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Shifting from an analytical paradigm to a systems paradigm: a fundamentally systemic approach of a business model to tackling complexity

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ABSTRACT

We are witnessing increasing complexity of the business world and a need for business renewal. However, our common way of thinking, based on analytical thinking and its guiding principles—determinism, reductionism, and disjunction—has limitations in regard to tackling these challenges. In line with this analytical approach, the current literature is confronted with many issues, including three major ones: the vagueness of the notion of ‘value creation’, the lack of consensus on the components, and the questioning of the scope and level of analysis. Thus, the present manuscript proposes a systemic approach to the business model. After presenting the main principles of systems thinking—teleological, interdependence, and holistic principles—we present directions for conceptualizing the business model concept to present avenues of development, thereby overcoming inherent limits of the concept and renewing the approach to face complexity.

Keywords: Business model, systems thinking, systemic, value, pattern

INTRODUCTION

A business model describes the way a firm creates, delivers, and captures value (Teece, 2010). The wide diffusion of business models over the past twenty years shows that they are useful for both business managers and researchers. This concept supports an approach that lies between strategy and operations (Casadesus-Masanell & Ricart, 2010), which moves away from the logic of competitive advantage and is closer to the everyday way of understanding business logic. Moreover, it has renewed the approach to strategy while relying on the fundamentals of the field before emancipating itself to become a field of its own (Maucuer & Renaud, 2019), with journals publishing regularly on the subject (Belussi et al., 2019). Finally, the empirical work that it has generated has made it possible to advance a great deal of useful knowledge on both theoretical and practical levels, such as the articulation of internal and external consistency (Demil & Lecocq, 2010), the functioning of platforms (Demil et al., 2018), and the strategic implementation of organizational hybridity (e.g., Yunus et al., 2010; Laasch, 2018).

We live in turbulent times, with increasingly interdependent businesses, in which change is accelerating and in which we face major social and environmental challenges (Senge, 2006). Firms are largely responsible for these challenges and have a large capacity to address them (e.g., Bocken et al., 2015; Brehmer et al., 2017; Ergene et al., 2021). This is, according to Snihur and Eisenhardt (2022), the most significant opportunity to extend the business model approach. Nevertheless, the business model literature has developed based on an analytical perspective (Ackhoff, 1999; Capra, 1997, Morin, 2014) that currently prevents the business model approach from successfully addressing these challenges. Indeed, the traditional analytical perspective on which Western science has been developed is based on the hard science perspective, which holds reductionist, disjunction, and deterministic principles. Although these principles have led to tremendous advances in the sciences for centuries, they also prevent researchers from developing more integrated, holistic, and purpose-oriented approaches that could renew the way knowledge is created and be used to address complex issues (Ackhoff, 1999; Capra, 1997, Morin, 2014).

In this view, we note that the business model literature, which draws on an analytical approach based on determinism, reductionism and disjunction principles, currently faces several issues, both theoretical and practical. Our study identifies three main issues. First, since the business model is defined as the logic of value creation, delivery, and capture, we can question the very notion of value. The extant literature on sustainable business models indicates that ecological

and social types of value can be integrated into the business model framework, which is rooted in the creation of primarily economic value (Spieth et al., 2018; Brehmer et al., 2018; Lüdeke-Freund et al., 2018). While some models have integrated the three main types of value in their understanding of the business model (Joyce & Paquin, 2016), the way in which these types of value are understood remains poorly articulated. The second issue is the definition of the components, activities, and ways of articulating these elements that constitute the business model. Indeed, there appears to be a lack of consensus on the components, activities and founding mechanisms of a business model and how to identify them in an ad hoc manner. How can we understand an object whose content seems to vary from one approach to another? Finally, the last major issue is the boundaries of the business model. Indeed, the notion of a business model goes beyond what is played out inside the firm. On the one hand, the business model articulates internal and external consistency (Demil et al., 2018), and on the other hand, the business model can include relationships with stakeholders such as consumer communities and financial and industrial partners (e.g., Brehmer et al., 2018; Yunus et al., 2010). Thus, one of the challenges of the business model is to determine how and to what extent to integrate relationships with the ecosystem to understand the logic of value creation, delivery, and capture.

To address these issues, following the premises of a complex and more systemic-oriented approach to the business model (Massa et al., 2018, Amit & Zott, 2018), we challenge the actual underlying analytical principles that have been the main drivers of the literature and propose an alternative and integrative view based on systems thinking (see Sandberg & Alvesson, 2011). Indeed, despite the adoption of approaches mobilizing the term 'system' (e.g., Demil and Lecocq 2010; Massa et al., 2017; Zott & Amit 2010), as well as numerous fragmentary borrowings from a systemic vision of this object (e.g., Casadesus-Masanell & Ricart, 2010; Demil & Lecocq, 2010; Zott & Amit, 2010) or the insertion of a complex vision of the business model (Massa et al., 2018), few articles mobilize systems thinking to apprehend the business model (Fehrer et al., 2018). However, systems thinking proposes moving from an analytical approach to an understanding-based approach focused on how the whole sets parts to music to achieve a given purpose (e.g., Capra, 1997; Senge, 2006). Therefore, we propose a declination of the principles of systems thinking for the study of business models by emphasizing three major principles induced by the mobilization of this approach: the teleological aspect of the business model, the understanding of the business model as a dynamic pattern, and the openness of the business model to its environment. In that view, we propose an integrative and fundamentally systemic view of business models that goes beyond premises for that direction. This article

highlights the avenues opened by the systemic approach to the business model and puts forward theoretical proposals regarding the three issues identified in the literature.

1. THREE CHALLENGES FOR THE BUSINESS MODEL APPROACH

The literature addressing the concept of business models comes from two major fields: strategy and entrepreneurship (Maucuer & Renaud, 2019). The use of the concept has grown exponentially (Foss & Saebi, 2017), and this trend has continued over time, demonstrating the interest in it in both the business and academic worlds (Zott et al., 2011). A business model is thus defined as the logic of a firm for creating and capturing value (Shafer et al., 2005; Teece, 2010). While we have seen a profusion of definitions (Teece, 2018; Zott et al., 2011), there is a consensus as to the essence of the concept, referring to the way a firm does business (Osterwalder et al., 2005). The differences are indeed related to the nuance of the terminologies put forwards, the synonyms used, or the use of different perspectives and are not related to fundamental contradictions expressed by the authors (Maucuer & Renaud, 2019). Despite the consensus about the definition of the concept, various approaches can be found in the literature: the business model can be considered as ‘attributes of real firms’, i.e., as a set of real-world activities a firm decides to perform; as a ‘cognitive schema’, or mental model of business leaders, managers and entrepreneurs, i.e., how they interpret the way they do business; or as a ‘formal conceptual representation’, such as the business model canvas elaborated by Osterwalder and Pigneur in 2010, to make explicit in a visual representation the participants’ mental models (Massa et al., 2017). From a partially systemic-oriented view (Amit & Zott, 2010, 2021), the business model describes “the system of interdependent activities that are performed by a focal firm and by its partners and the mechanisms that link these activities to each other” (p.163).

In any case, the concept underlines the importance for business leaders, managers, and entrepreneurs to design their business model since every firm has one, whether it is conscious or not (Zott and Amit, 2010). This design, or conscientization, then enables improvement to the performance of the firm (Foss & Saebi, 2017), particularly through the optimization of resources and skills (Demil & Lecocq, 2010), dynamic capabilities (Teece, 2018), reflection on interfirm relationships (Demil et al., 2018) or even through innovation and creativity (e.g., Chesbrough, 2002). Moreover, the focus of the concept on activities, with a level of analysis between strategy and operations (Casadesus-Masanell and Ricart, 2010), allows for a pragmatic

view of what is possible to do (Zott et al., 2011; Arend, 2013) by making the managerial realities related to strategy more legible (Osterwalder, 2005).

Although the literature on business models has grown considerably over the past decade, the concept still presents inherent challenges in terms of its theoretical foundation and its necessary evolution to respond to a new context to grasp the issues surrounding grand challenges and difficult issues (Jones, 2014; Checkland, 2012). We have thus identified three issues that we believe reflect the current main challenges: the vagueness surrounding the notion of value creation; the definitions of components, activities and mechanisms; and a questioning of the appropriate scope and level of analysis.

1.1. The blurring of the concept of value creation

One of the dominant themes in the business model literature is value creation and capture. In their very popular article, published at the dawn of the business model literature, Amit and Zott (2001) seek to identify the sources of value in a firm. To do this, they propose five explanatory theories: Porter's value chain analysis, Schumpeter's theory of the process of creative destruction, Penrose's resource-based view, strategic network theory, and Williamson's theory of transaction costs. In this regard, the business model approach is based on concepts and theories rooted in the field of economics (DaSilva & Trkman, 2014). In this sense, the business model literature, by focusing on profit generation and customer satisfaction, has long been detached from any extrafinancial value. In other words, value has been associated with the maximization of profit based on an objectivist conception, where everything can be measured on a financial standard (Desmarteau et al., 2020). This approach to value therefore fails to take into account the beliefs and principles guiding our choices (Sparviero, 2019). The notion of value was not challenged until new perspectives emerged in recent years, aiming to complement the traditional approach by questioning the nature of value (Arend, 2013; Dembek et al., 2022; Desmarteau et al., 2020; Sparviero, 2019). A whole stream of sustainable business models has since been developed to consider sustainability issues (Schaltegger et al., 2022), incorporating both environmental and societal value perspectives (Bocken et al., 2015; Massa et al., 2017; Spieth et al., 2018). Note that this has been one of the best opportunities to extend the field (Snihur and Eisenhardt, 2022). Traditional business model frameworks such as Osterwalder and Pigneur's business model Canvas (2010) have been supplemented to incorporate these different types of value (Schlüter et al., 2023).

However, authors appear to consider these different types of value in isolation by adding components side by side without seeing the synergies that may exist between them. For instance, Joyce et Paquin (2016) add two layers to the business model Canvas with an ecological and a social layer in addition to the existing economic layer. Moreover, if they assume that the model needs to have horizontal and vertical consistency, we do not see exactly how the framework is focused on the components of each layer but not on how they interact with each other.

Beyond the articulation of the dimensions, we can see that they often appear highly conceptual and out of context. For example, economic value can be conceived as the way in which shareholders capture value through the share price or through the payment of dividends (see Desmarteau et al., 2020); it can also address the fact that a family business must be sustainable to be passed on to future generations or that the business must allow for the financial needs of its employees. Thus, the economic dimensions of value are quite different and cannot be entirely dissolved under the name 'economic value' at the risk of erasing the specificities of the entrepreneurial project and of the specific economic logic implemented by the manager. At the time of mission-based enterprises, when some firms aim to reduce plastic consumption and change the way agricultural products are produced and consumed, summarizing the finesse of the value proposition in three generic dimensions seems inadequate for understanding the specificities of the logic that firms deploy. Moving from a restricted 'value' approach, Amit & Zott (2018) consider the 'overall objective' of the company, leaving space for various types of objectives.

Thus, business model approaches favour a focus on the creation of value but not on the destruction of value linked to the firm's activities. In the face of these challenging issues (Foss & Saebi, 2018), it is necessary to develop representations of the business model that allow for generic consideration of the different mechanisms of creation, delivery, capture and destruction of various types of value.

1.2. A lack of consensus on components, activities, and mechanisms

The second issue we raise concerns the components, activities, and mechanisms inherent in the constitution of a business model. On the one hand, the literature has already debated the nature of the components. While some authors have shown the recurrent use of certain components, such as value propositions, customers, resources, revenue, and costs (see, for instance, Shafer et al., 2005), the literature reports a wide variety of component use, ranging from three to twenty

depending on the author (Clauss, 2017). In addition, understanding the origin of these components is difficult (Foss & Saebi, 2018). In this sense, the components attributed to the business model are arbitrary, and no consensus has been reached. Some authors further state that the definition and nature of the components have no real theoretical basis (Baden-Fuller & Mangematin, 2013; Foss & Saebi, 2018). Thus, it is difficult to justify the choices that are made to include or not include certain components in the operationalization of the business model (Foss & Saebi, 2018). Moreover, the approaches do not make it clear which activities to include or exclude in the analysis and construction of a business model. Amit and Zott's (2011) approach, based on a system of activities, takes Porter's value chain as a major foundation, adding transactions between functions. However, based on an active approach to business model design, the approach does not allow for an understanding of which activities should or should not be included in the business model analysis. Authors must therefore continue their efforts to determine the characteristics that define the business model based on clarified empirical and theoretical foundations (Zott and Amit, 2010; Maucuer and Renaud, 2019).

Moreover, the articulations between components have rarely been analysed beyond the simple mentioning that they must allow the whole to operate (e.g., Amit & Zott, 2010, 2018). The emphasis is *a priori* placed on the dynamic nature of the business model, but the work carried out often proposes static approaches, such as blocks stacked on top of each other, like Osterwalder and Pigneur's business model canvas (2010). However, some approaches have begun to reflect on the articulation of these components, especially by studying the mechanisms, i.e., the articulation between activities (Amit & Zott, 2010). For instance, the causal loops approach of Casadesus Masanell and Ricart (2010) invites us to consider the business model as the articulation of structuring choices in terms of policy, assets and governance and their consequences. However, if the principle of interdependence, which is based on a complexity approach, is a real step forwards, it remains difficult to understand which elements must and can be interdependent. In addition, these approaches are the only ones, to the best of our knowledge, to have followed the path of a dynamic perspective of the business model (Massa et al., 2018).

1.3. The level and scope of the business model concept

The third issue that we have identified for the academic field of business models is the scope of the business model. Indeed, the approach "*recognizes the need to go beyond a focal firm's boundaries and adopt a more systemic perspective that emphasizes interdependencies and complementarities between a firm and third parties in order to properly understand how value*

is created” (Zott & Amit, 2013, p.12). While the ambition is laudable, particularly to overcome the sterile duality between the internal dimension of the firm and its external dimension (Lecocq et al., 2010), it becomes difficult to identify the boundaries of the business model. In other words, if the boundaries of the business model are not those of the focal firm, where should these boundaries be placed? Lecocq et al. (2010) argue that the environment is not one of the components of the business model, even if it influences each of these components. Later, Demil et al. (2018) associated business models and ecosystems, the latter being defined as the environment chosen by the focal firm. From then on, the ecosystem has been part of the logic inherent in the business model; is it therefore part of the business model or is it a separate concept that cannot be separated from it? For instance, the literature on global value chains shows that the organization of these global chains is based on logic that is partially inherent to the choices made by firms (Gereffi et al., 2006; Kano, 2018). Is it conceivable that, because they concern the suppliers of our suppliers, these choices of organization of activities are not part of the logic of value creation, delivery, and capture of the firm? Research in the stakeholder stream shows that it is necessary to identify the degree of association of stakeholders with the value creation of the firm, which can vary (Bacq and Aguilera, 2022). This raises the question of the scope of these relationships or of the ecosystem to be considered: should we consider only the stakeholders at the interface with the firm, i.e., those who have direct relations with the firm, or should we extend this to all the actors over whom the firm exerts its influence?

In addition to the boundary or delimitation of the business model, the question of the level of analysis arises. In fact, “*with various levels of abstraction applied to the BM concept – ranging from product level, business unit level, corporate level to the aggregative industry level of analysis [...] – the confusion regarding scope conditions persist.*” (Foss and Saebi, 2018, p. 12). The level of analysis thus ranges from product to industry to firm or business unit (Wirtz et al., 2016). In this sense, it is possible to “zoom in and out” of our perspective depending on the issues addressed and to assemble and disassemble the business model parts to switch from a holistic view to a more specific one. Indeed, the relevance of the level of analysis could a priori depend on the research project. If this question appear to not be a theoretical limitation, it is nonetheless fundamental to provide a basis for better justifying the relevance of the concept according to the level of analysis by understanding how to articulate them and how to choose the level that fits the research.

We have highlighted certain major issues concerning business models. It seems normal that the concept still has some way to go given its relatively recent origin. We thus remain confident

about the future of the concept, which will notably involve its theoretical consolidation (Foss and Saebi, 2018). Among the theories that are increasingly solicited, we find systems theories, which are more generally accepted as systems thinking. Many authors agree regarding admitting the systemic character of the concept, and the evolution of the concept goes in this direction (Schlüter et al., 2023; Velu, 2017). Since then, “*the received literature on business models, explicitly or implicitly, supports an activity system perspective*” (Zott & Amit, 2010, p. 219), describing how a business operates as a system (Osterwalder et al., 2005). While some research acknowledges the inherent complexity of the business model (e.g., Massa et al. 2018; Amit & Zott, 2018), an increasing number of authors are calling for a move towards systems and complexity theory (e.g., Abdelkafi and Täuscher, 2016; Foss and Saebi, 2018; Schlüter et al., 2023; Velu, 2017).

However, such an approach has thus far not been fully developed, and we respond here by proposing to formally mobilize systems thinking to address the issues identified above. It is therefore appropriate to present systems thinking to better understand the core principles to apply to the business model concept.

2. SYSTEMS THINKING: AN ALTERNATIVE TO ANALYTICAL THINKING

The notion of “system” may seem confusing to us in view of the diversity of meanings that are attached to it (Miller 1972), as well as the plurality of currents that constitute it (Leonard and Beer, 1994). Moreover, it is not because authors use the term ‘system’ that they refer to systems thinking, so we need to separate the confusing everyday language from the academic and well-defined notion of a system (Checkland, 2012). In fact, with its multiplicity of meanings, the term “systemic” has become a buzzword, losing a certain consistency.

Systems thinking can be defined as a way of thinking, a conceptual framework composed of knowledge and tools for embracing complexity by organizing it into a coherent narrative (Le Moigne, 1999; Senge, 2006). It has emerged to understand complex phenomena that cannot be explained by analytical thinking (Capra, 1997) and has been successful in addressing what we call challenging problems or grand challenges (Jones, 2014; Checkland, 2012). The discipline has evolved into many streams, and two major approaches—hard systems and soft systems thinking—core and principles can be identified. A system can be defined as “*an interconnected set of elements that is coherently organized in a way that achieves something*” (Meadows, 2008, p.11). Thus, a system is characterized by three characteristics: elements, interconnections, and

purposes. Additionally, it is not something real but rather a construction of the mind, a mental model, a way to grasp reality (Meadows, 2008; Senge, 2006), enabling us to face complexity. Therefore, considering an organization as a system requires the use of certain principles to understand it (Le Moigne, 1999). We introduce three guiding principles for such an understanding (compared to the guiding principles of analytical thinking: determinism, reductionism, and disjunction): teleology, interdependencies, and holism (Morin, 2014).

2.1. Teleological principle

Teleology – or the study of purpose – has long been considered supernatural or metaphysical (Bertalanffy, 1968). Indeed, analytical thinking assumes no teleological mechanism, claiming that the world is determined by universal laws that enable us to predict future events by analysing causal relationships (Capra, 1997). In contrast, systems thinking has reappropriated the notion of purpose to understand phenomena, on the one hand by emphasizing their unpredictable and nonlinear character and therefore by underlining our inability to predict them and, on the other hand, by restoring the importance of the purpose pursued by living systems – including organizations – considering their behaviour. In fact, according to the principle of equifinality, two systems can reach the same final state despite different initial conditions and different resources; similarly, systems may reach different ends despite identical initial conditions and allocated means (e.g., Bertalanffy, 1968; Kast & Rosenzweig, 1972). Consequently, it is not the past but the future that makes the present through what Capra (1997) calls ‘self-fulfilling prophecy’; the more you visualize something to happen in the future as if it was a prediction, the more likely it will happen. It is thus as important to study systems in a behaviours/purposes relationship as it is in a causes/behaviours relationship.

To implement this teleological principle, Senge (2006) suggests letting the values (as moral principles), purposes, and vision emerge from the organization. Here, values respond to the ‘how?’ while purposes are the answer for the ‘what for?’ or ‘why?’, and vision corresponds to the ‘what’, the idealized design according to Ackoff (1999). Ideals are different from objectives, which are different from goals (Ackoff, 1999), and this is what constitutes the difference between efficiency and effectiveness: efficiency is about goals, while effectiveness is about purposes and vision. *“If you define the goal of a society as GNP, that society will do its best to produce GNP. It will not produce welfare, equity, justice”* (Meadows, 2008, p.140), so we should always have in mind the purposes of an organization when defining goals.

Finally, the modelling of a system is also teleological, in the sense that it is a subjective act, realized in line with the modeller's aims (Meadows, 2008; Sterman, 2000; Senge, 2006). Modelling is inherently partial and imperfect. As we say, 'the map is not the territory' (Sterman, 2000). Modelling is therefore an arbitrary act, permitting observers to navigate through complexity for specific objectives. In this sense, the modelling of a system is a perspective of reality defined by the observer according to his or her needs and purposes.

2.2.The interdependence principle

Systems thinking suggests that the dynamics of a system, i.e., the way the system behaves over time, are due more to interactions between the parts of the system than to the parts themselves (Sterman, 2000). In other words, we should focus more on how the parts interact rather than on their intrinsic properties, in contrast to analytical thinking, which suggests focusing on intrinsic properties than on interactions. For instance, what is important is not the resources or clients I have but the way they participate in the system, i.e., the functions they have within the system to achieve its purposes. A function can be defined as a process that consumes inputs and generates outputs to support the whole process (Ackoff et Gharajedaghi, 1996; Miller, 1972). When we talk about 'client', we do not talk about the person but about the function the person has in the system and the way it is perceived (Le Moigne, 1999). To study these functions, it is necessary to understand how the parts are interdependent through three main components: stocks, flows, and variables. The stocks and flows, which can be described as the structure of the system, are made of matter, energy, information, and money (Sterman, 2000), while variables are the factors that influence this structure through causal relationships (Meadows, 2008; Senge, 2006; Sterman, 2000).

According to systems thinking, we live in a complex and nonlinear world, which means that effects can have multiple causes and vice versa; moreover, effects can be the causes of other effects, forming feedback loops. These feedback loops can be positive – or reinforcing – and tend to amplify any behaviour in the system. They amplify what is happening, creating vicious or virtuous circles, and may lead to uncontrolled growth and/or collapse. In contrast, feedback loops can be negative – or balancing – and tend to prevent deep changes in the system and stabilize it (Meadows, 2008). This set of feedback loops can be referred to as the system pattern (Capra, 1997).

This setting makes it difficult, if not illusory, to address a single cause when trying to solve a problem. The risk is not only to alleviate symptoms without understanding the underlying

mechanisms that cause them to emerge but also to create more problems in the future. As the expression goes, *'today's solutions are tomorrow's problems'* (Senge, 2006). It is therefore necessary to study the pattern of the system and to identify the leverage points, allowing small changes in the variables to be made that can lead to large results through the loops (Meadows, 2008; Senge, 2006). Through these leverage points, we do not seek to directly solve the problem but rather to dissolve it. In other words, we do not seek to identify the cause of the problem and remove it but rather to redesign the system by changing the feedback loops so that the problem no longer appears (Ackoff, 1999). In short, the conjunction principle enables us to study the pattern of the system, composed of feedback loops, leading to finding the leverage points to intervene and redesign the system to solve problems.

2.3. The holistic principle

One of the main principles of systems thinking is to view the whole as indivisible. This holistic approach – from the Greek word *holos*, meaning “the whole” (Ngana, 2015) – enables us to expand our consciousness about the phenomena we want to study. Indeed, according to systems thinking, spatial boundaries are subjective representations of our worldview. The world is then a continuum (Meadows, 2008): each system has subsystems and supra-systems and each system is a subsystem and a supra-system of another, all being interdependent. Note that these hierarchies are again mental representations. *“In nature there is no “above” or “below”, and there are no hierarchies”* (Capra, 1997, p.35).

Whereas analytical thinking takes apart the system to isolate difficulties and address them more easily, systems thinking studies the system by including it in a larger system (Gharajedaghi et Ackoff, 1984). Consequently, it makes it possible to understand how it impacts the supra-system, *i.e.*, what functions of the system are related to the supra-system. In other words, we must study the system in relation to the whole it serves. For instance, a university serves the educational system, and it is important to understand its purposes in relation to this system before implementing changes in the university. Likewise, sustainable development is often represented by a rose with the three pillars meeting in the middle, but the hierarchy of systems reminds us that the economy is a sub-system of society, which is a sub-system of nature. Moreover, each sub-system needs to fulfil its functions according to its supra-system if the world is to work well. Consequently, thinking in systems is a way to become aware that we are part of a whole and that every action we take might have an impact on a supra-system. Perhaps seeing the world as a large system would help restore the respect for life that we have lost (Bertalanffy, 1968). In addition, this is not only a question of ethics; it is above all a question

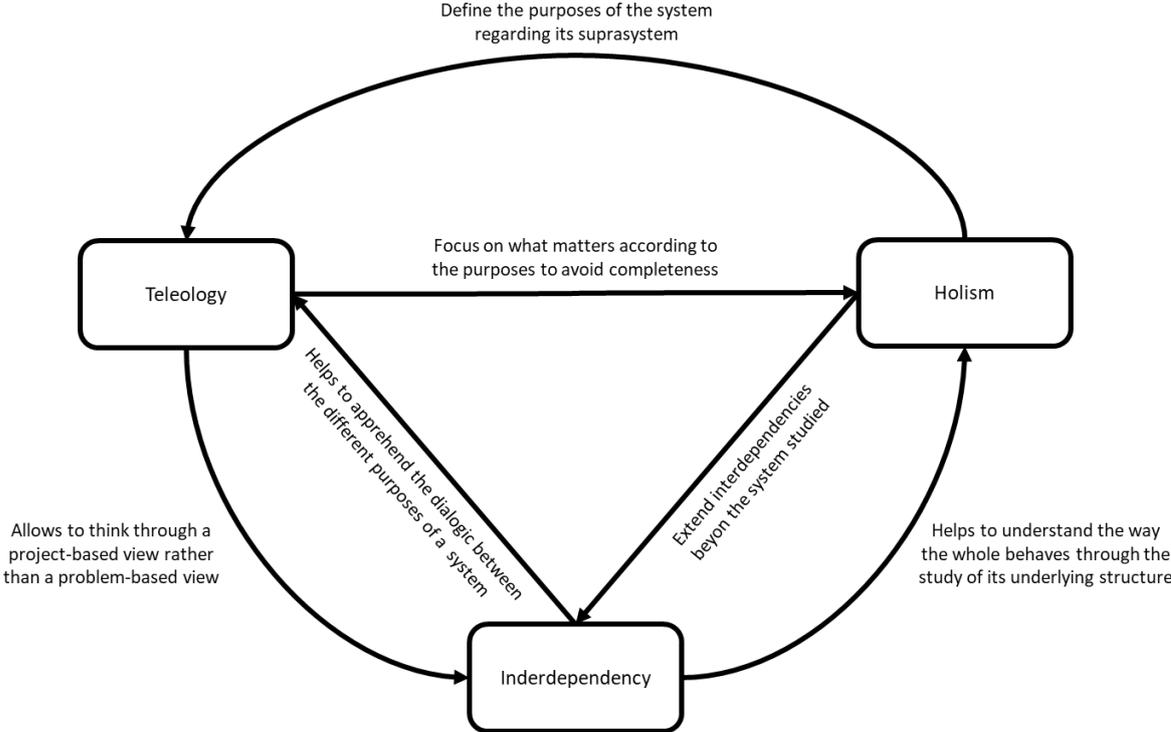
of awareness leading us to think globally if we want to face the complex issues of our time (Senge, 2006).

Moreover, systems thinking gives importance to context (Capra, 1997). Indeed, as the world is a continuum, systems and their environment are always in interaction, and we need to understand these interactions to understand how systems work according to the producer–product relationship defined by Singer in 1959: “*a producer is only necessary, not sufficient, for its product. Therefore, a producer never completely explains its product*” (Gharajedaghi et Ackoff, 1984, p.6). Thus, thinking about systems requires redefining the boundaries of the phenomena we study. On the one hand, a multidisciplinary and transdisciplinary perspective can be applied to understand the impact from economic, social, and ecological perspectives and other dimensions that might be impacted by these phenomena. By impact, we mean the functions each system has towards others, being both impacted and impacting through these interactions. The notion of ‘actant’ developed by actor-network theory and taken up by systems thinkers such as Jones and Van Ael (2022) helps us to designate all the elements of the system that are impacted or/and impacting, that have a function in the system according to its purposes, both human and nonhuman. For instance, a forest or a lake can be considered an actant, similar to an individual or an electronic device. On the other hand, it enables us to rethink the scope of a system, especially through what we usually call ‘side effects’, ‘secondary effects’, or ‘externalities’, as if they were not considered in the study. However, there are no such things in the real world: there are only effects, which can be intentional or non-intentional, anticipated or unanticipated (Meadows, 2008; Sterman, 2000). In this sense, “*side effects are not a feature of reality but a sign that our understanding of the system is narrow and flawed*” (Sterman, 2000, p.11). Indeed, we have difficulty understanding effects in time and space, limiting ourselves mainly to immediate and local effects (Sterman, 2000). Hence, it is important to clearly define the system boundary by knowing which effects we wish to include in the study.

Finally, the holistic principle leads us to a dead-end if we need to connect everything to everything else to explain a phenomenon (Capra, 1997). However, we should not confuse ‘complexity’ and ‘completeness’: systems thinking knows that complete knowledge is impossible and that “*our models fall far short of representing the world fully*” (Meadows, 2008, p.86). As modelling a system is always done with a defined purpose, it enables us to define arbitrary boundaries for the system to make it intelligible, especially by excluding elements of the systems that are irrelevant to the study (Meadows, 2008; Sterman, 2000). Being aware of this choice allows changes to be made when necessary.

These three core systems thinking principles provide an articulated system of thought (see Figure 1), which enables us to make some suggestions for developing a systemic approach to the business model concept.

Figure 1 Representation of the articulation between the three major systems thinking principles.



3. TOWARDS A SYSTEMIC APPROACH TO THE BUSINESS MODEL CONCEPT

We have shown that the literature on business models is still subject to numerous challenges, three of which we consider to be important in strengthening the relevance and robustness of the concept, namely, clarifying the notion of value, questioning the notion of component, and specifying the scope and the level of analysis of the business model. We claim that we can address these challenges by shifting from an analytical to a systems paradigm, which we have outlined.

In this section, we aim to apply the systems paradigm to address business model issues, first by recognizing what has already been reported in the literature in favour of a systemic conceptualization of the business model and, second, by going further. Going further involves

applying each of the principles in greater depth and articulating the three principles as an indivisible whole.

3.1. Towards a pattern-based approach to business models

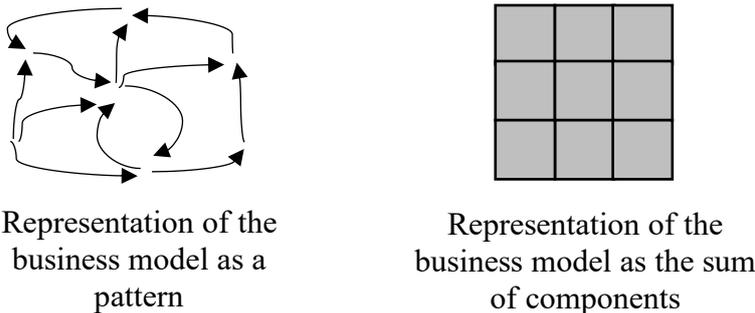
Systems thinking encourages us to focus on the interdependencies between parts rather than on the parts themselves. Drawing on the initial view of interdependencies in our field (Porter & Siggelkow, 2008; Amit & Zott, 2018), we suggest studying the business model as a pattern, i.e., “*a configuration of relationships characteristic of a particular system*” (Capra, 1997, p.80), rather than a sum of components (see Figure 2). The most important thing about a business model is not what resources and competences it has but rather how these resources and competences are used to meet its purposes (see, for instance, Do Vale et al., 2021). Some resources may have specific functions that are made possible by only a certain pattern in the business model; others may not fully exercise their capabilities, which are constrained by the current organization. In a sense, we must understand how these parts interact with each other to study their functions and thus understand how each part “*serve[s] a specific purpose toward the fulfilment of the overall objective*” (Amit & Zott, 2018:163). A function can be assigned by several stakeholders—or resources—and conversely, each stakeholder—or resource—can develop specific functions depending on the configuration of the business model pattern.

The business model as a pattern might show us that it is not a linear mechanism from suppliers to customers (Zott et al., 2011) but reflects the systemic organization of mutually reinforcing activities (Zott & Amit, 2010; Amit & Zott, 2018), especially through positive feedback loops – virtuous circles – that are formed (Casadesus-Masanell & Ricart, 2010). The essence of the business model therefore results in balance and complementarity of the parts (Foss & Saebi, 2018), visible only through a holistic vision (Zott et al., 2011). In other words, the way the parts of the business model interact is more crucial for its performance than are the parts themselves. Few attempts have been made to develop that view in the business model approach, the most famous one being the Ryanair business model representation elaborated by Casadesus-Masanell and Ricart (2010), inspired by the causal loop diagram, one of the most famous systems thinking tools. However, to our knowledge, no one has attempted to further pursue this work (the same remark was made by Massa et al., 2018). Some frameworks, such as the RCOV model elaborated by Lecocq et al. (2006), acknowledge the interactions between business model components, which were described years later in a book, but the focus is still on the components themselves. Nevertheless, an increasing number of authors, such as Abdelkafi and Täuscher (2016), Cosenz et al. (2020), and Ammirato et al. (2022), have attempted to understand business

model patterns, especially by using causal loop diagrams and stock and flow maps, often based on an existing business model framework, such as building a causal loop diagram based on the business model canvas (e.g., Cosenz et al., 2020). However, we can use other frameworks and thinking tools, such as subsystem diagrams or systemigrams, to apprehend the business model as a pattern (Sterman, 2000). As we will see, we can further integrate the other systems thinking principles.

Additionally, what is interesting in considering the business model as a pattern is the possibility of finding leverage points to intervene and improve its performance. Indeed, improving the performance of the business model is not about improving its components in an isolated manner because the optimization of the components may not lead to optimization of the business model as a whole. It is the coordination, intensification, and harmonization of functions within it that must be improved (Bistagnino, 2011). In that sense, business modelling consists of identifying variables and implementing leverage points that dissolve problems and (re)design the structure of the system rather than solving problems by eliminating the symptoms. Dembek et al. (2022) provide a well-known example of systems thinking: the reintroduction of wolves to Yellowstone National Park, which impacted not only the other animals but also the landscape and even the flow of the river. In this sense, the reintroduction of these wolves can be seen as a leverage point to improve the natural ecosystem.

Figure 2: Difference between a representation of the business model as a pattern and as the sum of components.



3.2. Towards a new understanding of ‘value’

While the literature on business models usually refers to value proposition as the products and/or services that the firm offers to its customers (Osterwalder and Pigneur, 2010), other outputs and outcomes – defined as the effects of the outputs on the different business model

actants – can emerge from a business model, such as the maintenance of a local culture, the creation of jobs in a territory, noise, or even waste rejected from production (Bistagnino, 2011; 2017). The goal is not internalizing the ‘side effects’ on the firm’s goals but rather about opening up to the ecosystem with which the firm interacts to expand its purposes (Pies and Schultz, 2023). The interest of such an understanding enables us to consider which systems capture the outputs generated by the organization and how they generate functions in these systems: for example, customers may use goods and services; partner organizations codevelop products and services; society and the territory may generate employment and local know-how; and pollution and waste may generate biodiversity loss in a natural system.

Thus, systems thinking invites us to consider any output of the system – material, energy, information, and monetary flows – as having potential value. For instance, a by-product represents material that has been transformed by the business model without being considered as contributing actual value creation (Bistagnino, 2011). However, if it is valorized by others by allowing this by-product to have a new function in the business model enabling new flows, it will be considered value creation. Similarly, the CO₂ released into the atmosphere is nothing more than the energy transformed by the business model that has not been valorized. Waste, and more broadly, the pollution created, are thus considered resources that are poorly used and therefore have a negative impact on society and nature (Bistagnino, 2011), whereas some waste can be used to produce new resources and therefore create effective value, for example, coffee grounds reused to grow mushrooms or methane from livestock reused to make biogas. The outputs of one organization become inputs for another or can become a product/service consumed by a customer. These outputs can therefore be defined as leading to potential value creation or destruction, depending on their use by another actant or system. Then, this approach is also a way to become aware of the value created and destroyed by the firm (Bocken et al. 2015).

In addition, systems thinking invites us to conceive the business model as teleological: the way the firm does business serves as support for its purposes. If these purposes are not solely economic, reasoning by economic equivalence is no longer relevant; we claim that the triple bottom line of People, Planet, and Profit is still a reductive and simplistic approach to all possible purposes (e.g., Ocasio & Radoynovska, 2016; Yunus et al., 2010), according to the actants and the spatial and temporal context in which they are located. Indeed, the mission of the firm, when it is clearly formulated, proposes alternative or complementary purposes to the economic ones, the latter being only a means to reach these underlying purposes (Ackoff, 1999).

In other words, firms should first clarify what their purposes are before trying to model how they create and capture value because the perception of what is valuable depends on these purposes. Consequently, we propose to rethink the notion of value through the prism of the purposes pursued by the focal firm and its ecosystem—these purposes being multiple—from each internal and external stakeholder, converging in a shared vision (Senge, 2006).

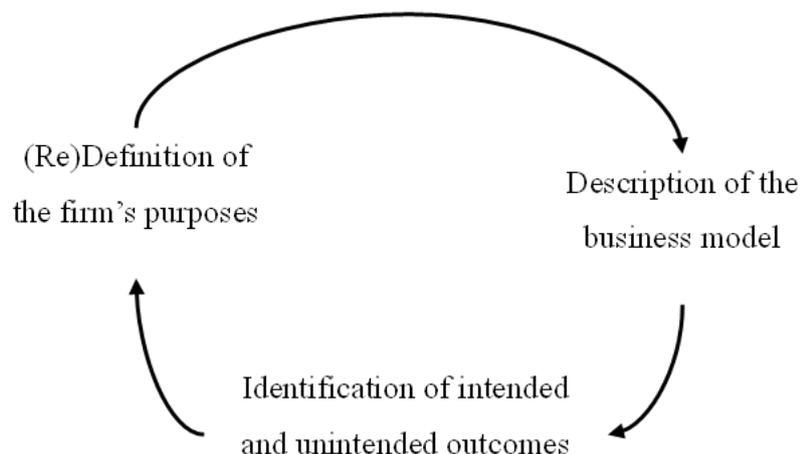
Under these conditions, we define value as the adequacy between the outcomes of the business model and its purposes, in line with the words of Dembek et al. (2022), who define value as the relationship between means and ends. In other words, a firm creates value when its outcomes are aligned or consistent with its stakeholders' purposes. Without excluding any notion of measurement, the emphasis here is on the following process: do the outcomes generated by the business model of the firm correspond to the worldview we defend? For instance, a firm creates ecological value if its purpose is to contribute to an ecological issue. Consequently, 'externality' can be considered value creation from the moment we become aware of it. Thus, value can no longer be evaluated solely in terms of economic equivalence; if a firm plants trees out of ecological concern, it does not need to sell this service to a client or even to have indirect repercussions on its core business for this to be considered value creation.

Moreover, we suggest deepening what the purposes of the business model are before modelling it. Indeed, scholars have developed many frameworks over time, which are becoming increasingly complicated with the multiplication of components to extend the approach to a sustainable perspective. For instance, Osterwalder and Pigneur's business model canvas (2010) has been extended by many authors, such as Joyce and Paquin (2016), with their framework called the triple layer business model canvas. They added two identical canvas layers to create an ecological layer and a social layer, increasing the number of components to 27. However, it does not seem relevant and feasible to add more and more components to obtain an exhaustive view of the way a firm does business. As we have stated, systems thinking is not about completeness; rather, it is about complexity. In other words, what we need most is to be able to identify what is important and what is not, what we should focus on and what we can ignore (Senge, 2006). Looking at the business model through the prism of purpose seems to be a good way to model how a firm does business, focusing on what matters. Furthermore, it is often difficult to classify purposes into boxes –economic, ecological, or social – as the logic is complex and contextual. In this regard, a business model addresses the way the firm and its ecosystem tend to reach their purposes in doing business, so we suggest starting from these purposes to create a business model. Consider the example of the business model of Ryanair

developed by Casadesus-Masanell and Ricart (2010). Before describing it with a causal loop diagram, we should first ask “why?” to model the way the firm does business regarding its purposes. In short, business modelling entails designing and implementing a pattern that supports the purposes of a firm. Researchers should therefore consider the ultimate purposes of the owner and main stakeholders to better understand how the business model supports these purposes.

Therefore, one interest of the approach we propose is to make the business model’s purposes conscious. If some purposes can be identified through objectives clearly defined by the firm and its ecosystem, most are often not conscious. It is therefore necessary to bring these purposes to light to confront them with the reality of the business model. Questioning the difference between outcomes and purposes is a way to both continuously rethink the purposes and rectify the outcomes to make them consistent through an ongoing feedback process. It is also a way to bring to light unintended outcomes and see if they are in line with those purposes or if these outcomes can reveal a purpose that the actors were not aware or explicit about (see Figure 3). In short, awareness of the intended and unintended outcomes of a business model leads to a dynamic redefinition of its purposes, which iteratively leads to redesigning the business model. Moreover, contrary to the common adage (Emiliani, 2000), we no longer manage only what we measure, but we manage what we are aware of.

Figure 3: Dynamic evolution of business model purposes and design



3.3. Towards a new perspective of the scope of the business model concept

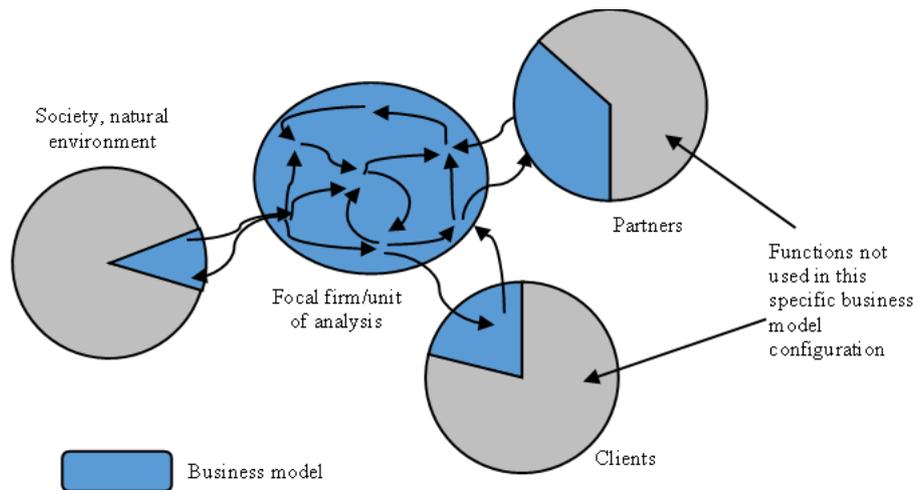
The systemic approach suggests studying the interdependencies, whether within the system or between the system and its environment, to understand how they influence each other. To study

the business model of the focal firm, it is first necessary to define its boundaries and understand the interdependencies with its environment.

Early on, authors noted the necessity of going beyond the focal firm. “[*The business model concept*] recognizes the need to go beyond a focal firm’s boundaries and adopt a more systemic perspective that emphasizes interdependencies and complementarities between a firm and third parties in order to properly understand how value is created.” (Zott & Amit, 2013, p.12). From these interactions with the environment inevitably follows the question of the boundary – or delimitation – of the business model (e.g., Amit & Zott, 2001; Zott et al., 2011). The literature remains vague on this question, as no study has focused on it. Systems thinking invites us to delimit the scope of the business model not by apprehending the internal and external stakeholders but by apprehending their functions. In other words, what matters is not the stakeholders themselves—the clients, the key partners—but the way stakeholders and the business model interact. Moreover, some authors have called for the extension of the stakeholder lens to determine how the business model is embedded into supra-system—socioeconomic and environmental systems (Dembek et al., 2022). In this way, we can better understand the impacts of the firm, including indirect effects in time and space, which may have effects on the activities of the company and its partners through a feedback loop process.

Consequently, the notion of ‘actant’ is interesting to use in the sense that we conceive the stakeholders only through their active or passive relationship – being impacted or impacting – with the business model in a particular context. Thus, the business model configuration enables some functions of the actants to be expressed and some to be constrained. The functions that are constrained are not part of the business model. Therefore, the business model does not integrate the stakeholders as whole entities but rather as the functions they perform in one particular business model configuration. In addition, the notion of actant enables us to broaden our awareness of what is part of the business model by including not only human entities but also non-human entities (such as parts of society and nature). In short, the business model is delimited by the functions of the actants—human and non-humans—impacting and being impacted by the way the firm does business (see Figure 4).

Figure 4: Delimitation of the business model



Finally, the business model can be considered an individual or shared mental model that allows leaders, managers, entrepreneurs, and researchers to know how their firm does business (see Massa et al., 2017). These mental models are flexible, depending on the needs of relevant individuals. In accordance with this approach, which articulates systems, sub-systems and higher-level systems, the systemic approach of the business model enables us to zoom in or out according to the desired level of analysis, from a product to a sector of activity, passing through a department, a business unit, an enterprise, or even a conglomerate. These different levels of analysis are to be considered in the same way as systems, their sub-systems, and supra-systems: everything is intertwined; therefore, everything is linked and needs to be linked. It is simply a question of changing the perspective. Therefore, if we take the business unit as the level of analysis, this does not mean that we isolate it to study it but that we study the interdependencies between it and the other business units and the firm by understanding what functions are assigned to it. The purpose of the concept remains unchanged: to understand how the firm – or a part of the firm – creates and captures value. It is up to the observer to choose his level of analysis such that it corresponds to the needs of the context.

DISCUSSION AND CONCLUSION

The manuscript presented here has shown that the literature on business models faces important issues that researchers are confronted with in their work, especially when using analytical thinking. Our work consists of shifting from an analytical to a systemic paradigm for business models through three new guiding principles—teleology, interdependence, and holism—

enabling us to build a coherent system of thought. This has led to the proposal of an integrative and fundamentally systemic approach to the business model concept. This work makes three main contributions. First, we address the issues we identified in the literature through a systemic approach to renew the notion of value, components, and the scope of the business model. Second, we open a new way to understand the business model concept to embrace complexity at a time of increasing complexity, especially with the rise of challenging problems. Third, our work opens new avenues of operationalization, both through the development of new frameworks and through business modelling to support practitioners in learning how to think about systems.

The value, scope, and elements of a business model

Our first contribution lies in responding to the business model challenges that we raised in the initial section of this article. Through the different ideas we have exposed, we have generated a new paradigm for business models that renews the very notion of value. The notion of ‘value’ has been used extensively throughout the literature, becoming the central notion of the concept and even being at the very heart of its definition, as the description of the way a firm creates, delivers, and captures value (Teece, 2010). In claiming that value lies in the alignment between the firm’s purpose and the outcomes of activity, we expand the notion of value that has been used in a restrictive manner. From the initial economic value to the enlarged economic/ecological/social triptych, sometimes called sustainable value (Méndez-Leon et al. 2021), value has been considered in a very normative way. Our notion of value enables us to consider more diverse purposes, such as family enrichment, feminism, democratic governance, and net positive ecological impact, which can all be considered as proposed in a normative view of business models (Laasch, 2018). This approach to value fits institutional complexity (Ocasio & Radoynovska, 2016), which has been imposed as a new standard for organisations. Additionally, our approach enables the consideration of value destruction, which has been overlooked in previous business model approaches. Focusing on value creation and capture without considering what a business destroys biases people’s perceptions of the role of business in our society as well as business owners’ views of the real impact.

The pattern approach of business models stresses element interdependencies. Thus, we support some previous work, such as the causal loop diagram made of choices and consequences elaborated by Casadesus-Masanell and Ricart (2010). This kind of diagram describes the pattern of the business model, which determines the way the business model behaves over time, much more than the parts that constitute it. This kind of description may lead to the discovery of

leverage points, permitting the redesign of the business model in an efficient and effective way, according to the purpose. In that view, we consider the systemic approach to be a relevant tool for addressing the internal and external consistency of business models (Demil et Lecocq, 2010), the articulation of which is a challenge for sustainable development (Attanasio et al. 2022).

Additionally, our approach provides guidelines for considering what should and should not be included in a business model. Claiming that the functions of the actant who is part of the system should be integrated, whereas the functions of the same actants who are not part of the system should be excluded, leads us to propose a more robust frontier of the business model concept. While business models and ecosystems highly overlap (e.g., Demil et al., 2018; Snihur et Bocken, 2022), our approach enables delimitation of the concept. In this view, not all features of a partner should be included in the business model, which may be less clear in other approaches, such as the CANVAS (Osterwalder & Pigneur, 2010). It also stresses that even if a business model is less focused on the external environment than on strategy (Lanzolla & Markides, 2021), relevant functions from external actants should be integrated from a business model perspective.

Business model, complexity, and challenging issues

Our second main contribution concerns the way the business model concept can address challenging issues. By developing a systemic approach to the business model, we allow future research to deepen our understanding and our knowledge to change the way we do business. Of course, some academics have already made calls to build a bridge between business and systems thinking (e.g., Abdelkafi, N., & Täuscher, K., 2016; Massa et al., 2018; Velu, 2017), but what we add here is a real system of thinking about systems to articulate the concept between them to develop coherent and integrative thinking. In this regard, we must think globally and act locally if we want to face anthropogenic challenges, and systems thinking, through its principles, may lead academics and practitioners to this point. It starts with a new language about systems rather than objects, purposes rather than causes, patterns rather than structure, and comprehension rather than explanation (Le Moigne, 1999). Today, we think in a linear manner, trying to find easy solutions because of the everyday language we use. Therefore, we need a new way to describe business models through this new language (Senge, 2006). We have started this work, and we could go further by integrating other concepts and articulating them in our system of thinking.

The global system in which the organization takes place often seems to have been neglected, notably due to our loss of awareness of belonging to it (Bistagnino, 2011). However, understanding the surrounding environment is essential for understanding how a firm operates, especially in the face of major challenges (Checkland, 2012; Jones, 2014). Challenging issues and anthropogenic challenges are complex by nature, and systems thinking has emerged to face such complexity (Capra, 1997). The systemic approach makes it possible to argue that even if certain global issues – such as challenging problems – seem difficult to grasp, they can be addressed at all levels, especially by firms (Senge, 2006). Thus, systems thinking enables us to recognize that we are all part of the problem and to detach ourselves from a self-centred or even anthropocentric vision of the firm by considering man as part of an ecological and social system: “*the web of life*” (Capra, 1997). The notion of ‘actant’ is interesting in the sense that it includes human and non-human actors or elements in a system without discrimination. Moreover, in the same way as for stakeholders, it is necessary to identify and integrate into the business model the functions of the environment that are performed in the business model. The surrounding environment develops specific functions with respect to the firm’s business model. Conversely, the business model develops specific functions as part of the surrounding environment. In that view, our approach enables us to better articulate business models that operate in their environment and to better grasp how they participate in responding to grand challenges and difficult issues.

Going further into operationalizing a systemic approach to business models

Our last contribution concerns the operationalization of this kind of approach. Indeed, our work, through the argumentation we formulate, can be translated into new frameworks to imagine, inspired by systems thinking tools, such as causal loop diagrams, as Casadesus-Masanell and Ricart (2010) did, and stock and flow models, systemigrams, rich pictures, gigamaps, etc. (see, for example, Sterman, 2000; Jones & Van Ael, 2022). We could adapt these tools and frameworks to describe how a firm creates, delivers, and captures value. Our systemic conceptualization of the business model is a path to achieve this goal. Moreover, thinking in systems is not something you can do in the blink of an eye. It is a long process we must live through to change the paradigm, from unlearning analytical thinking to learning systems thinking with a whole new language (Le Moigne, 1999). Moreover, systems thinking is often said to be too abstract and inapplicable, which is why it has not caught on in management until now (Jones, 2014). Therefore, we propose a first step to elaborate a new approach, from the core concept to the development of business model frameworks and business modelling

methodologies based on systems thinking, to let academics and practitioners think in terms of systems while making systems thinking more applicable and specific to the business model approach.

Thus, our work sets out a path for business modelling, allowing organizations to think of their business in a new way in line with their purposes and being aware of the intended and unintended consequences that are global and local in the short and long term and whether these consequences are economic, ecological, or social.

We do not claim here that systems thinking is ideal in all respects. Indeed, many difficulties regarding its mobilization have been noted from an empirical perspective. Thinking in systems requires time, whereas the business world moves very fast and is used to benefiting from quick and easy solutions (Jones and Van Ael, 2022; Senge, 2006). Therefore, this does not help its dissemination among the business world. Moreover, there is a plethora of concepts that are often very abstract and make it difficult to think concretely about the strategic decisions to be made; thus, we need to develop an integrative approach, from conceptualization to the development of methodologies and methods as a consistent whole (Jones, 2014). Thus, the proposed approach seems to be potentially fruitful and leads us to continue our efforts to try to deploy this approach and measure its full potential from both from theoretical and practical perspectives.

REFERENCES

- Ackoff, R. L. (1999). *Ackoff's best: His classic writings on management*. John Wiley & Sons.
- Abdelkafi, N., & Täuscher, K. (2016). Business Models for Sustainability From a System Dynamics Perspective. *Organization & Environment*, 29(1), 74-96. <https://doi.org/10.1177/1086026615592930>.
- Alvesson, M., & Sandberg, J. (2011). Generating research questions through problematization. *Academy of management review*, 36(2), 247-271. <https://doi.org/10.5465/amr.2009.0188>.
- Amit, R., & Zott, C. (2001). Value creation in E-business. *Strategic Management Journal*, 22(6-7), 493-520. <https://doi.org/10.1002/smj.187>.
- Amit, R., Zott, C. (2018). Business Model, the. In: Augier, M., Teece, D.J. (eds) *The Palgrave Encyclopedia of Strategic Management* (163-167). Palgrave Macmillan, London. https://doi.org/10.1057/978-1-137-00772-8_335.

- Ammirato, S., Linzalone, R., & Felicetti, A. M. (2022). The value of system dynamics' diagrams for business model innovation. *Management Decision*, 60(4), 1056-1075. <https://doi.org/10.1108/MD-02-2021-0172>.
- Arend, R. J. (2013). The business model: Present and future—beyond a skeumorph. *Strategic Organization*, 11(4), 390-402. <https://doi.org/10.1177/1476127013499636>.
- Attanasio, G., Preghenella, N., De Toni, A. F., & Battistella, C. (2022). Stakeholder engagement in business models for sustainability: The stakeholder value flow model for sustainable development. *Business strategy and the environment*, 31(3), 860-874. <https://doi.org/10.1002/bse.2922>
- Bacq, S., & Aguilera, R. V. (2022). Stakeholder governance for responsible innovation: A theory of value creation, appropriation, and distribution. *Journal of management studies*, 59(1), 29-60. <https://doi.org/10.1111/joms.12746>.
- Baden-Fuller, C., & Mangematin, V. (2013). Business models: A challenging agenda. *Strategic Organization*, 11(4), 418-427. <https://doi.org/10.1177/1476127013510112>.
- Belussi, F., Orsi, L., & Savarese, M. (2019). Mapping business model research: A document bibliometric analysis. *Scandinavian Journal of Management*, 35(3), 101048. <https://doi.org/10.1016/j.scaman.2019.101048>.
- Bertalanffy, L. V. (1968). *General system theory: Foundations, development, applications*. G. Braziller.
- Bistagnino, L. (2011). *Systemic Design—Designing the production and environmental sustainability*, e-book. Slow Food, Bra.
- Bistagnino, L. (2017). *Micro Macro: The whole of micro systemic relations generates the new economic-productive model*. Edizioni Ambiente, Milano, IT, 350.
- Bocken, N. M. P., Rana, P., & Short, S. W. (2015). Value mapping for sustainable business thinking. *Journal of Industrial and Production Engineering*, 32(1), 67-81. <https://doi.org/10.1080/21681015.2014.1000399>.
- Brehmer, M., Podoyntsina, K., & Langerak, F. 2018. Sustainable business models as boundary-spanning systems of value transfers. *Journal of Cleaner Production*, 172: 4514–4531. <https://doi.org/10.1016/j.jclepro.2017.11.083>.
- Capra, F. (1997). *The web of life: A new scientific understanding of living systems*. Anchor Books.
- Casadesus-Masanell, R., & Ricart, J. E. (2010). From Strategy to Business Models and onto Tactics. *Long Range Planning*, 43(2), 195-215. <https://doi.org/10.1016/j.lrp.2010.01.004>.
- Checkland, P. (2012). Four conditions for serious systems thinking and action. *Systems Research and Behavioral Science*, 29(5). <https://doi.org/10.1002/sres.2158>.

- Chesbrough, H. (2002). The role of the business model in capturing value from innovation: Evidence from Xerox Corporation's technology spin-off companies. *Industrial and Corporate Change*, 11(3), 529-555. <https://doi.org/10.1093/icc/11.3.529>.
- Clauss, T. (2017). Measuring business model innovation: Conceptualization, scale development, and proof of performance. *R&D Management*, 47(3), 385-403. <https://doi.org/10.1111/radm.12186>.
- Cosenz, F., Rodrigues, V. P., & Rosati, F. (2020). Dynamic business modeling for sustainability: Exploring a system dynamics perspective to develop sustainable business models. *Business Strategy and the Environment*, 29(2), 651-664. <https://doi.org/10.1002/bse.2395>
- DaSilva, C. M., & Trkman, P. (2014). Business model: What it is and what it is not. *Long Range Planning*, 47(6), 379-389. <https://doi.org/10.1016/j.lrp.2013.08.004>.
- Dembek, K., Lüdeke-Freund, F., Rosati, F., & Froese, T. (2022). Untangling business model outcomes, impacts and value. *Business Strategy and the Environment*. <https://doi.org/10.1002/bse.3249>.
- Demil, B., & Lecocq, X. (2010). Business Model Evolution: In Search of Dynamic Consistency. *Long Range Planning*, 43(2), 227-246. <https://doi.org/10.1016/j.lrp.2010.02.004>.
- Demil, B., Lecocq, X., & Warnier, V. (2018). « Business model thinking », business ecosystems and platforms: The new perspective on the environment of the organization. *M@n@gement*, 21(4), 1213. <https://doi.org/10.3917/mana.214.1213>.
- Desmarteau, R., Saives, A. L., Schieb-Bienfait, N., Emin, S., Boldrini, J. C., & Urbain, C. (2020). La création de valeur : glas ou Graal ? Revue critique et modélisation du concept. *Management International*, 24, 91-108. <https://doi.org/10.7202/1077436ar>.
- Do Vale, G., Collin-Lachaud, I., & Lecocq, X. (2021). Micro-level practices of bricolage during business model innovation process: The case of digital transformation towards omni-channel retailing. *Scandinavian Journal of Management*, 37(2), 101154. <https://doi.org/10.1016/j.scaman.2021.101154>.
- Emiliani, M. L. (2000). The false promise of “what gets measured gets managed”. *Management Decision*, 112-115. <https://doi.org/10.1108/00251740010694317>.
- Ergene, S., Banerjee, S. B., & Hoffman, A. J. (2021). (Un)sustainability and organization studies: Towards a radical engagement. *Organization Studies*, 42(8), 1319-1335. <https://doi.org/10.1177/0170840620937892>.
- Fehrer, J. A., Woratschek, H., & Brodie, R. J. (2018). A systemic logic for platform business models. *Journal of Service Management*, 29(4): 546–568. <https://doi.org/10.1108/JOSM-02-2017-0036>.
- Foss, N. J., & Saebi, T. (2017). Fifteen years of research on business model innovation: How far have we come, and where should we go? *Journal of Management*, 43(1), 200-227. <https://doi.org/10.1177/0149206316675927>.

Foss, N. J., & Saebi, T. (2018). Business models and business model innovation: Between wicked and paradigmatic problems. *Long Range Planning*, 51(1), 9-21. <https://doi.org/10.1016/j.lrp.2017.07.006>.

Gharajedaghi, J., & Ackoff, R. L. (1984). Mechanisms, organisms and social systems. *Strategic Management Journal*, 5(3), 289-300. <https://doi.org/10.1002/smj.4250050308>.

Gereffi, G., Humphrey, J., & Sturgeon, T. (2006). The governance of global value chains. *Review of International Political Economy*, 12(1): 78–104. <https://doi.org/10.1080/09692290500049805>.

Jones, P. (2014) *Systemic Design Principles for Complex Social Systems*. In G. Metcalf (ed.), *Social Systems and Design*, Gary Metcalf (editor), Volume 1 of the Translational Systems Science Series, Springer Verlag. https://doi.org/10.1007/978-4-431-54478-4_4

Jones, P., and Van Ael, K. (2022) *Design Journeys through Complex Systems. Practice Tools for Systemic Design*. BIS

Joyce, A., & Paquin, R. L. (2016). The triple layered business model canvas: A tool to design more sustainable business models. *Journal of Cleaner Production*, 135, 1474-1486. <https://doi.org/10.1016/j.jclepro.2016.06.067>.

Kano, L. (2018). Global value chain governance: A relational perspective. *Journal of International Business Studies*, 49(6): 684–705. <https://doi.org/10.1057/s41267-017-0086-8>.

Kast, F. E., & Rosenzweig, J. E. (1972). General systems theory: Applications for organization and management. *Academy of Management Journal*, 15(4), 447-465. <https://doi.org/10.5465/255141>.

Laasch, O. (2018). Beyond the purely commercial business model: Organizational value logics and the heterogeneity of sustainability business models. *Long Range Planning*, 51(1), 158-183. <https://doi.org/10.1016/j.lrp.2017.09.002>.

Le Moigne, J.-L. (1999) *La Modélisation des systèmes complexes*. Dunod

Leonard, A., & Beer, S. (1994). The systems perspective: Methods and models for the future. *AC/UNU Project*.

Lüdeke-Freund, F., Carroux, S., Joyce, A., Massa, L., & Breuer, H. (2018). The sustainable business model pattern taxonomy—45 patterns to support sustainability-oriented business model innovation. *Sustainable Production and Consumption*, 15: 145–162. <https://doi.org/10.1016/j.spc.2018.06.004>.

Massa, L., Tucci, C. L., & Afuah, A. (2017). A Critical Assessment of Business Model Research. *Academy of Management Annals*, 11(1), 73-104. <https://doi.org/10.5465/annals.2014.0072>.

Massa, L., Gianluigi, V., & Tucci, C. (2018). Business models and complexity. *Journal of Business Models*, 6(1), 59-71. <https://doi.org/10.5278/ojs.jbm.v6i1.2579>.

Maucuer, R., & Renaud, A. (2019). Business Model Research: A Bibliometric Analysis of Origins and Trends. *M@n@gement*, 22(2), 176-215. <https://doi.org/10.3917/mana.222.0176>.

Meadows, D. H. (2008). *Thinking in systems: A primer*. Chelsea Green Publishing.

Méndez-León, E., Reyes-Carrillo, T., & Díaz-Pichardo, R. (2022). Towards a holistic framework for sustainable value analysis in business models: A tool for sustainable development. *Business Strategy and the Environment*, 31(1), 15-31. <https://doi.org/10.1002/bse.2871>.

Miller, J. G. (1972). Living systems: The organization. *Behavioral Science*, 17(1), 1-182. <https://doi.org/10.1002/bs.3830170102>.

Morin, E. (2014). Complex Thinking for a Complex World – About Reductionism, Disjunction and Systemism. *Systema*, 2 (1), 14-22. <https://doi.org/10.17101/SYSTEMA.V2I1.257>

Ngana, J.-P. (2015). Management with a frame of mind for systemic thinking: A conceptual condition setting tool. *Systems Research and Behavioral Science*, 32(2), 175-182. <https://doi.org/10.1002/sres.2257>.

Ocasio, W., & Radoynovska, N. (2016). Strategy and commitments to institutional logics: Organizational heterogeneity in business models and governance. *Strategic Organization*, 14(4), 287-309. <https://doi.org/10.1177/1476127015625040>

Osterwalder, A., & Pigneur, Y. (2010). *Business model generation: A handbook for visionaries, game changers, and challengers*. John Wiley & Sons.

Osterwalder, A., Pigneur, Y., & Tucci, C. L. (2005). Clarifying business models: Origins, present, and future of the concept. *Communications of the association for Information Systems*, 16(1), 1. <https://doi.org/10.17705/1CAIS.01601>.

Pies, I., & Schultz, F. C. (2023). The governance of sustainable business model innovation—An Ordonomic Approach. *Scandinavian Journal of Management*, 39(1). <https://doi.org/10.1016/j.scaman.2022.101246>.

Schaltegger, S., Hansen, E. G., & Lüdeke-Freund, F. (2016). Business models for sustainability: Origins, present research, and future avenues. *Organization & Environment*, 29(1), 3-10. <https://doi.org/10.1177/1086026615599806>.

Schlüter, L., Kørnøv, L., Mortensen, L., Løkke, S., Storrs, K., Lyhne, I., & Nors, B. (2023). Sustainable business model innovation: Design guidelines for integrating systems thinking principles in tools for early-stage sustainability assessment. *Journal of Cleaner Production*, 387. <https://doi.org/10.1016/j.jclepro.2022.135776>.

Schultz, A. E. (1999). Creative Problem Solving: A Unique Aspect of Technology. *The Journal of Technology Studies*, 25(1), 73-75. <http://www.jstor.org/stable/43603902>.

Senge, P. (2006). *The Fifth Discipline: The Art and Practice of the Learning Organization*. Doubleday; Revised & Updated edition.

Shafer, S. M., Smith, H. J., & Linder, J. C. (2005). The power of business models. *Business Horizons*, 48(3), 199-207. <https://doi.org/10.1016/j.bushor.2004.10.014>.

Snihur, Y., & Bocken, N. (2022). A call for action: The impact of business model innovation on business ecosystems, society and planet. *Long Range Planning*, 55(6), 102182. <https://doi.org/10.1016/j.lrp.2022.102182>

Snihur, Y., & Eisenhardt, K. M. (2022). Looking forward, looking back: Strategic organization and the business model concept. *Strategic Organization*, 20(4), 757-770. <https://doi.org/10.1177/14761270221122442>.

Sparviero, S. (2019). The case for a socially oriented business model canvas: The social enterprise model canvas. *Journal of social entrepreneurship*, 10(2), 232-251. <https://doi.org/10.1080/19420676.2018.1541011>

Spieß, P., Schneider, S., Clauß, T., & Eichenberg, D. (2018). Value drivers of social businesses: A business model perspective. *Long Range Planning*, 52(3): 427-444. <https://doi.org/10.1016/j.lrp.2018.04.004>.

Simon, H. A. (2004). *The Sciences of the Artificial*, Massachusetts Institute of Technology.

Sterman, J. (2000). *Business dynamics: Systems thinking and modeling for a complex world*. Irwin/McGraw-Hill.

Teece, D. J. (2010). Business Models, Business Strategy and Innovation. *Long Range Planning*, 43(2), 172-194. <https://doi.org/10.1016/j.lrp.2009.07.003>.

Teece, D. J. (2018). Dynamic capabilities as (workable) management systems theory. *Journal of Management & Organization*, 24(3), 359-368. <https://doi.org/10.1017/jmo.2017.75>.

Velu, C. (2017). A Systems Perspective on Business Model Evolution: The Case of an Agricultural Information Service Provider in India. *Long Range Planning*, 50(5), 603-620. <https://doi.org/10.1016/j.lrp.2016.10.003>.

Wirtz, B. W., Pistoia, A., Ullrich, S., & Göttel, V. (2016). Business Models: Origin, Development and Future Research Perspectives. *Long Range Planning*, 49(1), 36-54. <https://doi.org/10.1016/j.lrp.2015.04.001>.

Yunus, M., Moingeon, B., & Lehmann-Ortega, L. (2010). Building Social Business Models: Lessons from the Grameen Experience. *Long Range Planning*, 43(2-3): 308-325. <https://doi.org/10.1016/j.lrp.2009.12.005>.

Zott, C., & Amit, R. (2010). Business model design: An activity system perspective. *Long range planning*, 43(2-3), 216-226. <https://doi.org/10.1016/j.lrp.2009.07.004>.

Zott, C., & Amit, R. (2013). The business model: A theoretically anchored robust construct for strategic analysis. *Strategic Organization*, 11(4), 403. <https://doi.org/10.1177/1476127013510466>.

Zott, C., Amit, R., & Massa, L. (2011). The business model: Recent developments and future research. *Journal of Management*, 37(4), 1019-1042.
<https://doi.org/10.1177/0149206311406265>.