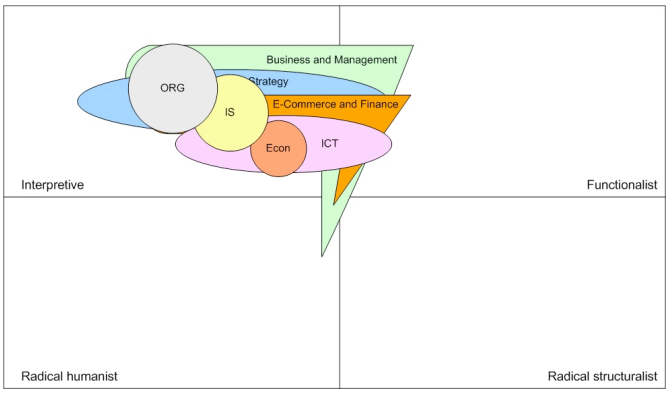

Fig. 1. Burrell and Morgan's framework

The matrix clearly shows the prevalence of the interpretative paradigm in BMs research. Even though BMs have been studied by different disciplines using different perspectives, mostly all the contributions share a common ontological and epistemological approach. With these premises research on BMs seems to follow a common path. Interpretive paradigm predominance is common in new and not well understood field: this seems to fit perfectly with BMs research.

Anyhow following the consideration in the previous paragraph and looking at the diagram we argue that an objective understanding of BMs is still lacking. BMs research contributions led to different directions, due to different interpretations. We are far from a mutual understanding and a common theoretic background for BMs. Relevant literature shows the foundations of BM are rooted on technology and the way to gather value from it. Another import aspect is the relationship between strategy and BMs. We may sum up that finding how to gather value from a technology and defining steps to practically achieve this goal it is what BMs research is all about.

Interpretative paradigm predominance could be the reason for isolationism prevalence. If contributions on BMs are mainly based on interpretations it could be hard to find a common path because interpretations rely on subjective judgments and subjective judgments could easily diverge.

On the other end, objective perception of reality is scarce in this research field. Objective perception derives rational explanations from observation and measurement and defines general valid laws in order to predict or evaluate [29]. But if BMs are not clearly defined how can they be measured and described? The identification of a set of candidate variables or phenomena to be measured or observed could be helpful in this context. Recent contributions adopt ontological approaches to summarize all the positions and derive a shareable concept of BMs [7, 1]. An effort to compare and integrate the two approaches could be useful to achieve the goal of a unique concept [30]. These ontologies could be used as a base for data gathering with the objective of defining new taxonomies and moving towards a theory of BMs [22]. Anyhow these are still defined over interpretive contributions. As an interpretive approach in part creates the reality studied through constructs used to view the world [29], research must be aware that variables to be measured could be outside the ontology. At this point it is worthwhile to mention a relevant critic in BMs research which, entering the radical humanist paradigm considers BMs as a dangerous and human created superstructure [5].

5. Conclusion and further research

In this paper we looked at BM research gaining a deep insight of this field of research. Our research suggests that ontology based approach applied to BMs could be a good starting point to make this field more objective.

We decide then to apply the Business Model Ontology [31] to the LD-CAST European project which aims at increase cross-border cooperation among chambers of commerce using web services. The ontology has been proposed in order to help to define the BM for the proposed enabling platform. The use and adoption of the ontology will be studied and analysed in an action research project for one year. In our opinion this case seems to be particularly relevant as may be used to test the ontology as a communicative and design tool as well as a guide to identify

variables to be measure to define how e-services adoption could be used to gather value provided the given scenario.

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