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Emerging Themes in Management Accounting and Control Research

Temas emergentes en contabilidad y control de gestión

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ABSTRACT

Organizations are at an interesting inflection point where existing paradigms are insufficient. The focus on execution as the main source of competitive advantage has been the dominant paradigm since the late 19th century. It is not enough. The dynamism brought by billions of people joining the market economy and by the exponential development across a large number of technologies requires complementing execution with managing for creation. Management accounting and control is not immune to these changes. Rather, its future development will determine its relevance to management. This paper reflects on some of the opportunities opening for this management discipline to keep its significance to managers. The paper explores new challenges in supporting execution and its role in creating new sources of value.

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Temas emergentes en contabilidad y control de gestión

RESUMEN

Las organizaciones están en un punto de inflexión donde los paradigmas existentes son insuficientes. El enfoque en la ejecución como la fuente más importante de ventaja competitiva ha sido el paradigma dominante desde el siglo XIX. No es suficiente. El dinamismo que ha traído el hecho de que más de mil millones de personas se hayan sumado a la economía de mercado y el desarrollo exponencial de un número significativo de nuevas tecnologías requiere complementar la ejecución con gestionar la creación. La contabilidad y control de gestión no son inmunes a estos cambios. Es más, su desarrollo en los próximos años determinará su relevancia para los gestores. Este artículo refleja algunas de las oportunidades que se están abriendo a esta disciplina de gestión para seguir siendo significativa para los ejecutivos de las organizaciones. El artículo explora los retos para seguir apoyando la ejecución así como su papel creando nuevas fuentes de valor.

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Emerging Themes in Management Accounting and Control—Research Directions Relevant to Managers

Management accounting and control systems (management systems) extend from the collection and structure of management information to how organizations use them. As such, they are a central piece of the management infrastructure of organizations. The management discipline that has evolved around these organizational needs is relevant to most aspects of an organization, from human resources to product development, from manufacturing to marketing, from operations to strategy. The knowledge developed by this discipline is applicable to any organizational process grounded in information. Management beyond a few employees, where direct interaction and unstructured information exchange, requires management systems for collecting and processing information, the design of processes that use this information to facilitate the recurring execution of a set of standardized actions, and a culture that interprets the values embedded in these recurring processes.

Management systems, much like most of management research, has been built upon the assumption that the purpose of organizations is to effectively and efficiently pursue their goals (Merchant and Van der Stede, 2017). Not surprisingly, the main product in management education is the Master in Business Administration, where administration refers to using resources as efficiently as possible. For instance, a common premise of this body of knowledge is to interpret these systems as tools to implement strategy. For most of the 20th century, organizations who had discovered a winning strategy could execute on it for relatively long periods of time and be at the forefront of their industries. Competitive dynamics were relatively stable with progressive changes that gave enough runway for organizations to adapt their strategies. Within these settings, execution was the main source of competitive advantage. Executing better than your (well-defined) competitors was an almost certain recipe for success. This premise has been central to the development of management systems' theory.

This editorial challenges this premise. Execution is and will remain important to the success of an organization. Yet, in today's world, execution is a necessary but not sufficient condition for success. An organization is not able to survive without being excellent at execution, but it is not enough. It needs to be excellent at identifying opportunities in increasingly dynamic environments and creating new value out of them. MBAs need to add to Administration the ability to Create. Management systems' theory faces an interesting paradox going forward, a paradox that mimics that of organizations designed on the premises outlined in the previous paragraph. The complexity of the competitive dynamics that organizations face today is several orders of magnitude larger than the complexity of organizations themselves, yet the complexity of the systems to run these organizations is several orders of magnitude larger than the complexity of the systems to sense and interpret environments. Future research needs to address this imbalance to be relevant to the challenges facing organizations.

The increasing complexity of organizational environments stems from two main forces typically referred as globalization and technology. The first force reflects the fact that over the last twenty years more than a billion people have joined the market economy, most of them out of Asia. Today, a lot more people are exploring how to upset the existing structures across all industries. Interestingly, these people do not have a legacy of more than one hundred years where execu-

tion has been the path to success; rather, they have joined the market economy knowing that success is about both creating and executing.

The second force is technology. The last twenty years have seen dramatic changes in the environment because of the rapid evolution of the silicon technology. Going forward, these changes are coming from a myriad of individual technologies rapidly advancing on their own, but also interacting with each other. The number of opportunities opening up will dwarf what we have seen over the last twenty years. Technologies rapidly evolving include artificial intelligence (machine learning), blockchain, robotics, 3D printing, drones, nanotechnology, biotechnology, 5G, and Internet of Things to name a few.

These forces are creating environments that are much more dynamic, constantly offering opportunities to those organizations designed to take advantage of them and constantly threatening those that hope their environment want to maintain the status quo. Schumpeter's characterization of capitalism as being driven by creative destruction is becoming of age. Back in 1942 he wrote: "The problem that is usually being visualized is how capitalism administers existing *industrial* structures, whereas the relevant problem is how it creates and destroys them" (Schumpeter, 1942). Market economies are not simply about administering structures, but mostly about creating and destroying them. Organizations are now fully facing this new order.

The Evolution of Management Accounting and Control

The original core of the management accounting and control discipline is financial measurement. Most of concepts that we currently use, ranging from relevant cash flows to cost systems and variance analysis, were developed in the late 19th century and well established by the early part of the 20th century. The content of management accounting textbooks today is not that different from its predecessors a hundred years back; although the raise of financial accounting shifted the attention of the discipline to inventory and costs of goods sold valuation for a good part of those years (Johnson and Kaplan, 1987). Their content can be grouped into three main themes: financial information for decision-making, profitability measurement, and financial performance analysis. The most recent development in this area dates back forty years ago to the development of strategic cost analysis, Activity Based Costing and more recently its time-based version (Kaplan and Anderson, 2007).

As measurement technology improved, performance measurement extended from financial to non-financial dimensions. Decreasing costs of collecting and processing information gave managers access to more detailed performance measurement. The challenge moved from having limited performance information to choosing which information to focus on. It also strengthen the link between management accounting and other functions of the organization that could now take advantage of management accounting's expertise in performance measurement. Frameworks to guide the selection of relevant measures evolved from KPIs (Key Performance Indicators) to tableau de bord (mostly focused on financial measures), Balanced Scorecard, OKRs (Objectives and Key Results) and today's business intelligence software (Epstein and Manzoni, 1998). All these frameworks use an organization's strategy as their guide. For instance, the Balanced Scorecard uses strategic maps as the conceptual model of an organization's strategy to select performance measures.

Management control systems were officially born in the sixties to use management accounting information for implementing strategy (Anthony, 1965). Rather than measuring performance as management accounting systems do, management control systems focus on how organizations use performance measurement systems and information more generally. Given a strategy, management control systems also support and monitor its implementation. The original tools borrowed from management accounting and budgets played a central role that is still being researched today. Other concepts included responsibility centers and transfer pricing. The attention moved from measurement itself to the behavioral implications of these measurements. For instance, the design of transfer prices provides incentives to business unit managers that are not aligned with the objectives of the company except for very specific settings.

Management control systems research has provided a wealth of frameworks relevant to management practice ranging from the input-process-output to the levers of control models (Simons, 1995). This research has also extended to include any information-based routine that organizations use to implement strategy. Compensation systems, performance evaluation, systems that underpin values and culture, governance, internal controls are all aspects that management control systems' research is examining. Some authors have extended the study of these systems to informal aspects of organizations that are not grounded in explicit and formal routines. Underlying all of this work is the interpretation of these systems as tools for managers to implement strategy.

Interestingly, the formulation and emergence of strategy has received scant attention. Strategic planning, probably the main tool to define strategy, has seldom being a focus of research despite being a formal process in most organizations. Strategic control, defined as information-based routines to sense the environment to assess the alignment of the current strategy with the environment, was briefly part of the research agenda in the eighties. Consistent with the importance of execution to competitive advantage, management control research has taken strategy as a given.

The New Requirements for Executing Strategy

Within the premise of strategy as a given and thus focusing on management systems for execution, changes to technologies and markets are putting new demands on these systems.

The first trend is the continuing increase in computing power that has opened up new possibilities under the label of big data, artificial intelligence, or machine learning. The availability of large amounts of data has led to a significant conceptual change in how statistics are used. When the number of observations is relatively small, analyses of cost behavior, causal models, or profitability drivers requires well-structured theories and hypotheses. For instance, the design of cost systems relies on the designer to select the cost drivers that structured the system; business models rely on a causal model that managers specify. Machine learning as the technology underlying big data and artificial intelligence discards the need to specify ex-ante the model that is going to be tested. In a sense, it gets rid of the need to have a theory and translate this theory into a model. Analyzing performance measurement moves from stating hypotheses to having data speak for itself. The objective of machine learning is not to test a particular hypothesis about a certain behavior, but about predicting this behavior with little ex-ante attention as to why certain variables are better predictors. Because machine learning does not need pre-defined models and hypo-

theses, it can use a much larger set of variables, even if most of them turn out to be irrelevant to predict behavior. Including additional variables or interaction terms do not need a theoretical argument for them to be included. The objective is not to confirm or reject a model, but rather to predict behavior going forward. Machine learning is less demanding from a modelling perspective, although it is much more demanding in terms of data.

Machine learning has important implications for managerial accounting. In analyzing performance drivers, there is no need to limit the exploration to pre-defined models; rather organizations can extend their exploration to a larger set of potential drivers. For instance, assume that a clothing retailer wants to understand product profitability. In this particular industry, product profitability depends on how much of a product ends up sold during the sales period when the company reduces prices progressively to sell the remaining stock. A traditional analysis would identify variables that the designer believes drives the amount of product that ends up being sold at a discount and specify how it affects the dependent variable. Machine learning does not need any of these, it just needs data. The designer can include any variable available, from the amount of stock of the product in every outlet, to the traffic on internet for this product and other products, or the amount of rain while the product was on the shop floor. As long as the data is available, variables can be fed to the algorithm.

Machine learning also opens up a new field to management accounting and control. Because it allows codifying text, the raw data for our discipline expands dramatically. Cost behavior and profitability analysis can now rely on qualitative sources of data like social media, internal reports, or customer feedback to better understand resource usage. For instance, our cloth retailer can use social media feed to predict the success of a particular product.

A second trend that affects our research field is the evolution of the economy away from manufacturing into services and the knowledge economy. Still, manufacturing companies benefit from the core concepts of cost accounting, which were developed precisely for these settings. However, they become less relevant for non-manufacturing companies and knowledge intensive manufacturing companies. Profitability for these companies does not depend as much on the difference between the price of a unit and the expenses associated with it, but rather on the decision of how much to invest upfront and how to manage capacity. The challenges are not as much managing margins as to manage risk. Because a large percentage of their costs are fixed, profitability depends to a large extent on decisions made when committing to these fixed costs and then managing the capacity associated with this commitment. The variable cost in these settings is close to zero once the company has committed to a decision. For instance, the profitability of our cloth retailer depends on its decisions about the number of units of each model it produces. If demand for a particular model is higher than expected, the lead time does not allow the company to restock and it will just miss on profitable sales. Conversely, if the demand is lower than expected, a large number of units will be sold at a discount. Even the profitability of a car company increasingly depends on its R&D investments. Value generation depends on the ability to manage risk and capacity. These companies need less cost allocation accuracy and a better understanding of risk and capacity management.

Entrepreneurship provides some insights into risk management; because of the large amounts of uncertainty that characterizes new ventures, entrepreneurship is about risk man-

agement. The concepts that it offers cluster around two ideas. The first one is the idea of portfolio management. An approach to mitigating risk is to have a portfolio of projects as diverse as feasible. Translating this idea into our field, it suggests that profitability of individual services might not mean much if decisions are taken with a portfolio perspective. Evaluating performance is not about a particular product but about the portfolio of products. The question going forward for researchers in management accounting is how to go about decision making and performance evaluation when looking at portfolio decisions. The second idea from entrepreneurship is staged investing. Venture capitalists mitigate risk through sequential investment decisions; the investment is designed in such a way that commitment comes in stages that use past progress to evaluate future performance. This same idea is at the core of the lean startup methodology and customer discovery; design investments to create options going forward. Real options are another alternative to ground future research.

Another aspect of this new economic structure is managing the capacity that has been committed. Because fixed costs are committed, management accounting is not just about understanding margins, but rather about how to manage capacity. When managing capacity, understanding the economics of sales and marketing decisions become much more relevant. Management accounting and control faces questions regarding pricing, customer equity, and return on marketing investments. These questions require bringing together financial and non-financial metrics as well as measuring value in different ways.

A third trend relevant to identify research opportunities going forward is the emergence of platforms. Companies like Amazon, Apple, Google, Airbnb, or Uber create markets for transactions to happen. These markets are platforms. The economics of these platforms are different from the economics of traditional value-chain business models.

Research Opportunities for Supporting Creation

Another broad field for relevant research in management accounting and control is business creation. This field encompasses managing creativity and innovation and has attracted attention recently. It ranges from entrepreneurship management to managing innovation in large established firms. Opportunities for research in entrepreneurship management for accounting and control have been already addressed (Dávila, Foster and Oyon, 2009). So, this section focuses on managing innovation in large established firms; an area of research with significant open questions and of utmost relevance to managers. The section further focuses on radical innovation efforts rather than incremental innovation, which is addressed in the product development and design thinking literatures.

Creating management systems that support radical innovation relies on having a framework to think about the various activities involved in these efforts. The first activity for any established company to manage is how to guide people to spot opportunities emerging in the market, what I refer to as *inspiring*. Larger organizations also need to manage their relationships with startups; ideas emerge all over and it is naïve to think that only internal ideas will be relevant. Moreover, startups are likely to be much faster at bringing ideas to the market and testing them. Thus, larger organizations need to be integrated into the startup ecosystem as players but also as magnets that startups consider when evaluating partnerships. I refer to this activity as *attracting*. Larger organiza-

tions need to see themselves as systems' innovators; companies that reinvent large systems such as healthcare, mobility or smart cities that integrate the efforts of startups. As such, they do not compete head to head with startups that do not have the resources to address this large systemic innovation, but rather integrate the efforts of startups into a larger innovation. This activity is *combining*. Another activity is *learning*, where large companies work to reduce the uncertainty that characterizes radical innovation. An important advantage of established companies is the infrastructure deployed across the world. These companies need to find ways to *leveraging* this infrastructure to accelerate innovation. Finally, once a radical innovation has proven to have value, the challenge is *integrating* it into the existing organization.

Research opportunities relevant to managers exist in each and every of those activities, where academic as well as practical knowledge is just emerging. This section examines these research opportunities with an emphasis on the first of the activities, inspiration, which is relevant to all types of organizations. Opportunities for creation, whether we consider an incremental innovation or a redesigning strategy, start with changes in the environment. Thus, inspiring people to spot trends and weak signals that form those opportunities becomes an important activity going forward. The rising importance of analyzing the outside is relevant to any organization, large or small, public or private. Yet, we know little about how to do this.

Two sets of concepts are relevant here. Interactive systems support top managers engaging themselves in exploring strategic uncertainties. Strategic control highlight the need to monitor events in the environment to quickly spot changes that indicate the need to rethink the strategy of the organization. Interestingly, companies of all sizes still use concepts developed a few decades ago to think about the environment. Frameworks like SWOT analysis or Porter's five forces are staples of strategic planning processes. Moreover, the sophistication of internally-looking systems and the paucity of externally-looking ones means that managerial attention is heavily biased towards the inside at the expense of ignoring events on the outside.

Research on how to design systems for organizations to periodically and systematically think about events outside the organization is happening in fields other than management systems' research. For instance, a vibrant community is exploring concepts such as scenario planning, foresight, scouting, and forecasting (Rohrbeck and Gemunden, 2011). However, most of this research studies dedicated departments in large companies. The increasing importance of business creation offers numerous opportunities to study and design management systems that can leverage the knowledge spread around the organization.

Together with colleagues, we have been working on the concept of the Landscape Monitor to explore and test some of these ideas with companies (Dávila, Oyon, Parmigiani, Schnegg, 2017). The premise of the concept is simple. Ideas, whether tactical or strategic, start with observation and everybody in an organization sees events potentially relevant to the future of the organization. The foundations are no different from traditional management systems. If you want a company to be quality-oriented, you need to collect data (observations), develop processes to interpret this data and then adjust the culture. For monitoring and spotting opportunities in the market, you need to observe, this is data, and design processes around it and adapt the culture.

The Landscape Monitor starts with mapping the environment, which builds on the tradition of management systems

of mapping processes to be able to manage them. Data comes from two main sources, personal observations from employees and observations available from public and private sources. Strategic control becomes a constant task and organizations develop the capabilities to interpret events as they unfold in the environment. Observations are the building blocks of creation, whether it is an incremental innovation around enhancing customers' experience or strategic shifts because of the coming of blockchain. Great minds throughout history have been all good observers. The interesting aspect of observation is that everybody has unique experiences and knowledge, which is great in complex environments that require different skills to fully interpret. Monitoring the outside is a crowdsourcing exercise.

While the idea of mapping and the relevance of data is common to traditional management systems' research, the qualitative and quantitative nature of observations presents new challenges. Processing qualitative information is especially challenging to management systems' research as its focus has been quantitative information. Research into systems for business creation will have to rely on new technologies such as text analysis and machine learning to fully make sense of this new data that is becoming available.

Another challenge for these new systems is building the processes around them. Questions here range from how often should meetings to analyze these observations happen to who should be involved in these meetings or what should be the action plans coming out of those meetings.

Beyond research on inspiring people to observe and create, opportunities for researching the other activities are large. For instance, if startups are faster and nimbler to bring ideas to market than large companies, these latter companies are looking at how to work together with startups to take advantage of their speed and creativity. So far, there is not a single or contingency answer to the question, making it a very interesting field of research. One solution that large companies are exploring is the use of corporate venture capital (CVC). These departments mimic independent venture capital funds but within a company. However, their incentive structure, performance measurement, incentives and objectives do not fully align with independent venture capital funds.

Learning is the most important aspect of entrepreneurship. Startups are not typical organizations, but rather a group of people searching for a viable business model. Whether we take the perspective of lean startup or business model canvas or we migrate these ideas to the world of innovation using techniques such as design thinking, the parameter that dominates these efforts is learning. Incubators, accelerators or hackatons are all techniques that are being used and would benefit from management systems' research.

The strength of large companies when looking at radical innovation is systemic innovation, this is their ability to innovate at the systems' level. Large companies have the resources and knowledge base to redesign entire systems such as mobility, energy, health, insurance, finance, smart cities and even governance. To do so they need to combine startups that do the early experimentation. Studying how large companies combine efforts within and outside their organizations to create new systems is a fruitful research area. Understanding how companies combine the innovations from startups (and other companies) requires understanding how they think about strategy and how strategy is formed. Yet, management systems' research has traditionally studied strategic planning as processes to project the company into the future within the existing business model assumptions.

Once we realize that established companies have to work

with outsiders to build their future strategy, questions open up regarding leveraging the capabilities of the organization and integrating these outsiders. Again, research opportunities are numerous ranging how to motivate existing businesses to devote resources to exploring new opportunities with outsiders to understanding how to integrate acquisitions of startups.

Conclusions

Management as a discipline is facing interesting challenges going forward and management accounting and control systems is at the center of it. The increasing complexity of the environment because of more organizations trying to upset existing structures and the impact of a large number of emerging technologies means more demands on management systems. As any other change, challenges can be seen as threats or opportunities. For researchers, it means opportunities to advance knowledge and be relevant to managers as they explore uncharted management territory.

Conflict of interests

The author declares no conflict of interests.

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