How management control systems can facilitate a firm's strategic renewal and creation of financial intelligence

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ABSTRACT

This chapter presents how management control systems and financial intelligence can facilitate a firm's strategic renewal. Although the strategic accounting literature has recognized the importance of financial intelligence to a firm's strategic decision making and formulation of strategy, the question of how a management control system (MCS) can help a firm to revamp and reallocate its resources has been overlooked in the prior strategy literature. In response, this chapter presents a conceptual model, which presents how advanced management accounting systems can foster a firm's strategic renewal in light of the available theoretical foundations (the strategy implementation view, the dynamic capability perspective, and management accounting). This chapter advances managers' understanding of firm's renewal practices through the use of an MCS. Practical examples have been used to illustrate how firms renew their business operations in practice.

INTRODUCTION

Deloitte, a multinational consulting company providing professional services, has stated in its report published in 2014 that *"In today's highly competitive business environment, companies need more from Finance than accurate financial statements and reports. They need forward-looking, predictive insights that can help shape tomorrow's business strategy and improve day-to-day decision making in real time."* Thus, strategic and dynamic resource allocation is vital for sustaining long-term profitability. The link between strategy and the finance function has therefore become even more important. Economic turmoil, product commoditization, technological development, vertical disintegration, and increased competition from low-cost economies have forced many western companies to renew themselves to generate profits in their industries, and in some cases just to remain a viable entity in the market. A firm's ability to create new capabilities, leverage and shed its existing resources (Danneels, 2011; Huikkola, Kohtamäki & Rabetino, 2016; Sirmon & Hitt, 2003), make strategic decisions in high-velocity business markets (Eisenhardt, 1989), change its operations and organizational routines (Eisenhardt & Martin, 2000; Feldman & Pentland, 2003; Teece, 2012), innovate new products, services and processes, and adapt to altered circumstances (Wang & Ahmed, 2007) have been acknowledged as central to attaining sustainable competitive advantage in the business markets. In the long run, a firm's ability to learn and change might be the only viable strategy for sustained existence (Teece, Pisano & Shuen, 1997; Teece, 2012). In other words, these dynamic capabilities explain a firm's success in the long run, which will depend on its ability to sense and seize new business opportunities and adapt the type and level of its resources to address ever-changing business requirements (Teece, 2007; 2012).

The lifespans of listed companies have been declining for some time (Birkinshaw & Gibson, 2004), leading managers and scholars to emphasize the importance of establishing flexible and agile organization structures (Doz & Kosonen, 2007; Sull, 2009), and of creating an entrepreneurial organizational culture to avoid organizational rigidity and inertia (Leonard-Barton, 1992; Sirén et al. 2016). While the extant strategy research has considered digitization as a context (Brown & Eisenhardt, 1997; Eisenhardt & Sull, 2001) or enabler (Hagiu, 2014), it has overlooked the central role of business intelligence (BI) in a firm's renewal. Given the importance of dynamic resource allocation in sustaining profitability, strategic plans need to be solidly grounded in financial projections. Furthermore, a clear link must exist between strategy, budgeting, and resource planning to facilitate strategy implementation. Traditionally, the role of management accounting systems in particular has been seen as relatively rigid, given that such systems are primarily seen as existing to control risks rather than facilitating organizational renewal (Langfield-Smith, 1997). Financial information has typically been result-oriented, meaning that the numbers generated have taken center place in the discussion. These financial data have thus typically been descriptive rather than prescriptive. However, more important than knowing the exact numbers is the ability to understand why the company has achieved or has not achieved those numbers, and which are the key factors affecting those outcomes. As a minerals processing company Outotec's former Chief Financial Officer (CFO) Mikko Puolakka stated in an interview: *"The only way to have an influence on financial figures is to go to the sources of those figures. Numbers are only the manifestation of sales, purchasing, and production operations."* Thereafter, financial department managers and other managers with a profit-and-loss responsibility should strive to understand the reasons behind the revenues, sales, and profits, and diligently extract the factors affecting those numbers. This underlines the importance of establishing and reviewing

operative key performance indicators in addition to financial ones, as well as the role of the finance function in understanding the business. Ultimately, the finance function can become an important discussion partner in formulating and enabling the execution of strategy.

The current chapter sets out to present how management control systems and financial intelligence can facilitate a firm's strategic renewal. Simons (1995: 5) defines management control systems as "*the formal, information-based routines and procedures managers use to maintain or alter patterns in organizational activities."* Subsequently, the strategic accounting literature (e.g., Laitinen et al. 2009; Simons, 1995) has recognized the importance of financial intelligence or financial analytics to a firm's strategic decision making and formulation of strategy (Deloitte, 2014). However, the question of how management control systems can help a firm to revamp and reallocate its resources has been overlooked in the prior strategy literature. This work discusses the theoretical foundations of the strategic business intelligence (the strategy implementation view, dynamic capability perspective, and management accounting systems) and presents a conceptual model of how advanced management accounting systems can foster a firm's strategic renewal. Practical examples are presented to illustrate the emergence and existence of the phenomenon in the different business contexts.

This chapter is organized as follows: the introduction describes the background of the phenomenon. The following theoretical section discusses the main theoretical lenses and the literature used in the study, namely the strategy implementation view, the dynamic capability perspective, and the management accounting systems literature. The conceptual framework discusses the nine building blocks contributing to the firm's strategic renewal. These building blocks consist of the intersection of different timeframes (past, present, and future) and dynamic capabilities (sensing and seizing opportunities and also modifying resources). The conclusion

paragraph summarizes the previously discussed content and its practical relevance, and the chapter ends with the outlook for the future of financial intelligence.

THEORETICAL BACKGROUND

Information, and particularly apposite quality information, is a key intangible asset for any modern organization (Barney, 1995; Clarke, 1999; Porter & Heppelmann, 2014; 2015). Information helps management and personnel to make better decisions, to track the organization's performance, and ultimately, to generate (sustainable) competitive advantage (Porter & Heppelmann, 2015). Financial information held in an organization's information systems provides opportunities to increase the firm's productivity, market share, cost-savings, and performance (Ceci & Masini, 2011; Maciariello & Kirby, 1994). Additionally, quality information enables an organization to develop new products, services, processes, and innovations (Nevo & Chan, 2007). Financial information offers reports on how past actions affected the markets, and can be utilized when planning future moves and evaluating their likely consequences. As a whole, information intertwined in the organization's information systems can facilitate its strategic and operational activity, decision-making practices, and the actions that support organizational renewal that incorporates reshaping the firm's strategy, structures, and resources.

Building on strategy creation and implementation views, the dynamic capability perspective, and the strategic accounting literature (particularly that on management control systems), this chapter contributes to defining the intersection of these theoretical grounds. The overall aim of the work is to conceptualize how advanced management control systems providing real-time data can facilitate agile strategic initiative creation and implementation processes, and thus, a firm's

strategic renewal. Hence, the work combines three concepts of strategic management: 1) strategy creation and the implementation perspective (strategy into practice), 2) the dynamic capability view (resources and processes evolvement) and 3) management control systems (strategic accounting/financial ICT systems). These research streams are briefly discussed below.

Strategy implementation can be defined as the activities and initiatives needed to accomplish a strategic plan (Wheelen & Hunger, 2011) and to transform a decision into practice. Implementing a strategy consists of decisions and activities to achieve a desired strategic outcome or an overall organizational goal. Strategy implementation also covers how organizations should develop, deploy, and amalgamate their organizational structures, control systems, and cultures to create wealth. In today's volatile business conditions spanning many sectors, strategy creation and implementation may occur simultaneously. This situation increasingly demands the seamless integration of strategic and operational activities.

The *dynamic capability* perspective accords with a firm's ability to learn and to renew itself in such a way as to create wealth for the firm (Doz & Kosonen, 2007; Teece, Pisano & Shuen, 1997) and provide long-term benefits for the firm's key stakeholders (Long & Vickers-Koch, 1995). Strategic learning, organizational learning, and ambidexterity are typical contents of discussions on a firm's dynamic capabilities (see also Birkinshaw & Gibson, 2004; Easterby-Smith, Crossan & Niccolini, 2000; Kuwada, 1998; Thomas, Sussman & Henderson, 2001). Dynamic capability has been defined as the firm's ability to 1) sense and shape new business opportunities and threats, 2) seize such fleeting business opportunities and 3) reconfigure and modify its resource base to address changes in its marketplaces (Eisenhardt & Sull, 2001; Teece, 2007; 2012). Following an extensive literature review, Wang and Ahmed (2007) classified dynamic capabilities into those relating to a firm's 1) innovative capability, 2) adaptive capability and 3) absorptive capability.

Innovative capability refers to a firm's ability to develop new products, services, and markets through aligning strategic initiatives with innovative behavior and processes. Adaptive capability, on the other hand, accords with the firm's ability to identify and capitalize on emerging business opportunities. Third, absorptive capability is defined as a firm's ability to recognize the value of new external information, and assimilate and exploit such information to commercial ends. In sum, dynamic capabilities encapsulate a firm's ability to change itself strategically by altering its resource bases, processes, routines and capabilities (Danneels, 2011; Huikkola, Kohtamäki & Rabetino, 2016; Teece, 2012).

Strategic accounting and particularly management control systems refer to information systems that are used to foster strategy creation, implementation, evaluation, and performance (Maciariello & Kirby, 1994; Simons, 1995). This includes both monetary and non-monetary information to support managers in their decision-making practices (Anthony & Govindarajan 2007). Management control systems are vital in steering an organization toward its strategic objectives by allowing the firm to better prioritize and reallocate its (perhaps scant) resources. Management control systems have been described as having several dimensions such as the source of information (internal vs. external), the type of information (financial vs. non-financial) and the timeline of the information (history vs. future). Moreover, the extant studies (e.g., Laitinen et al. 2009; Tillema 2005) have classified the information produced by management control systems into a) narrow scope of information, b) average scope of information and c) broad scope of information. The first refers to historic information that is financially quantifiable; the second encompasses both financial and non-financial information about future events; and the broad scope of information label covers a combination of the financial and non-financial, and the future-

oriented external information. Advanced management control systems enable a firm to act proactively because future cash flows, sales, and strategic actions taken by competitors can be better predicted and analyzed. In addition, information systems provide accurate real-time data on a firm's sales and profitability in different market and product areas. Third, historical data can be utilized when evaluating future business opportunities and analyzing previous actions' value that have been undertaken in a firm's history.

Figure 4.1 below summarizes the theoretical grounds of the work. Strategy creation and implementation include executing a strategic plan, the process of turning a decision into an action, and activities required to deliver a firm's vision. Strategic accounting and management control systems include a firm's use of predictive, real-time, and historical data and analysis. The term dynamic capabilities refers to the firm's strategic change and renewal, and includes a firm's processes to sense and seize new business opportunities, and to modify its resources to address changes that occur in the ever-changing business environment (Teece, 2007).

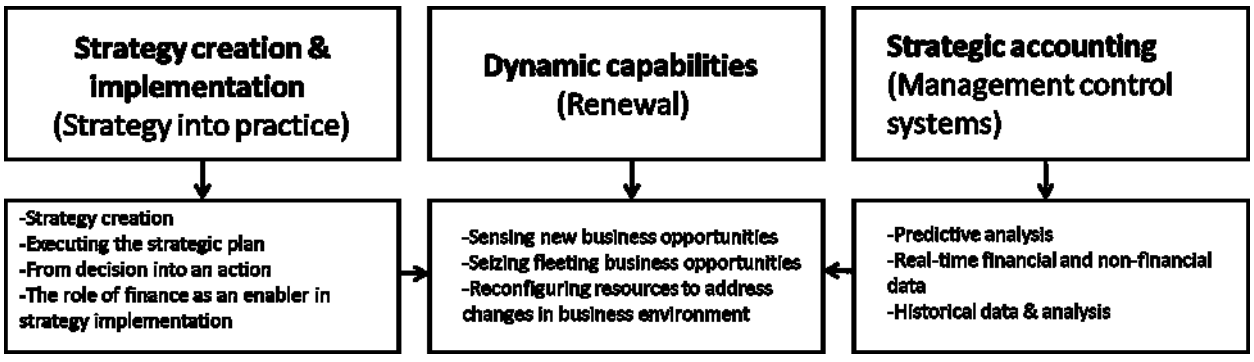

Figure 4.1. Theoretical grounds of the work.

CONCEPTUAL FRAMEWORK

The following framework conceptualizes and incorporates the above-mentioned research streams. We follow Teece's (2007) definition of dynamic capabilities and consider them as the firm's ability to renew itself by 1) sensing and shaping new business opportunities, 2) seizing these fleeting business opportunities and 3) reconfiguring and modifying its resource base to address changes that occur in the business environment. Management control systems, on the other hand, are systems that collect, use, and assimilate information to evaluate a firm's (financial or non-financial) performance (Simons, 1995). Management control systems are used to steer a firm toward its strategic objectives and implement its strategy by facilitating resource reallocation. Figure 4.2 conceptualizes how financial intelligence acquired through an MCS can facilitate a firm's creation of dynamic capabilities.

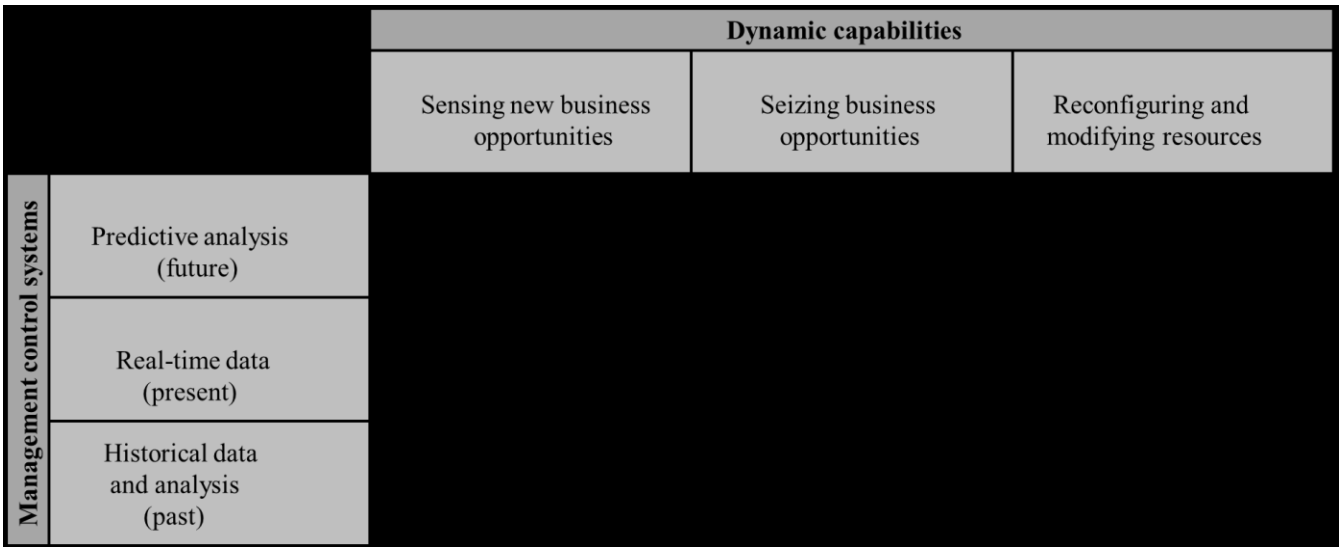

Figure 4.2. How management control systems and financial intelligence facilitate a firm's strategic learning and renewal processes.

The impact of predictive analysis on a firm's ability to renew itself

Predictive analysis to sense future business opportunities

The top management team's main responsibility is to guide their organization to continuously seek underlying market opportunities to create growth in the future. This may include sensing new products, services, customers, business markets, or market areas. Advanced management control systems provide historical financial data, and potentially real-time financial data that can be used as grounds on which to model the future (Tekavčič, Peljhan & Šević 2008). Maintaining solid predictive financial models is key for making strategic decisions and following up on them. This is an important role of the finance function.

For instance, Electric car manufacturer Tesla has forecast that it will deliver 80,000–90,000 Model S and Model X vehicles during the year 2016. Elon Musk, Tesla's founder and CEO describes the firm's future potential: *"Tesla is doubling its cumulative sales every year. I'm not sure this has happened in the car industry in a century. This year, we will potentially double the size of the fleet. That's pretty exciting."* Forecasting is difficult, particularly in consumer and high-technology businesses (for instance sales projections for the Apple Watch testify to that difficulty) but firms are typically aware of global megatrends and typical business trends affecting their industries. Identifying these trends enables firms to determine which products or markets they should concentrate on in the future. Managers should evaluate how their current MCS is utilized to sense new markets, products, services, or business markets. Therefore, companies should acknowledge the importance of building predictive modeling capabilities within the company. To build this capability, people responsible for sensing new product or market development should have occasionally conversations with the financial personnel to increase mutual understanding of the future business opportunities.

Predictive analysis to seize future business opportunities

In addition to sensing capabilities, firms must be able to seize the most promising business opportunities in the markets. As digitization and turbulent markets provide more opportunities than a single firm is able to exploit, a shortage of management and financial resources means businesses must reject most opportunities and focus only on the most promising and relevant (Eisenhardt & Sull, 2001). This means that the information systems should provide information on the new products, services, and markets that have the greatest business potential in terms of growth, profits, or other benefits such as increased customer satisfaction or better strategic fit. As Apple's CEO Tim Cook phrased it: "*We believe in saying no to thousands of projects, so that we can really focus on the few that are truly important and meaningful to us*." The usage of these information systems can for instance explain why streaming media provider Netflix has been able to create so many successful series. Netflix, described as a data-driven company, has been able to develop algorithms and analytics to make decisions on the most promising series. Whereas the success rate of a new series launched on conventional television is about 35%, Netflix series have a success rate of around double that. Netflix has a luxury that conventional operators do not have: advanced customer data. The data reveal when the customer pauses, rewinds, or fast-forwards the content, what date and time the content is watched, where the content is watched, what devices have been utilized to watch the content, how the contents have been rated and what searches have been done, et cetera. Based on the analysis of the rich data it receives, Netflix can predict which series and movies are likely to succeed in the future and why. Seizing opportunity is particularly about making decisions based on the quality and accuracy of data rather than intuition. Managers

operating in different sectors should evaluate how their current systems are utilized when making decisions on which opportunities the firm is about to seize or options it will reject. Moreover, personnel responsible for making investment decisions and accounting personnel should team up to improve their mutual understanding of future breakthrough products

Predictive analyses to modify resources

The best companies are proactive in terms of modifying their resource bases. Reactiveness in terms of changing a firm's resources typically indicates a failure of sensing and seizing activities. Advanced management control systems enable a firm to understand what type of resources it will need in the future, what extant resources should be reinforced and invested in, and what resources should be released to address changes that will most likely occur in the future business environment. For instance, the world's second largest manufacturer of elevators and escalators, KONE, sold its operations in South America to its main competitor ThyssenKrupp Elevator in 2001 to generate enough capital and slack resources to develop its businesses, operations, and resources in Asia, particularly in China. Even though it is easy to see the logic of this successful strategic initiative afterwards, the decision required that KONE conduct a proper financial analysis of future business opportunities globally and undertake initiatives in terms of creating and developing valuable resources in China. In another example, Apple's strategic initiatives regarding the (self-driving) car industry development include recruiting engineers from Tesla to build competencies related to car design. In sum, predictive analysis seeks to find out where the money will coming from in the future. To get the most out of a business opportunity, a firm must build its future resources proactively based on a fine-grained analysis of future trends. Managers should

consider how their current systems are utilized to create new resources, and leverage and shed their existing resources as necessary. The top management team should focus on defining the global megatrends and industry-specific business trends that most affect their company. Part of the discussion during the top management team meetings should focus on future trends and future actions. Hamel and Prahalad (1994) estimated that top managers spend only 3% of their time discussing future opportunities. If considering the future were an agenda item in every management team meeting, developing a future trend outlook could become routine for managers, which would further promote discussion of future scenarios and business trends. To understand future trends better, firms should gather future data and information through associations, universities, and other research institutes (particularly with futures studies researchers), and other firms. The data gathered could be matched with firms' own internally collected data for further validation. Decisions on resource reallocations could be based on proper analysis made through active collaboration with external parties. Successful resource allocation could be further facilitated by active dialogue with the finance function during strategy formulation such that budgeting and resource allocation incorporate strategic thinking.

Using real-time data to facilitate a firm's strategic renewal

Using real-time data to sense new business opportunities

ICT companies among others have successfully utilized real-time data to develop new products and services. For instance, the Finnish mobile game development company, Supercell, famous for its Clash of Clans, Clash Royale, Hay Day and Boom Beach mobile games, exploits real-time data on customer purchases made during its games to sense and develop new commercial products.

This type of freemium business model requires continuous development of existing products based on customer purchasing and playing behavior. Monetization gives direct feedback on how customers / gamers evaluate their satisfaction with the new product. In a similar manner, as manufacturers are increasingly becoming like software companies (see Porter & Heppelmann, 2014; 2015), they can also benefit from extensive real-time data. New remote technologies enable manufacturers to monitor data on customer processes and optimize those processes by undertaking preventive maintenance, or by consulting customers on how the firm could optimize its production capacity to increase its profits or revenues. Utilizing real-time data to make quick decisions is far from easy, but can potentially create economic rents for the firms, as the examples available from the ICT sector indicate. Managers should review how their current systems utilize real-time data to sense and develop new products, services, and business markets. Real-time analysis should not be based on temporary peaks (snapshots) but instead on indications of trends (both growing and declining). Digitization supports companies in increasingly utilizing real-time data to develop new products and services. For instance, KONE can utilize its real-time data gathered on product malfunctions by guiding its technicians to make immediate visits to certain customers. For instance, if KONE detects an error in the customer's automatic door, it can send the closest available technician to see if he or she can repair it immediately. This is possible because of *dynamic dispatching.* Different mobile devices can thus be utilized to increase instant sales.

Using real-time data to seize business opportunities

Real-time data can be leveraged to seize the most promising business opportunities. Seizing the most promising business opportunities means that the organization invests in them, develops them, adds them to, and integrates them into their offerings, and ultimately sells them. This means that some new business markets and products will have to be rejected. Those rejected should typically

be those with the lowest levels of sales, profit, or customer satisfaction and retention estimates, or the weakest strategic fit. Subsequently, the question is not only where to invest but also where *not* to invest because today's business environment and information technology continuously provide thousands of fleeting opportunities (Eisenhardt & Sull, 2001). While traditional product development takes a long time, and considerable effort and money, to progress from idea to execution, today's advanced systems allow firms to decrease the time and costs required to test which products and services are in demand and therefore offer business opportunities, and which do not. (Schmidt & Rosenberg, 2014). Fast piloting can be an effective means to test which products and services are the most viable to develop in the future. In the mobile games industry, Canada is often used as a good test market to pilot new mobile games because the market provides reliable data that is comparable to other major markets such as the United States. Canada is simultaneously both big enough and small enough. Supercell's famous Hay Day exemplifies this phenomenon: "*The Hay Day beta went live in Canada in May 2012. Until this point, every single beta launch we'd had as a company had been lukewarm at best and had eventually led us to kill the game later on. A few of them had garnered some initial interest, but player engagement soon started to wane. But Hay Day was different. The engagement was crazy from day one, and it just kept growing. Slowly we started to realize that perhaps, finally, we were onto something"*.

In grocery stores, storekeepers and entrepreneurs can evaluate the currently popular products based on real-time data. This does not automatically mean that the prices should be higher when the demand is higher. Swedish furniture giant, IKEA, has become famous for selling umbrellas cheaper on rainy days (weather data are considered real-time data in this context). To accelerate the sales of umbrellas (alongside other IKEA products at the same time), the firm not only reduced

umbrella prices (which many organizations would not) but also displayed them prominently to boost their overall sales. This strategy may lower income/profits for a short time-period but increase customer satisfaction and business performance in the long run. Thus, good business decisions sometimes seem counterintuitive. Managers should evaluate how real-time data are currently utilized in making seizing and investment decisions. Increasingly these seizing decisions are based on advanced (and automatic) algorithms and heuristics. For instance, a robot can decide what stocks to buy and at which price on an investor's behalf, after it is programmed with the relevant parameters.

Using real-time data to modify resources

Management control systems enable a firm to map in real time the type of resources a firm should possess at any given time, what new resources should be built and acquired, which existing resources should be leveraged and nurtured, and which should be released to address changes in the business environment. At the corporate-level, real-time data provide opportunities to optimize and reallocate a firm's limited resources. Although some resources, especially human resources, are typically relatively immobile, using real-time data hints at the possibilities of reallocating resources within the corporation. For instance, an airline company that dynamically changes ticket pricing based on demand patterns can optimize its fleet capacity. Another example from the service industry is McDonald's A McDonald's franchisee who owns multiple McDonald's stores in the same area (town or region), might be able to transfer employees from quiet restaurants to busier restaurants based on real-time sales figures. In sum, real-time data can be utilized to better meet the prevailing supply and demand. Managers should consider how the real-time data provided through the current systems are utilized to reallocate existing resources. Sharing real-time data

with external firms has been increasing because of the evolution of enterprise resource planning (ERP) systems and the interconnectivity between firms. This has helped firms to optimize their production and operations across regions, as it is far easier to see the free capacity currently available.

Using historical data and analysis to facilitate a firm's strategic renewal

Using historical data to sense business opportunities

It has been said that history does not predict future performance. It has also been said that people and governments have never learned from history, or acted on principles deduced from it (Danneels, 2011). Companies, however, should use historical data to evaluate future business opportunities. The data used in management accounting systems, have typically been historic. This makes sense, because regulations and official reports, for instance, require accurate financial data on the firm's past performance (because of taxation and local legislation issues) Utilizing longitudinal historical data (e.g., panel data) can reveal historical patterns (whether of success or failure) to the firm commissioning the study, and the firm can then tailor its decisions accordingly. Supercell's CEO and co-founder Ilkka Paananen commented on the firm's success and how it has learned from its mistakes: "*That reminds us that our success is built on past failures and learning from them. That's an important legacy that is helpful even now, because remembering the failures helps people to keep their feet on the ground."* Therefore, previous mistakes can be reevaluated as learning steps. Managers should evaluate how the historic data collected can be used systematically to sense new products, services, or business markets. The people responsible for

developing new products, services, and markets should collaborate with those working in the finance department to review historical patterns, which can be useful when designing new products and services. For instance, observed patterns between country's gross domestic product (GDP) and demand for a certain product may create opportunities for new related products and services. If China's GDP increases, the demand for premium cars will most likely increase too. An increased number of premium cars leads to an increased demand for garages. Firms building, marketing and selling garages may use this data to sense new opportunities available to them.

Using historical data to seize business opportunities

Historical data can be capitalized on with regard to new products, services, and business markets. Firms can use past data to assess when it would be most beneficial to launch a new product or product extension. For instance, in the automotive industry, the product life cycle of mass produced cars typically ranges from 4 to 6 years. The car manufacturer can use historical data to evaluate the optimal timeline for launching a totally new model, pushing out a new facelift, or ending the model production completely. During the production time of a model, competitors will introduce new products, or increase market share for different reasons. Historical data can be utilized to respond to this stiffening competition, because such data can illustrate if it is worth marketing a facelift version (typically two to three years after the original model was launched to offset revenue erosion) or launching a new model. Managers should consider how the historic data gathered through the established systems are utilized to seize new business opportunities. Personnel from different organizational units should also identify patterns that emerge from the historic data

Using historical data to modify resources

Historical data can be utilized when reallocating resources in a new way or for new purposes. Historical data may reveal repeatable patterns over history and enable a firm to add, release, or nurture dedicated resources at the right time. Based on historical analyses (or tacit knowledge), many service firms know when the size of the workforce should be temporarily increased or decreased. For instance, Wal-Mart announced that declining earnings would force it to close 269 of its stores, affecting 16000 workers in North-America (mainly in Wal-Mart Express stores). Simultaneously the firm stated that it would be developing its digital and supercenter businesses. The stated actions included personnel training and increasing the firms wage bill (by approximately $1billion) and opening 300 new stores globally. Historic data could reveal what types of stores have been the most profitable and where the company sees the most promising business opportunities. To address these concerns, a company decides what resources it should create in the future (e.g., Wal-Mart builds its digital capabilities or pick-up services), what resources it will leverage for other purposes (e.g., Wal-Mart invests in its Supercenters), and what resources it needs to shed (e.g., the closures of Wal-Mart Express outlets). Usually, the historical trend (whether growing or declining) is more important than the current numbers in a given period when deciding where to focus efforts. Managers should evaluate how systematically the historical data are used to address firm's resource reallocation decisions.

CONCLUSION

Strategic renewal is difficult as the competitive environment might be turbulent, customers' preferences change continuously, or there might not be easily understandable change management models available. However, the only constant is change. The role of management control systems

in a firm's renewal has been overlooked in the prior strategy literature. This chapter conceptualizes how these systems can facilitate a firm's strategic renewal by taking into account different time dimensions (past, present, and future) and modes of change (sensing, seizing, reconfiguring). Through combining these elements, the data generated through management accounting systems can potentially help managers to strategically renew their companies in a more systematic way.

More advanced management control systems, a turbulent business environment, changing customer needs, technology turmoil, and more intense competition create a challenging situation for many companies but also provide tremendous opportunities for those firms prepared to be forerunners and to dedicate themselves to being agile. First, manufacturers should evaluate how interactive, accurate, and developed their current management control systems are. Managers should ask if their firms' management control systems permit predictive analysis and offer real-time data, or whether they were built to mainly address mandatory regulatory requirements. Second, managers should evaluate how management control systems are used in strategy creation, implementation, and follow up: Is the link between strategy and its key enablers such as tactical financial planning and resource allocation decisions clear enough? Is strategy implementation followed up based on trends in financial and operative performance indicators? Is the CFO the only person in the management team utilizing the MCS? and how are the systems used to support sensing and seizing new business opportunities? At the operational level, managers should ask how often people from different silos come together or collaborate. At all levels (or between firm boundaries), knowledge-sharing between functions, firms, and people has become increasingly important to facilitate organizational change.

Established firms should consider, test, and learn the best fast piloting practices typically applied in start-up firms. Digitization and advanced information systems enable a manufacturer to continuously seek, sense, and seize new business opportunities, to pilot and test them on selected customers and business markets, and leverage or release resources relatively quickly. Business and product development models of the "scale fast or fail fast" type should be encouraged among established companies to obtain rapid results from customer experience and demand in the markets (Schmidt & Rosenberg, 2014). Modern advanced systems enable companies to conduct fine-grained analysis of future opportunities, the current situation, and past performance.

The conceptual model developed in this chapter seeks to advance managers' general understanding of their firm's strategic renewal. The model attempts to conceptualize how management control systems can facilitate a firm's renewal by taking into account different timeframes and change modes. Moreover, the model can be tested in firms and could improve collaboration between the different organizational functions. For instance, financial administration and R&D could jointly use the model to understand and evaluate costs, investment decisions, and future cash flows. Thereafter, firms who want to renew strategically through utilizing management accounting systems could establish cross-functional teams to improve mutual understanding of the initiatives required. Financial analytics answers specific business questions and enables firms to establish initiatives that facilitate the components of strategic renewal.

THE FUTURE OF FINANCIAL INTELLIGENCE

In the future, big data will get even bigger. Just as the banks have learned how to utilize big data systematically to improve their customer intelligence (see the chapter on CRM in this book),

financial departments need to develop their capabilities to exploit the opportunities offered by big financial data in their organizations. Specifically, as the Internet of Things (IoT) develops rapidly in the manufacturing sector, managers responsible for financial issues should collaborate with the business functions to better understand the linkage between the core business and the financial figures. For instance, customer satisfaction in some industries can be predicted from the unexpected breakdown rate of the firm's equipment. Utilizing IoT to evaluate potential breakdowns could help a firm to improve its customer satisfaction levels, and eventually, customer-specific profits. Thereafter, the finance department should delve deeper into the firm's core business and grasp the business strategy, initiatives, and patterns. The CFO in the future will not just be a gatekeeper of financial assets, but will actively participate in the strategic discussions related to the firm's new product, market, and business development opportunities. Overall, more advanced analytics might be applied to diminish organizational silo effects as knowledge and data become integral to future decision-making processes.

In some scenarios, digitization and new technologies such as blockchain-based technology have been predicted to make traditional finance departments obsolete. It is very likely that new technologies will reshape the finance department's role because monitoring, trade processing, and transaction costs ought to decrease in the future. Another way for organizations, and especially their finance departments, to develop their processes and improve their cooperation with the firm's other departments is to centralize standard processes and tasks in service centers. In these service centers, organizations could effectively cost standard tasks such as accounts payable processes and standard monthly report creation. Doing so would free time in the business control function spent on report creation to enable the analysis of past performance and predicting future performance. The centralization would also allow the business control function to focus on supporting business

management with its decision making and strategic renewal processes. However, the finance department's analytical expertise could be better exploited throughout the organization to improve the quality of decision making across its business functions. This would further lessen the impact of the silo effect. In the future, the finance department should invest in developing machine learning or artificial intelligence capabilities to automate transactional work, and enable it to focus on decision-making activities, analytical modeling, strategic renewal processes, and collaboration between the functions and boundaries.

REFERENCES

Anthony, R. & Govindarajan, V. (2007). *Management control systems*. Irwing, New York.

Barney, J. (1995). Looking inside for competitive advantage. *Academy of Management Executive,* Vol. 9, No. 4, pp. 49-61.

Birkinshaw, J. & Gibson, C. (2004). Building Ambidexterity Into an Organization. *MIT Sloan Management Review,* Vol. 45, No. 4, pp. 47-55.

Brown, S.L. & Eisenhardt, K.M. (1997). The Art of Continuous Change: Linking Complexity Theory and Time-Paced Evolution in Relentlessly Shifting Organizations. *Administrative Science Quarterly* Vol. 42, No. 1, pp. 1-34.

Ceci, F., & Masini, A. (2011). Balancing specialized and generic capabilities in the provision of integrated solutions. *Industrial and Corporate Change*, Vol. 20, No. 1, pp. 91–131.

Clarke, A. (1999). A practical use of key success factors to improve the effectiveness of project management. *International Journal of Project Management* Vol. 17, No. 3, pp. 139-145.

Danneels, E. (2011). Trying to become a different type of company: dynamic capability at Smith Corona. Strategic Management Journal Vol. 32, No. 1, pp. 1-31.

Deloitte (2014). *Finance Analytics: The Three Minute Guide.* https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Deloitte-Analytics/dttl-analytics-us-da-3minFinanceAnalytics.pdf

Doz, Y. & Kosonen, M. (2007). The New Deal at the Top. *Harvard Business Review* Vol. 85, No. 6, pp. 98-104.

Easterby-Smith M., Crossan M. & Niccolini, M.D. (2000). Organizational Learning: Debates Past, Present And Future. *Journal of Management Studies*, Vol. 37, No. 6, pp. 783-796.

Eisenhardt, K.M. (1989). Making Fast Strategic Decisions in High-Velocity Environments. *Academy of Management Journal*, Vol. 32, No. 3, pp. 543-576.

Eisenhardt, & J.A. Martin, J.A. (2000). Dynamic capabilities: What are they? *Strategic Management Journal*, Vol. 21 No. 10-11, pp. 1105–1121.

Eisenhardt, K.M. & Sull, D. (2001). Strategy as Simple Rules. *Harvard Business Review*, Vol. 79, No. 1, pp. 106-116.

Feldman, M. S. & Pentland, B.T. (2003). Reconceptualizing organizational routines as a source of flexibility and change. *Administrative Science Quarterly*, Vol. 48, pp. 94–118.

Hagiu, A. (2014). Strategic Decisions for Multisided Platforms. *MIT Sloan Management Review*, Vol. 55, No. 2, pp. 71-80.

Hamel, G., & Prahalad, C. K. (1994). *Competing for the Future*. Boston, MA: Harvard Business School Press.

Huikkola, T., Kohtamäki, M. & Rabetino, R. (2016). Resource Realignment in Servitization. *Research-Technology Management*, Vol. 59, No. 4, pp. 30-39.

Kuwada, K. (1998). Strategic Learning: The Continuous Side of Discontinuous Strategic Change. *Organizational science*, Vol. 9, No. 6. pp. 719-736.

Laitinen, E.K., Länsiluoto, A. & Rautiainen, I. (2009). Extracting appropriate scope for information systems: a case study. *Industrial Management & Data Systems*, Vol. 109, No. 3, pp. 305-321.

Langfield-Smith, K. (1997). Management control systems and strategy: A critical review, *Accounting, Organizations and Society*, Vol 22, No.2, pp. 207–232.

Leonard-Barton, D. (1992). Core capabilities and core rigidities: A paradox in managing new product development. *Strategic Management Journal*, Vol. 13 No. S1, pp. 111–125.

Long, C., & Vickers-Koch, M. (1995). Using Core Capabilities to Create Competitive Advantage. *Organizational Dynamics,* Vol. 24 No. 1, pp. 7–22.

Maciariello, J. & Kirby, C. (1994). *Management Control Systems - Using Adaptive Systems to Attain Control*. New Jersey, Prentice Hall.

Nevo, D. & Chan, Y.E. (2007). A delphi study of knowledge management systems: scope and requirements. *Information & Management*, Vol. 44, No. 6, pp. 583-597.

Porter, M.E., & Heppelmann, J.E. (2014).How smart, connected products are transforming competition. *Harvard Business Review,* Vol. 92, No. 11, pp. 64-88.

Porter, M. E., & Heppelmann (2015). How smart, connected products are transforming companies. *Harvard Business Review* Vol. 93, No. 10, pp. 96–114.

Schmidt, E. & Rosenberg, J. (2014). *How Google Works.* Grand Central Publishing. 304 pages.

Simons, R. (1995). Levers of Control: How Managers Use Innovative Control Systems to Drive Strategic Renewal, Harvard Business School Press, Boston.

Sirén, C., Hakala, H., Wincent, J. & Grichnik, D. (2016). Breaking the Routines: Entrepreneurial Orientation, Strategic Learning, Firm Size, and Age. *Long Range Planning* DOI: http://dx.doi.org/10.1016/j.lrp.2016.09.005

Sirmon, D., & Hitt, M. (2003). Managing resources: Linking unique resources, management, and wealth creation in family firms. Entrepreneurship, Theory and Practice, Vol. 27, No. 4, pp.339–351.

Sull, D. (2009). The Upside of Turbulence: Seizing Opportunity in a n Uncertain World. HarperBusiness.

Teece, D., Pisano, G. & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal,* Vol. 18, No.7, pp. 509-533.

Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, Vol. 28 No. 13, pp. 1319–1350.

Teece, D. (2012). Dynamic Capabilities: Routines versus Entrepreneurial Action. *Journal of Management Studies*, Vol. 49 No. 8, pp. 1395-1401.

Tekavčič, M., Peljhan, D. & Šević, Z. (2008). Levers of Control: Analysis of Management Control Systems in a Slovenian Company. *The Journal of Applied Business Research*, Vol. 24, No. 4, pp. 97-112.

Thomas, J.B., Sussman, S.W. & Henderson, J.C. (2001). Organizational learning, knowledge management, and sensemaking. *Organization Science* 12(3): 331-345.

Tillema, S. (2005). Towards an integrated contingency framework for MAS sophistication: Case studies on the scope of accounting instruments in Dutch power and gas companies. *Management Accounting Research* 16, 101-129.

Wang, C.L. & Ahmed, P.K. (2007). Dynamic capabilities: A review and research agenda. *International Journal of Management Reviews*, Vol. 9 No. 1, pp. 31–51.

Wheelen, T.L. & Hunger, J.D. (2011). Concepts in Strategic Management and Business Policy: Toward Global Sustainability. Prentice-Hall.