EXTENDED THE SAM MODEL - PROPOSED A SYNCHRONIZE MODEL -

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ABSTRACT

Integration between business and information technology (IT) has become one of the top priorities for today's organizations, known as "strategic alignment", which has resulted in several models. The model that has attracted the most attention in this area is the Strategic Alignment Model (SAM) proposed by (Henderson and Venkatraman, 1993a). Any organization needs to be flexible and dynamic to support internal activities and external exchanges. The SAM model does not convene several points on this dynamic integration.

Our article will result in giving the limits and weakness of the SAM model by propagating the studies impeded by the model and concluding with a proposal of the revisited SAM model which will lead to the part of the implementation of the business and IT strategy and the infrastructure part, which must meet the requests to strategic and operational objectives with a synchronization that anticipates each time if there is a verification to do or to renew again the strategy and realign the business IT in a constantly evolving and dynamic way.

KEYWORDS

Business IT Alignment, SAM Model, Synchronization, Agility and Dynamism

1. INTRODUCTION

Today's businesses need flexible and adaptable information systems (IS) to support their strategies and business processes, as well as to facilitate the organization's adaptation to environmental requirements. Dynamic adaptations of the information system resulting from changes in strategy or environment are part of the problems addressed by the strategic alignment of information systems.

Like any business, to grow and prosper, managers must be able to anticipate, recognize and respond to changes in the internal and external environment. This study examines the limitations and gaps of Henderson and Venkatraman's SAM model, which will lead to a synchronous model between strategy and information system. The model will hinder the implementation of the strategy that will change the processes for changing information technology and therefore to achieve agile and synchronous strategic alignment. Since managers spend significant resources on consultation and training in the hope of creating smart strategies very often, these smart strategies do not translate into smart performance (Verweire, 2014).

The researchers examined the difficulties encountered by organizations in achieving a high degree of homogeneity across domains, i.e., the alignment of strategy with IT infrastructure and processes. The main challenges are: a strategy that is often unknown and ambiguous or difficult to implement. (Baets, 1992; Reich and Benbasat, 1996a) identified that high management does not understand the importance of alignment or contribution that IT can make to the business (Henderson and Venkatraman, 1993a), (Campbell and al., 2005) say that the business environment is dynamic and changing rapidly. A number of consequences have been observed as a result of these challenges. When the company's strategy is unknown, ambiguous or static, the computerized level is random rather than determined, resulting in inefficiency (Baets, 1992). When there is a disconnection between the IT team and the strategy team (a group often without an IT specialist), the strategic potential of IT is poorly understood (Campbell and al., 2005). And in environments characterized by dynamism and hyper-competition, it is a great challenge, a mission to align IT capabilities with an evolving strategy. Despite previous research and the identification of challenges for cross-domain areas, mechanisms to align business strategy with IT infrastructure and processes remain insufficiently studied, neither the

above-mentioned studies on the discovery of important alignment factors nor the research that led Henderson and Venkatraman to the strategic alignment model (SAM) (Henderson and Venkatraman, 1993a).

In the following chapters, we will elaborate the strategic alignment globally, then the work that has extended the SAM model to acquire a specific need by elaborating if agility is between its empirical work, from this work we will determine the limits of the SAM model to lead to a revised and synchronous SAM model.

2. RELATED WORK

2.1 Strategic Alignment

Since the early 1990s, the alignment of activities with information technology has improved organizational performance and has received considerable attention in the literature (Bharadwaj and al., 1999) (Etien, 2006) (Thevenet, 2009) (Doumi and al., 2013). Alignment of Business Strategy and Information Technology (now referred to as Strategic Alignment) has many synonyms such as Alignment (Silvius, 2007), Harmony (Luftman and Brier, 1999), Linking (Reich and Benbasat, 1996b) and Business-IT Alignment (Maes and al., 2000) ...

In the literature, we identify many definitions of strategic alignment : Business IT alignment refers to the alignment between business and information technology Strategies and between organizational information systems and infrastructures (Henderson and Venkatraman, 1993b). It is defined as "the extent to which the mission framework, objectives and support plans, and are supported by the organization's mission, objectives and plans" (Hirschheim and Sabherwal, 2001). This alignment creates an integrated organization where each function, unit, and person is focused on the organization and its competitiveness. (Tallon and Kraemer, 2003) define strategic alignment by the extent to which the Information System strategy supports and is supported by corporate strategy, according to (Reich and Benbasat, 1996b) strategic alignment refers to the level at which the mission, objectives and plan contained in the business strategy are shared and supported by the IT strategy. (Luftman, 2003) reports that strategic alignment refers to the application of information technology in an appropriate and timely manner, consistent with business strategies, objectives and needs. (Chung and al., 2003) find a strong correlation between the agility of the IT infrastructure and alignment of the IT enterprise strategy. They conclude that the IT strategy needs to be closely aligned with the organizational strategy in view for IT infrastructures to be able to facilitate the agility of the business. This tight alignment means that IT infrastructures need to be flexible because the agility of the IT infrastructure allows the company to develop new processes and quickly applications. (Oosterhout and al., 2005) have developed a conceptual model that describes the conditions under which the specific attributes of the IT architecture and business governance mechanisms are viewed as the agility of the business by enabling and leading to better organizational performance. Operational IT alignment refers to the alignment between business and information technology strategies and between information systems and organizational infrastructures. This approach aims to increase the use value of the information system and make it an advantage for the company.

The main challenges of business IT alignment are to make the information system an advantage in support of the company's strategy. The information system emerges as a quality and creates a source of competitive advantage, only if it is ensured to coincide with the company's needs by strategic alignment.

"Strategic alignment" has resulted in several models. The model that has retained the most attention in this area is the strategic alignment model proposed by (Henderson and Venkatraman, 1993a). We will present the model by mentioning its limits concerning the misalignment of uses and the non-interconnection of the different types of domains of the SAM model.

2.1.1 SAM Model

The model that has attracted more attention in this area is the strategic alignment model proposed in the article written by Henderson and Venkatraman in 1993, SAM is the most cited. According to the literature review developed in (vargas and al., 2007). The SAM model has received empirical support and has conceptual and practical value (Avison and al., 2004; Maes and al., 2000; vargas and al., 2007). This model is based on the need to achieve alignment between internal and external domains as well as functional integration in the business and IT domains (Bomarius, 2005). Strategic alignment is a process in which the company's strategy aims to improve its activities compared to its competitors. The concept of strategic alignment is based on two elements, as shown in Figure 1.

Figure 1. Strategic Alignment Model -Henderson & Venkatraman 1993

Model SAM is comprised of four strategic alignment perspectives. Henderson & Venkatraman (1993) classify alignment perspectives under two categories: business strategy driven perspectives, which consists of strategy execution and technological potential, and IT strategy driven perspectives, which encompasses both competitive potential and service level (Table 1).

Table 1. Alignment perspectives -Henderson & Venkatraman-

Business strategy driven		Business strategy driven	
	IT Strategy		
This perspective is consistent with the traditional top-down strategy approach.		This perspective focuses on the development of strategies adapted to information technology.	
IT strategy driven		IT strategy driven	
	IT Infrastructure & Processes		
This perspective reflects the exploitation of new information technology capabilities to influence or enable a new strategy and therefore create a competitive advantage for companies.		This perspective emphasizes strategic complementarity that creates the capabilities required to satisfy IT needs.	

We must realize that the real challenge for an organization is not to achieve static alignment between the four areas at any given time, but to ensure continuous assessment of trends in these four areas to enable the organization to review and reposition itself in the external environment, while reorganizing its internal infrastructure. The researchers determined that management must recognize the need to move from one perspective to another, based on the changing internal and external business environment. Quoting a quote: "The most important lesson to learn is that strategic alignment is a journey and not an event".

Henderson and Venkatraman (1990) also emphasized the need to understand the dynamic characteristics of this model. They claim that the numbers of strategic planning methods established in the previous decades have failed not because of the weakness of their logic, but because of their inability to realize the dynamic nature of the strategy, and therefore of the alignment.

The SAM model has received empirical support and is considered to have both practical concepts and values (Avison and al., 2004). The vast majority of tracking models and alignment consulting practices are based on the original strategic alignment model. Even today, it is considered to be the most fundamental work in business-IT alignment, and is cited in the majority of relevant academic work. Several specialists have developed and extended the SAM model, this part will be elaborated in the next section.

2.2 Extended SAM Model

Several studies have extended the SAM model to validate or evaluate strategic alignment or to create a new aligned enterprise architecture framework (Avison and al., 2004; Chen and al., 2005; Hinkelmann and al., 2017)... Few researchers attack the SAM model by mentioning its limitations or its relationship with business and IT agility. In this chapter, we will develop different works obtained from the SAM model in Table 2:

Table 2. Extended Sam Model

Sources	Extend SAM Model
(Avison & al. 2004)	Validated the strategic alignment model and found that it had conceptual and practical values, Therefore, (Avison and al., 2004) proposed a more practical approach using a strategic framework based on the SAM model that "allows management and individuals in management and technology to determine current alignment levels" and to track and modify future alignment as required to determine the extent to which business strategies and IT are aligned...
(Gerow & al., 2015)	Gutierrez and Serrano also discover the strategic alignment of a theoretically useful model (Henderson and Venkatraman, 1993b) but it should be noted that the initial research provides little guidance on how to achieve the proposed strategic perspectives. (Gutierrez and al., 2009) indicate that the most recent alignment measurement tools are specific to each organization and that there is little data to validate their applicability to small businesses (Gutierrez and al., 2009).
(Wegmann & al., 2007)	The paradigm "SEAM" has been proposed as a systemic paradigm for improving existing environmental assessments framework methodologies and finding explanations for practical problems faced by enterprise architects (Wegmuller and al., 2000).
(Hinkelmann and al, 2017)	Proposed a new paradigm in the context of enterprise information systems for business continuity and IT alignment for the agile enterprise. (Jansen, 2017) explored how the alignment of the system based on "ArchiMate" The enterprise architecture model can be controlled using Semantic Web technology. Despite this important work, each of the above-mentioned studies is nevertheless limited.
(Fimbel, 2007)	Introduces a model by highlighting a double necessity. On the one hand, it would be necessary to have an operational model for professionals. On the other hand, it would be necessary to take into account the latest theoretical developments in management sciences. To do this, the author carries out an empirical study of 150 companies and then identifies seven success factors for the adjustment of the information system, which he describes as a "strategic manoeuvre". Thus, the authors develop a set of twelve steps to control, detect and correct misalignments between the "Business" architecture and the IT architecture. It is, in a way, the representation of a process that consists of twelve steps to complete the management, detection and correction of misalignment.

Finally, we conclude that most of the work reviewed by the SAM model gives us the opportunity to say that few have developed the limits of the SAM model and that they mention some tasks that can be discussed or validated with the SAM model such as the change in internal or external environment, as well as the fact that the SAM model perspectives are not uniform in 4 abstraction levels.... the work mentioned focuses on the validation of the SAM model, or the maturity of the SAM model, the others on issues related to enterprise architecture modeling and the others on strategic reorganization. It is our turn to determine the limits of the SAM model by projecting this meaning into the dynamism and determining the principle of agility, this part will be developed in the next section.

3. LIMITS OF SAM MODEL

The model shows its limits outside the "classical" alignment but today it is confronted with the uncertainties and complexity of the external environment, strategic alignment alone is not enough. In this chapter, we will discover what he is missing!

The SAM model was created in 1992, several other researchers referred to it to develop another model, for strategic alignment modeling, for assessing the coherence between the different domains of the SAM model, for evolution... but in the long term, we never find follow-up. The model gave no inability or real leads on the implementation of change and environmental flexibility. Nowadays, dynamism has become the trend; companies are faced with rapid and radical changes, making the organization's entities closely linked, agile and flexible.

Starting with the criticism that is characterized by the date of the model (1992), nowadays the model must integrate dynamism and not remain static by the weakness of the empirical results that it could produce by its referencing. The development of the SAM model was created during a rather stable economic period. Today, market uncertainty and instability are important for companies. Adaptability becomes a factor of competitiveness.

The complexity of the SAM model relationships is difficult to implement. In (Reix and al., 2016) they say that the world of practitioners has sought to tune the SAM model. He concludes that support is difficult to implement. This author also emphasizes the time dimension. In his book, he points out that "the model does not explicitly integrate time and history". In the face of environmental instability, organizations must be increasingly flexible and agile in their alignment process; there is no reference to time management.

Alignment between the different domains of the SAM model must be able to anticipate new strategies and technologies useful to the company and allow their adoption by synchronization over time. In the same context, it is worth mentioning the work of (Chan, 2002) they conclude that the SAM model is not applicable to concretely analyze real situations, in addition, this type of criticism would weaken strategic alignment.

Nowadays the acronym VUCA stands for volatility, uncertainty, complexity and ambiguity characterize the world in which we live and the circumstances in which we must make decisions. The acronym has been developed to all the uncertainties and unpredictability we confronted. In connection with the concept of VUCA, it helps us to developed strategies that support the effective progress of operations and can be applied to business success. Basically, all the requirements described above correspond to the principles of business IT alignment because it's necessary to work closely and interdisciplinary. Except the SAM model does not handle complexity or uncertainty. The strategy aspect ensures business success in a VUCA world; it becomes clear that IT produced a very important role in the planning and execution of individual measures. It is therefore essential to make companies aware of the skills and performance of computers so that IT can help to find the right answers to the questions of tomorrow. However, the SAM model does not evoke the quality of the information system next to the context of the company and its activity, nor the quality of the uses of technological tools neither the behavior of the actors and the operation of information systems.

The goal of the SAM model is that the four components must be aligned, i.e. the overall strategy, the IT strategy, the organizational infrastructure and processes, and finally, the technological infrastructure and the IT processes. This means that these four components must evolve so as to converge for the same goal. The model ignore in each of its perspectives a part of the coherence of alignment and there is unfortunately no continuity between the 4 perspectives which normally must have a common objective, therefore the model SAM does not generate the function synchronization between the entities of strategic alignment from business strategy to IT infrastructure and process. We will explain this synchronization in the following table 2:

Table 2. Synchronize The SAM Model-

To make the adjustment dynamics of each of the components, it is necessary to synchronize the different domains of the SAM model to remain attentive to the external / internal change of the environment and to make strategic alignment agile. The SAM model shows that the notion of alignment is not easy to grasp and that the purpose of alignment can go beyond the process between information technology and business and IT strategy. In the next part, we will define the revisited SAM model by synchronizing the different domains of the model to have an agile model.

4. SYNCHRONIZE A SAM MODEL

A lack of synchronization between business processes will lead to operational slowdowns within the company, errors and replication in data processing (HR, Finance, CRM, ERP, etc.). It is difficult to focus on all activities under these conditions until standards are established.

The company must provide its employees with quick and direct access to the most current information, at any time and from anywhere. Whatever the means and technologies used, if data integration has not been

properly carried out, the collection of information dispersed over the enterprise can become truly complex, and it is therefore impossible in a company to "make changes at one level without affecting another, because everything is closely connected". Organizations must therefore reflect globally on their objectives.

The company's strategy is very important in information systems planning. The information system is developed to support the organization's strategic objectives, even in the near future. This is why the strategic role of the information system must be clearly defined in the scheduling processes. The information system is normally not dynamic enough to change significantly in order to be able to manage the changing needs of users. It is therefore expected that information systems will take into account all the eventualities related to the type of strategy, whether it is business or IT strategy.

Fundamentally, dynamism is important to support the Business and IT strategy with the development of information systems to enable the delivery of new strategic objectives that must be planned and adapted to each other while remaining scalable and constantly updated. It is an ongoing process that helps the information systems support structure to remain relevant to the strategic goals and objectives of any organization, to which the SAM model refers by adjusting some changes to obtain a synchronous model between the strategy that will verify the continuity of the acquired objectives between the strategy and the two levels (organizational and IT infrastructure).

All the elements that were presented and discussed in the previous sections are used to present a synchronous adaptation of the classic Strategic IT Alignment Model (SAM). Ensure that the strategic alignment model is revisited in a flexible way, which can at the same time take into account changes in the internal and external environment to obtain an update of the strategy that will be consistent with information technology with a synchronization that anticipates each time if there is a change to be made to renew the strategy and redo the Business IT Alignment. In Figure 2, we propose the SAM model revisited by correcting some of the limitations mentioned in the previous section.

Figure 2. Revisited a SAM Model on a synchronization Model

Technology is becoming increasingly complex, and business processes are required to support the strategic objectives to maintain alignment between the four different levels of the SAM model including integration between technology and IT to be able to apply and return an appropriate response to the business and IT strategy, the infrastructure part must respond to the demands of constantly evolving strategic or operational business strategies in a cost-effective and dynamic manner.

5. CONCLUSION & FUTURE WORK

Despite the existence of many extensions of the SAM model, several limitations of this model emerge in relation to the external environment and the constant evolution of the activities. This document focuses on the limitations of the SAM model that were cited in previous sections showing that the SAM model is still limited and lacks several phases to achieve dynamic synchronization between the four domains of enterprise architecture. This is why we designed to revisit the SAM model by making it synchronous to the new objectives between strategy and information technology. To achieve this important step, organizations can follow a process that involves self-evaluation, strategy development, and business IT correlation. The IT function will

be able to innovate and deploy the most appropriate simplification strategy to meet the company's specific needs.

The future objective of this study is to investigate how the assessment between all levels of the SAM model will be constituted to correct some limitations obtaining an instrument to measure both the agility between the level of alignment between the company and the IT, and the activities necessary for organizations to comply with it, following the work that was validated by (Imgharene & al., 2018).

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