The transformation of performance measurement during business model innovation in large companies: a research agenda

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Résumé :

La Business Model Innovation a été reconnue, à la fois d'un point de vue académique et praticien, comme un défi crucial pour les grandes entreprises qui souhaitent maintenir ou accroitre leur avantage concurrentiel. Elle transforme la façon dont l'entreprise mène ses activités, et ainsi les critères de performance. Or, la recherche académique n'a pas encore exploré les relations et interactions qui existent entre Business Model Innovation et mesure de la performance. Pourtant, on peut supposer que cette innovation amène pour l'entreprise le besoin de transformer son système de mesure de performance, car des mesures inappropriées amènent à une mauvaise gestion du nouveau business model, voire à son échec.

Le but de cet article est d'introduire une étude de la littérature sur l'évolution de la mesure de la performance, et son lien avec la Business Model Innovation dans les grandes entreprises. Cette étude mène à quatre propositions qui permettent d'explorer de nouvelles questions de recherche. Nous contribuons ainsi aux littératures sur la Business Model Innovation et sur la mesure de la performance, en appelant à plus de recherche sur leur lien, qui constitue selon nous un sujet d'intérêt.

Mots-clés : business model, innovation, performance, papier conceptuel/théorique, grande entreprise

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INTRODUCTION

In today's competitive environment, the business model constitutes a potential competitive advantage for firms. We define the business model as "a system of activities that depicts the way a company « does business » with its customers, partners and vendors" (Amit and Zott, 2010, p.2). It encompasses the choices made by the firm to ensure its sustainability.

We focus in this paper on business model innovation (thereafter referred to as BMI). There are multiple definitions of Business Model Innovation in the literature, considering it either as a process, a result, or both. For our study, we choose the definition given by Casadesus-Masanell and Zhu (2013) : "At root, business model innovation refers to the search for new logics of the firm and new ways to create and capture value" (p.464). This definition suits our study, because we consider BMI as a significant transformation undertaken by a company. It changes deeply the way this company creates and captures value. It's these deep changes that impact the way it measures performance, as we will highlight in our next section.

BMI is generally seen as a response to change in the firm's environment (Dopfer et al., 2013; Wischnevsky and Damanpour, 2006), which is constantly evolving, thus putting the business model of a firm in constant disequilibrium (Demil and Lecocq, 2010). External factors are, for example, technological progress, new regulation, or a new entrant in the industry (Volberda et al., 2018; Kavadias et al., 2016). On the other hand, the firm can be its own source of BMI. The daily operation of its activities can open new possibilities to conduct its business (Leih et al., 2015; Volberda et al., 2018): new ways to configure its resources, new strategic directions, for example.

BMI generally impacts performance, in a positive way (Amit and Zott, 2010; Wirtz and Daiser, 2017) which can even lead to the redefinition of an industry by a firm (Kavadias et al., 2016); or in a negative way (Wichnevsky and Damanpour, 2016; Saebi, 2015).

Yet, a common agreement is that "what is measured is managed" (Goshu and Kitaw, 2017), a firm can only manage the performance of its business model if it has implemented measures to this end. In the case of Business Model Innovation, the new business model's performance has to be measured in order to ensure its success. Large companies have generally implemented performance measures which evaluate the old business model. To evaluate the new business model, they need new measures. Therefore, business model innovation brings the need to adapt how the firm measures performance.

This can sound obvious. However, we found a real lack of academic research on this topic. Although there is a literature about the evolution of performance measurement, we are faced with a lack concerning how firms adapt their performance measurement to business model innovation. Yet, we are convinced that there is a need to study this matter.

We intend to help filling this gap by doing a literature study on performance measurement and its evolution and calling for research on performance measurement during business model innovation. This paper is conceptual and presents several propositions to guide this future research.

Volberda et al. (2018) point out fundamental differences between big companies and SMEs regarding BMI. On the one hand, large companies profit from their reputation, customer's trust, and their resources which give them more control over their environment. On the other hand, in comparison to SMEs, they suffer from inertia and the focus on current markets and capacities, as well as the fear of cannibalization. In the end, the more a company grows, the more it tends to replicate its business model.

On the other hand, there is also differences between these two types of companies regarding performance measurement. Indeed, the system maturity and size influence the outcome of performance measurement (Bititci et al., 2012).

We thus choose to focus on large companies, as BMI appears as a bigger challenge for these companies.

Our research question can be stated as follows: "How do literature tackles the impact of business model innovation on performance measurement in large companies, and what challenges lie ahead?"

We proceed as follows. In the first section, we highlight the interest of bringing together the literatures on BMI and on performance measurement. The second section explains our methodology. The third section, based on that literature review, defines performance measurement and its challenges, then summarizes the literature on evolution of performance measurement. In our fourth and last section, we develop our propositions and the challenges concerning research on performance measurement evolution during Business Model Innovation.

1. WHY BRIDGING BMU AND PERFORMANCE MEASUREMENT?

This research is motivated by the acknowledgement of a link between two concepts that has not been truly explored yet. Large companies usually have implemented performance measurement systems and norms. As we have previously said, “what is measured is managed”; therefore, performance measures highly influence strategic decision and action, which in turn influence the performance itself (Goshu and Kitaw, 2017). Indeed, correctly designing and implementing performance measurement can benefit the global performance (Akhtar and Sushil, 2018; Moullin, 2004; Bititci et al., 2012).

BMI is one of these major strategic decisions. It fundamentally transforms a company’s activities and/or how it performs them. BMI is often driven by a perceived opportunity or threat on the company business model and performance. Indeed, the main objectives of a BMI are to maintain or gain a competitive advantage, protect or reach the leadership of a market, or more plainly ensure the sustainability of a company.

Correctly adapting performance measurement during BMI is thus a critical issue (Waggoner et al., 1999) if the company wants to reach these objectives.

It appears then that performance measurement and BMI are linked and influence each other. Yet firms do not always know how to manage this link, as shown by an interviewee in Demil and Lecocq (2015): “We are largely in unknown territory with this new business model. For instance, how to set up the margins of the hardware compared to those of the software? To a great extent, it’s a gamble. We may screw up completely.” (p.48).

Based on this assumption, it appears essential to explore the link between these two concepts. A literature study appears to be best suited for this task : on the one hand, it allows us to

summarize what has already been studied on this link; on the other hand, it allows us to lie what still needs to be studied (Dumez, 2011)

2. METHODOLOGY

Our research is based on a literature study relating to performance measurement and its evolution. We have two objectives here: first, to understand performance measurement and its evolution in companies; then, to see how the literature bridges this evolution of performance measurement to BMI.

To better understand the concept of performance measurement, we first conducted a research on the Scopus database, with the keywords “performance” (title only) and “literature review” (title, abstract and keywords). We restricted the results to articles, in English, in the fields “Business, management and accounting”, “social sciences” and “economics, econometrics and finance”. This research yielded 658 results.

Our second research studied more precisely the evolution of performance measurement and performance measurement systems, to understand how and why companies transform their performance measurement. We therefore conducted a second research on Scopus, with the keywords “performance measurement” (title only) and “evolution” (title, abstract and keywords). We limited the results to articles in English, in the field “management, business and accounting”. This yielded 37 documents.

We then conducted a third research on Scopus, with the keywords “business model” (title) and “performance measure*” (title, abstract and keywords), with the same limitations as before. The goal was to find articles related to the impact of business model change (in a general manner) on performance measurement. The research yielded 8 results.

A first reading of the abstracts allowed us to sort these articles. First of all, we only kept articles relating to performance measurement in large companies. We focused on global performance and innovation performance, thus excluding performance of specific activities like supply chain or sustainable performance. We also excluded articles related to public and third sector, ecosystems and network. Finally, we didn’t keep articles studying the effect of a specific factor on performance.

A second, more careful reading allowed us to only keep the articles that served our two objectives. We then excluded any article not effectively discussing the evolution of performance measurement in large companies and/or the link between BMI and performance measurement.

The analysis of the articles was done by the author alone, manually. It was conducted as a thematic research on three topics: performance measurement, evolution of performance measurement, and the link between the latter and BMI.

Our methodology is summarized in Table 1 below.

Table 1. Methodology used for our literature review

Keywords	**Results yielded**	**Articles kept**	**Objective**
Performance (title) AND "literature review" (title, abstract, keywords)	658	45	Understand the concept of performance measurement in big companies
"performance measurement" (title) AND "evolution" (title, abstract, keywords)	37	9	Study literature on how and why companies transform their performance measurement
"business model" (title) AND "performance measure*" (title, abstract, keywords)	8	0	Review the literature on the link between BMI and performance measurement evolution

Our research showed the gap we highlighted earlier. Although the topic of performance and performance measurement attracts many scholars, we can see a lack of research on the evolution of performance measurement and performance measurement systems during BMI, as no articles we found tackled this subject. Some authors point the need to study why and how the PMS change and evolve (Kennerley and Neely, 2002). We would add there is a need to study how business model change affects the PMS. Currently, there is a real lack of research on how BMI forces performance measurement to adapt and how PMS are transformed in this context.

3. PERFORMANCE MEASUREMENT

3.1. PERFORMANCE MEASUREMENT AND PERFORMANCE MEASUREMENT SYSTEMS

Our literature review allows us to draw several insights on performance measurement and performance measurement evolution, which we present in this section.

Performance measurement as a concept is often discussed and rarely defined. Neely et al. (1995) suggested the following definition, which is usually adopted in the literature: "performance measurement can be defined as the process of quantifying the efficiency and effectiveness of action" (p.80). This definition however does not encompass some major features of performance measurement as seen today (Bourne et al., 2003). Indeed, performance measurement includes multi-dimensional measures, both financial and non-financial, internal and external. These measures quantify what the firm has done and determine what has to be done, assessing the impact of actions on stakeholders, on the environment, and on the performance of the firm. They should be developed from the strategy of the firm and be an integral part of management planning and control (Dixon et al., 1990).

Bititci et al. (2012) identify 4 phases in performance measurement literature. First, measures were focused on productivity management. Then they were related to budgetary control. The third phase saw the development of integrated measures with planning practices. During this period, the literature encountered a "revolution", when scholars and practitioners alike acknowledged the flaws of financial-only performance measurement. Financial measures indeed promote short-term orientation and lack strategic focus, encouraging local optimization (Goshu and Kitaw, 2017). Performance measurement then started to integrate non-financial measures. The Balanced ScoreCard (Kaplan and Norton, 1996) was born during this phase, and is nowadays the most used framework in companies. The last phase is the shift from measurement to management of integrated performance.

In a more general manner, the literature on performance measurement has shifted from a static nature to a dynamic nature, from operations to strategy, from economic profit to the satisfaction of stakeholders (Srimai et al., 2010). Performance measurement is today more holistic and more integrated, and is increasingly considered a social and/or learning system (Altin et al., 2018)

affected by context, beliefs and culture (Bellisario and Pavlov, 2018; Bititici et al., 2012; Festing and Knappert, 2014) and affecting organizational behavior (Bititci et al., 2012)
Literature explores the design of the measures (Bourne et al., 2003), their implementation (Aktar and Sushil, 2018), the management of measurement systems (Bellisario and Pavlov, 2018; Festing and Knappert, 2014). Current literature focuses on specific aspects of performance: in certain value chains areas like supply chain (Cuthbertson and Piotrowicz, 2011; Taticchi et al., 2014) and in industries like hospitality (Altin et al., 2018). The challenge of sustainable performance management is also extensively studied (Padua and Jabbour, 2015; Morioka and Monteiro de Carvalho, 2016).

Performance measurement is implemented in companies through performance measurement systems or PMS. A PMS includes individual measures that quantify efficiency and effectiveness of actions; a set of these measures aggregated to evaluate the global performance of the firm; and a supporting infrastructure (Kennerley and Neely, 2002).
Performance measurement systems allow the firm to evaluate, monitor, budget, motivate, promote, celebrate, learn and improve (Altin et al., 2018; Neely, 1998; Neely et al., 1995). It supports decision-making based on facts (Kulatunga et al., 2007). To do that, the design of the PMS has to fit the goals of the firm. For example, if the goal is to motivate employees, the measures should be easily appropriated by them (Waggoner et al., 1999). It is also impacted by several factors, including the information architecture of the firm, the incentives processes, the implication of top management (Aktar and Sushil, 2018)

A part of the literature brings attention to the difficulties faced by firms during the implementation of PMS. Implementation can lead to failure, and the process often lasts for years (Bourne et al., 2003; Ittner et al., 2003). Some authors have focused on identifying facilitators and inhibitors to implementation. The review by Bourne et al. (2003) identifies multiple types of barriers. The first is the difficulty to define the right measures in the right number. The second is the difficulty to define the right objectives. The third is the lack of appropriate infrastructure to implement the performance measurement system. The failure of implementation can also originate from a lack of understanding and aversion to risk from personnel.

What is interesting in the analysis of these barriers is that we can draw a link with the implementation of BMI. Indeed, BMI fails primarily because of the incapacity to define a new business model (Guo et al., 2016, Chesbrough, 2010), the lack of supporting structures and processes (Villinger and Jung, 2015), and a resistance to BMI from actors (Kim and Mauborgne, 2005; Bucherer et al., 2012). BMI is also a risky process that often lasts for many years.

3.2. Evolution of PMS

As pointed out by Bititci et al. (2012), the environment is changing: global warming, CSR, globalization, rapid technological progress are some of the factors affecting firms and their environment. As such, the context of performance measurement is evolving. Therefore, PMS must evolve with the context to always reflect it (Neely 1999). Waggoner et al. (1999) develop 4 types of forces that shape the evolution of PMS:

- Internal influences, such as power relationships, peer pressure, legitimacy quest, conflicts of interest
- External influences, such as legislation, market volatility, new technologies
- Process issues, such as the system's design, implementation, innovation
- Transformation issues, such as top management support, risks of change, impact of culture

According to Frigo and Krumwielde (1999), 40 to 60% of firms have significantly changed their PMS between 1995 and 2000. But they still tend to remain static, measuring only present activities without anticipating what will be important in the future (Feurer and Chaharbaghi, 1995; Kueng, 2001; Kennerley and Neely, 2002; Marchand and Raymond, 2008; Nudurupati et al., 2011).

Some authors thus acknowledge the need for PMS to be adaptive and dynamic in order to stay relevant to what's important to the firm (Lynch and Cross, 1991; Kennerley and Neely, 2002; Dixon et al., 1990; Eccles, 1991; Meyer and Gupta, 1994; Ghalayini and Noble, 1996; Bititci et al., 2000; Waggoner et al., 1999).

A dynamic PMS has 4 features (Bititci et al., 2000). It includes an external monitoring system which identifies changes in the external environment; an internal monitoring system to identify changes in the internal environment and alarm managers when performance thresholds are

reached; a review system -which is essential according to Kennerley and Neely (2002)- to collect data transmitted by the monitoring systems and design the objectives and priorities; and an internal deployment system to propagate these objectives throughout the organization.

But transforming a PMS constitutes a challenge for the firm. Firms generally assume that transforming their PMS will lead to a performance gain; but research suggests this is a false assumption (Pinheiro de Lima et al., 2009).

Successful transformation of PMS implies that the firm has the skills and processes necessary to assess the current measures, identify those needed to be changed, and modify them (Dixon et al., 1990), which only few possess. It also implies the allocation of time and resources (Kennerley and Neely, 2002).

Eccles (1991) identifies three essential success factors for the update of a PMS. The first is to develop an information architecture with a supporting technology. The second is to align incentives with the PMS. The third is to let the CEO lead the project.

Last but not least, a PMS can only be successfully transformed if it is used in the first place (Feurer and Chaharbaghi, 1995; Kennerley and Neely, 2002). Indeed, some PMS implemented are rejected by the actors, for various reasons. If this is the case, transforming the PMS will not help the firm and the impact on performance will be inexistent, perhaps negative.

4. BUSINESS MODEL INNOVATION AND PERFORMANCE MEASUREMENT

In their literature review, Goshu and Kitaw (2017) identify 3 main challenges for performance measurement research. The first is to resolve the lack of solid theoretical foundation of measure. The second is to study the necessary and sufficient conditions expected by PMS. The third is to pay attention to emergent performance measurements coming from technological, natural and business trends.

We advocate for a third challenge: studying how firms transform their PMS when they transform their business model. So far, the literature has mainly focused on evolution of PMS when faced to external pressures, mainly changes in the firm's environment. We would like to point the gap of research on evolution of PMS when faced with internal transformation, namely business model innovation. Two dimensions are to be measured during a BMI: first, the performance of the new business model; second, the performance of BMI as a process. Both pose challenges that we display in Table 2.

Table 2. Two performance measurement of BMI and their challenges

Objective	Main challenges
Measuring performance of the new business model	The new BM is uncertain Firm needs to set new reference points for performance Possible hindering from one process to the other, leading to failure
Measuring performance of BMI as a process	Need to frequently assess BMI on a long period of time Overcoming barriers to BMI and PMS evolution at the same time Developing measures for each phase of the BMI process

The first and perhaps most obvious dimension studied here is the performance of the new business model. There's a lack of focus in the literature on how to assess and validate business models (Batocchio et al., 2017). Hence, very few studies look for ways to measure the performance of a new business model. It is true for new ventures, as pointed out by Batocchio et al. (2017), but also for BMI. Yet, when a firm creates a new business model, it transforms the way to manage activities and therefore what constitutes performance.

Proposition 1: Business model innovation changes the criteria of performance

These new criteria are not measured, or incorrectly measured, in the firm. Especially when speaking of innovation, traditional PMS are generally not suited (Dewangan and Godse, 2014). However, measuring the performance of an innovation (in our case, innovation of business model) is essential in many aspects. It allows to clarify the goals, to allocate resources, to improve processes, to diagnose, control and correct the processes of innovation (Dewangan and Godse, 2014), therefore impacting the performance of innovation itself (Zizlavsky, 2014). Each metric impact decision and action (Goshu and Kitaw, 2017) and measuring innovation allows to make sure the process is supported (Brattstrom et al., 2018)

Yet, if the PMS does not adapt to these new objectives, it loses its ability to distinguish good and bad performance, rendering it useless (Meyer and Gupta, 1994).

Proposition 2: Business model innovation creates the need to adapt performance measurement

The challenge here is that BMI encompasses a certain level of uncertainty. Especially in a radical BMI, the firm will experiment, and implement new ways of doing business, a new logic. It will operate activities in a previously unknown way. Therefore, these new activities have never been measured in the firm, and actors probably don't know how to measure their performance. When faced with environmental changes, the firm adapts its PMS to them, but its activities and thus its reference point of performance stays the same. In the case of BMI, it has to design measures for something it has never done, thus creating new reference points.

Adapting PMS to BMI constitutes, then, an experimental process, during which the firm will progressively develop new measures to assess the process and outcome of BMI. The study carried out on BMI in newspaper industry by Karimi and Walter (2016) show that the firms gradually modify their measures in order to monitor the evolution from the old business model to the new one.

Proposition 3: The transformation of PMS during BMI is an experimental process similar to the process of BMI itself

Yet, the need to transform PMS during BMI constitutes a barrier to the success of BMI itself. Transforming performance measurement, as we highlighted previously, is a challenge for firms. But we also pointed out that it is essential to correctly measure performance in order to manage it. Indeed, if the firm does not correctly adapt its performance measurement to BMI, its PMS will be rendered obsolete and could lead to false assumptions about the new business model or the process of BMI.

Furthermore, performance measurement is an attention-focusing device (Brattström et al., 2018). Indeed, the decision making and action are linked to how the issues are framed in the organization (Elg and Kollberg, 2009). Therefore, if measurement is not transformed in order to focus attention on BMI and a new business model, the decision-making risks overlooking the challenges and opportunities of BMI.

Proposition 4: Failure to correctly change performance measurement constitutes a barrier to the success of BMI

5. DISCUSSION AND CONCLUSION

As the focus on performance measurement has morphed in recent years to a focus on performance management (Bititci et al., 2012), the goal is not on controlling and monitoring anymore, but on using these measures to generate action. Measures of performance are no longer a simple passive representation of the firm; they have an active role in shaping the future of the firm. Performance measurement and its use affects strategic decisions, therefore impacting strategic change (Goshu and Kitaw, 2017). Performance measurement becomes a tool to make strategic decisions, which includes the decision to enter into Business Model Innovation. In return, BMI changes how the firm conducts business, and hence its objectives and/or the way to reach them. Therefore, BMI changes what constitutes performance of the firm and what needs to be measured. The two concepts are therefore highly linked.

Our literature review led us to point a gap in current research: there is a need for research on how firms transform their PMS when operating a BMI. Literature on innovation performance measurement and innovation performance management is focused on two types of innovation: new product development and R&D (Hentonnen et al., 2015; Dewangan and Godse, 2014). But BMI is a specific and different kind of innovation which brings its own challenges and measures necessary. To further advance the research, we introduce 4 propositions.

The first proposition suggests that BMI changes the criteria of performance. On this subject, it would be interesting to study how actors assess which criteria are no longer suitable, and how they design new measures. It would also be worthy to study which criteria are most likely to change, depending on the type of BMI, the sector in which the firm evolve, or other factors. Some authors such as Birchall et al. (2011) or Brattström et al. (2018) suggest that measures are highly contingent to the firm, its environment and the BMI it pursues.

Our second proposition suggests that PMS needs to change during BMI. The first challenge is to become aware of this need. This can constitute a primary barrier to PMS transformation. Furthermore, as literature on performance measurement shows, implementation of PMS is a

complex process which often fails. How, then, do the firm successfully implement this new PMS, in a time when BMI already brings uncertainty?

The third proposition presents the transformation of PMS during BMI as an experimental, trial-and-error process. Hence, it would be valuable to study this process, notably how it is implemented and experienced by actors. During this process, managers will have to design and implement new measures. But we are faced with a "black box" which needs to be studied. Measures are not universal. Recent research on performance measurement and management acknowledge the cultural character of measurement. PMS are linked to strategy (Bourne et al., 2003). Performance measurement also constitutes a social and learning system, affecting and affected by organizational features, culture, leadership, and other environmental factors and stakeholders (Bititci et al., 2012).
This experimental process is also strongly linked with the process of BMI. As the business model evolves gradually, the PMS will evolve in parallel. Therefore, how does the organization manage these two processes? Which one triggers the other and when? To this end, longitudinal studies seem best suited.

Our fourth proposition suggests that failing to correctly transform performance measurement can constitute a barrier to the success of BMI. The literature review performed by Franco-Santos et al. (2012) shows that performance measurement – how it is designed, implemented and used- have multiple consequences on individuals' actions, organizational capabilities, and performance itself. Notably, performance measurement has an impact on innovation processes and capabilities. It would be highly valuable to understand to what extent performance measurement and management is linked to the success of BMI. The question here is: can a firm correctly innovate its business model without adapting its PMS?

These propositions and their challenges associated are summarized in Table 3.

Table 3. Challenges for research on BMI and PMS evolution

Proposition number	Proposition	Research challenge associated
1	Business model innovation changes the criteria of performance	Which criteria are the most likely to change during BMI? Are they contingent to the type of BMI or to firm's features?
2	Business model innovation creates the need to adapt performance measurement	How do firms determine or create the new measures?
3	The transformation of PMS during BMI is an experimental process	Which capacities are needed to implement a new PMS in the uncertain environment created by BMI? How is this process experienced by actors? What is the impact of culture and organizational features on the experimentation? How does the organization manage the two processes (BMI and PMS transformation) in parallel? Which one triggers the other and when?
4	Failure to correctly change performance measurement	To what extent is the success of BMI linked to performance measurement

	constitutes a barrier to the success of BMI	transformation? Can a firm correctly innovate its business model without adapting its PMS?

The main challenge to explore these questions is that literature on BMI is still a young one and has evolved in silos. As such, it lacks concept clarity and dimensionalization (Foss and Saebi, 2017). On the other side, the concept of performance measurement is also not clearly defined and encompasses multiple disciplines and applications (Goshu and Kitaw, 2017). Studying the link between these two concepts will then require clear conceptualization of the notions developed. However, further research would benefit the understanding of both concepts and important processes in the life of firms.

Our contribution is twofold. From a theoretical perspective, we link two literatures that have not been studied together and give some research challenges. From a managerial perspective, we highlight the necessity to pay attention to performance measurement when a company wants to engage in BMI. BMI and performance measurement transformation are linked experimental process. For a company willing to innovate its business model, this encompasses thinking about the measure of this new business model performance.

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