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Performance measurement system in the situation of simultaneous vertical and horizontal integration

Jukka Pellinen Henri Teittinen Marko Jarvenpaa

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Why be first if it doesn't pay? The case of early adopters of C-TPAT supply chain security certification

1. Introduction

The horizontal organization, based on customer-focused production, has been considered as a central source of competitive advantage in recent decades (Dean and Snell, 1991; Schonberger, 1996; Ostroff, 1999; Galbraith, 2005). Horizontal organization is defined in the theory as an alternative to vertical organizational structure based on the needs of owners and upper management, and where management accounting (MA) is the most central means of strategy implementation and achievement of the primary financial goals. Theories of horizontal organization treat vertical control merely as a problem, which can be abolished by abandoning the procedures and action models that maintain hierarchies and financial orientation. Horizontal organization is understood to require totally new, non-accounting means of control. In real life conditions, however, the vertical organization and control cannot be totally ignored because the mechanisms for the strategic and financial control of a firm are required at least in some form. Therefore, the puzzle is, how can these two seemingly exclusionary rationales of control be coupled?

The most obvious need for increased vertical control takes place when a company is growing through acquisitions and previously independent firms are merged into a single entity. The basis for acquisitions may be found from different integration strategies. Companies seeking vertical integration are acquiring new firms in order to gain control over the whole supply chain, in extreme cases from raw materials to end customers. While vertical integration therefore requires the acquisition of different types of capacities, horizontal integration requires capacities that are similar. The strategy of horizontal integration aims at increasing market share, diminishing competition and increasing cost competitiveness.

The rationale of horizontal control is mainly based on the idea of more customer driven supply chains (see for example Dean and Snell, 1991; Hansen and Mouritsen, 2007). According to definition, supply chain integration is 'the degree to which a manufacturer strategically collaborates with its supply chain partners and collaboratively manages intra- and inter-organization processes (Flynn et al., 2010: 59). In cases where the conditions for horizontal control are defined by integration strategies and company acquisitions, there exist simultaneous requirements to integrate new business units vertically under one management and into one financial entity (see for example Jones, 1985; Micheli et al., 2011). In order to avoid problems in such situations it is important to identify potential tensions and contradictions between horizontal and vertical control, which may take place in these integration processes and to develop a theory that combines both dimensions. Currently, these theories are merely mutually exclusive, and the need for more comprehensive theory of integration is not recognized. The theories describing horizontal organizations have not considered the new MA methods, which have the potential to support customer-focused strategies, strategic reorganization processes and the management of a wide variety of different objectives. On the other

hand, the MA research also lacks empirical research on horizontal organizations. Since research in operations management has been broadening out to draw from other management disciplines (Filippini, 1997), this study combines theories from operations management and MA.

In this study we pay especially attention to the processes of horizontal and vertical integration aiming at a more customer oriented, effectively controlled and better performing entity. Organizational integration is defined 'as the process of achieving unity of effort among the various subsystems in accomplishing the organization's task' (Lawrence and Lorch, 1967: 4). The need for organizational integration might stem from either acquisitions or changes in manufacturing strategies. Acquisitions lead to the need for the vertical organizational integration of strategic and financial control, since the acquired firms should be aligned with one strategy and prepare financial reports as a single entity. On the other hand, horizontal organizational integration is sought in order to reorganize production according to customer needs instead of the earlier traditional responsibility centre based hierarchical structure.

We have chosen an explorative case study as our research methodology due to the phenomenon, which is novel and difficult to be accurately limited. The case study is suggested as suiting situations where the goal is to build a new theory or refine a less theorized area of knowledge, based on empirical observations (e.g. Eisenhardt, 1989b; Keating, 1995; Meredith, 1998; Kiridena et al., 2009; Ketokivi and Choi, 2014; Walker et al., 2015). The purpose of this paper is to identify tensions and contradictions, which arise at the time of a simultaneous need for horizontal and vertical integration. Moreover, the purpose is to develop a theory based on abductive logic from the design and use of a performance measurement system (PMS) in order to solve these tensions. Because our aim is to gain a deep and rich understanding of the complex organizational change process, we have decided to focus on a single case organization with multiple production sites instead of a multiple case study or survey study (see e.g. Yin, 2003; Meredith, 1998).

We report on fieldwork in one metal and engineering company that has grown rapidly via acquisitions. The strategy of the company was to integrate 15 small machine shops into a larger corporate entity and make the growing group of machine shops operate as a contract manufacturer and supplier of machining and assembling services for a number of original equipment manufacturers. The case firm was acquiring firms in order to implement strategies of horizontal and vertical integration. Customer orientation was how the businesses were run in the acquired production units. The new situation created new questions about how the organizational integration needs and the customer orientation of business units could best be combined.

In this study we focus on the post-acquisition situation in an organization, where a need to manage both vertical and horizontal integration at the same time exists. In particular, we focus on the role of PMS in this special situation. While research in PMS has resulted several frameworks of designing performance measures and planning their implementation (see e.g. Kaplan and Norton, 1992; Neely et al., 2002; Bourne et al., 2000), there is still a need for situational theories about their use and systematic evaluation (Bourne et al., 2000; Lämsiluoto et al., 2013). Even though the role of PMS in

the strategy process has recently been emphasized (Micheli and Manzoni, 2010), the role of PMS in integrating diverse organizations and businesses is also well recognized (Jones, 1985; Gupta and Govindarajan, 1991; Micheli et al., 2011).

The role of PMS in vertical organizational integration has been a controversial and much disputed subject within the field (Micheli et al., 2011; Roberts, 1990; Granlund, 2003). Although some research has been carried out on the role of PMS in vertical organizational integration, no studies have been found that would explore situations where both vertical and horizontal organizational integration are sought simultaneously.

We contribute to the theory of designing PMS to encourage co-operation within the organization and overcome the conflicts between performance measures (Neely, 2005, p.1255). As a result of our study, we provide observations on potential problems in PMS design in advancing integration. Furthermore, based on case analysis and theorization, we provide propositions on PMS design that form a more comprehensive theoretical framework of PMS for integration.

This paper has been structured as follows. The following section discusses the preliminary research in the role of PMS in organizational integration. Section 3 describes the research methodology and introduces the case setting. This is followed by findings from the case organization. Finally, we discuss our findings and theoretical contributions in section 5 and section 6 concludes the paper.

2. Literature review

There is increasing concern that research on PMS should be based on more coherent theoretical foundations (Bourne et al., 2000; Chenhall, 2003; Neely, 2005; Ferreira and Otley, 2009). Previous studies on vertical integration and PMS has resulted in notions of various problems. Jones (1985) conducted a seminal study on implementing MA systems in acquired companies. The acquirer usually replaced the control systems of the acquired firm with its own management control systems which may result in various post acquisition problems like the over formalization of procedures and reduction of the quality of information. Roberts (1990) argued that hierarchical management controls were obstacles for strategy formulation and implementation based on market information. Granlund's (2003) longitudinal study illustrated problems and consequences that the lack of a common MA system may have in integrating two companies. This can also be seen in the study of Micheli et al. (2011), who have explored the links between PMS and strategy implementation in a highly diversified group of firms. They argue that difficulties with strategic planning and implementation were due to the lack of a comprehensive PMS. The rapid growth of the organization created great necessity for strategic coordination mechanisms and initiated the development of a corporate PMS.

Busco et al. (2008) studied how the tensions characterizing processes of vertical integration may be managed. They found that formal PMS is not sufficient for integration but there is a need for informal interactions and knowledge sharing to create trust in the

other parties. They also found that the dialectic has power to either challenge or reinforce formal structures and systems. They emphasize that integration does not simply imply homogenization; but rather managing local adaptation and the preservation of peculiarities through appropriate forms of co-ordination and standardization. According to Giovannoni and Maraghini (2013), there are challenges involved in the development of integrated performance measurement systems. In their case, the company was operating in the fashion industry and there was therefore a greater need for balancing between creativity, productivity and customer satisfaction. The direct intervention of the founder was an integration mechanism that substituted the PMS as a mechanism for achieving integration across the value chain and between different departments. Social interaction, however, was a way to improve the PMS based integration, eliminate inconsistencies and ensure flexibility in the process of setting targets.

The horizontal integration of value chains is a widely discussed issue in management literature (see e.g. Govindarajan and Gupta, 2000; Ghoshal and Bartlett, 1990), but it is not as clear what the role of PMS is in the process of integration. There are many calls to investigate the role of management control systems in the integration process, but only very few studies have really focused in the role of PMS in the process where vertical and horizontal integration are sought simultaneously (Micheli et al., 2011; Busco et al., 2008; Hyvönen et al., 2008).

The vertical dimension, however, has increasingly been combined with more direct relationships between the subsidiaries or business units. The horizontal interaction between units is seen to facilitate the sharing of knowledge, ideas and resources (Dent, 1996; Busco et al., 2008). However, Tsai (2002) found that increasing control by the headquarters over subunits decreases the subunit's willingness to knowledge share. Centralization requires vertical information flows, whereas in decentralized organizations there is more room for horizontal information flows.

The need for horizontal integration is central in the new manufacturing paradigm. Horizontal flows of products, services and information confronts MA ideals of the hierarchical flow of information for planning and control. Dean and Snell (1991) characterize the new manufacturing paradigm as a matter of horizontal integration. They conceptualized integrated manufacturing encompassing JIT, TQM and automation. Companies have to integrate stages of production, functional departments and manufacturing goals. Integrated manufacturing integrates diverse functions in terms of information, focus and responsibility, and thereby, breaks down traditional departmental barriers. The goal of integration particularly concerns the three strategic goals: goals of manufacturing cost, quality and lead time.

Chenhall (2008) emphasizes that customer centred strategies act as the starting point of horizontal organizational processes and structures. He analysed the propositions of MA based on the central theories of horizontal organization, and conversely the findings on MA research about horizontal organizations. According to Ostroff (1999), the horizontal organization requires clear top management decisions on the structural redesign of activities based on cross-functional processes. According to him, these processes need

owners, who integrate them with suppliers and customers. Organizations should be hierarchically flat and based on relatively autonomously operating teams.

According to Schonberger (1996), in firms aiming at world class manufacturing, financial numbers serve merely cash flow management based on budgets. Regular cost reporting is merely an unnecessary waste. Real-time customer and root-cause-oriented non-financial performance measures are tools, which serve development better (p. 96). The front line workers should be the owners of the customer and process oriented measures, and the measurement should focus on team results. (p. 190) If a customer-centric organization is sought, the need for profitability of organizational segments structured around customers should be considered. Budgeting may be an important planning tool, but it should be organized based on products or customers. Moreover, incentive systems should be defined around customer satisfaction (Galbraith, 2005). It is common for theories of horizontal organization that the organization should be redesigned based on customer relations and teams. This means that responsibilities, targets, performance measures, and incentives should be based on them. Organizational hierarchies and vertical information flows should be minimized (Chenhall, 2008). Even though there are themes in the MA literature on horizontal flows of resources and information, such as value chain analysis (Shank and Govindarajan, 1993), activity-based costing (Cooper and Kaplan, 1987), or integrated performance measurement systems (Kaplan and Norton, 1992), there is little cross-referencing on issues that are relevant to designing and operating horizontally (Chenhall, 2008: 527).

A similar analysis by Hansen and Mouritsen (2007) was based on Dean and Snell's (1991) theory of integrated manufacturing, according to which companies should concentrate on removing barriers for integration in three ways: integrating production stages, integrating functional departments or integrating the goals of production; that is, costs, quality and throughput time. Integrated manufacturing might therefore put strain on MA, including decentralization, non-financial performance measurement, new types of costing, standard setting and rewarding. Decentralization, required by the integration of the production, relocates the decision-making down to the teams that have the skills and knowhow about the concrete action. Accordingly, top-down accounting controls must be eliminated (Johnson, 1992), as opposed to what most MA thinking is traditionally based on (Anthony, 1968; Jensen and Meckling, 1992). Decision-making in teams should be supported by customer-centred non-financial performance measurement. Current innovations in MA that may be useful in customer-driven management include activity based costing, quality cost accounting and life-cycle costing. There is empirical evidence of the increased use of non-financial performance measures in integrated manufacturing contexts, but financial accounting based performance measures still dominate (Ittner and Larcker, 1998). Hansen and Mouritsen (2007) concluded that there is a lack of empirical evidence on the advantages and disadvantages of MA in organizations seeking lateral integration. Therefore, although the importance of PMS for integration management is acknowledged, there is very little empirical evidence on the design, use and influence of PMS in situations where increased integration is sought.

3. Research methodology

The two strands of literature on PMS for integration provide some guidance as to what may matter when there is a need to integrate their organization both vertically and horizontally. However, the literature is incomplete and it is clear that there is a need to understand what PMS designs satisfy the needs of integration management, how the different PMS design elements fit together with each other and the intended strategies, and why this bundle of practices leads to organizational performance, and a need to build a theory. The research design was based on the recommendations of Eisenhardt (1989b) and Yin (2003) and the theory is presented in the form of a model and propositions closely following previous research in operations and supply chain management (e.g. Pagell and Wu, 2009).

According to Saunders et al. (2012, p. 173), the research question should define the choice of research methodology. Ketokivi and Choi (2014) state that the case study suits inductive theory generation particularly well, but also for deduction based theory testing or theory elaboration based on abduction. Even though a case study can also be used for theory testing, according to Meredith (1998) and Voss (2002), its particular strength compared to more formal methods is the inductive understanding of and theory building on less theorized phenomena with unclear boundaries.

According to Soltani et al. (2014), abduction can be used also in qualitative middle range operations management research. In our study, the theory driven inquiry is aimed at defining a grounded theory, including problem analysis and theoretically sound solutions. Ketokivi and Choi (2014) point out that it is important to explicate the researcher's reasoning by defining the methodological assumptions, interview protocol and data collection, methods of coding, and analysing what the propositions and models are based on.

A theory building case study requires the same rigour as any scientific research. According to Meredith (1998), controlled observation, controlled logic of reasoning and replicability is required from a case study. Meredith (1993) and Filippini (1997) have elaborated on the features of different stages in theory building. The first stage is a conceptual model that defines a phenomenon but does not include explanations. The second stage is a framework that tends to explain the interdependencies within the phenomenon. The last stage is a theory with strong explanatory power that is validated in larger populations and series of empirical studies. We aim to build a framework that is based on findings from a single case study.

Our case site is a subcontractor in the engineering industry. *Unimet* (alias) supplies services globally for machining, assembling and hydraulics in the auto, mechanical engineering, transmission and defence equipment industries. The turnover in 2008 was almost 200 million euros and it has over 1,000 employees. We have selected the case company for our inquiry because it has grown via acquisitions. The goal is to continue restructuring the industry, to exploit the fragmented subcontracting business in the metal industry and double the turnover in 3 to 4 years. There is also a strong involvement from

Capital (alias), a private equity company, that creates a demand for profitable growth and vertical accounting reporting, and strategic intents that call for supply chain integration and horizontal control.

The history of Unimet starts in 2002, when the company was separated from the Patriot Group. The strategic intent was to become a subcontractor that would be able to supply larger volumes and more demanding systems to global companies but without losing the flexibility and agility of the small machine shops. In order to implement the strategies of horizontal and vertical integration, Unimet executed 15 acquisitions between 2002 and 2008. The objects of the business arrangements include both small entrepreneurial companies and outsourced business units from listed companies. The turnover during these years has grown from 13 million euros (in 2002) to over 200 million euros (in 2008), which means average annual growth of about 57 per cent in six years indicating our case site as a fast growing company. At the same time the organic growth has been about 10%.

The primary data of this study is comprised of the semi-structured interviews on PMS practices. The interviews were conducted during July and September 2008, at a time when the company PMS had been in use for a few years. Thirteen business unit managers, three division managers, three members of the top management and the chair of the company board were interviewed. Typically the interviews lasted one and a half hours. Facility tours were part of data collection at the fifteen production sites. All interviews (except two) were recorded and transcribed. In addition, we have had several informal discussions and meetings with the CFO and the company management over the two years. In total, the fieldwork took two years (2007–2009) as we gained good access to the company through a modestly interventionist case study, part of which was to describe the current state of the PMS. Moreover, we have plenty of internal documents and reports as empirical source material, and we met the company management several times during the project. The possibility to talk about evolving business situations and development needs with the company management during the two years gave us a relatively good emic perspective (insider) of the management situation (see e.g., Jönsson and Lukka, 2006). The broader understanding of the management context of the firm was particularly useful in analysing the interviews and trying to find explanations for the problems with the PMS.

With this research design we seek to focus on the processes and practices that relate to PMS and integration management. The opportunity to interview the company management and all the business unit managers enabled us to gain a rich overall understanding of the complex organizational phenomenon under scrutiny. Managers were asked how PMS is used in the integration processes and what kind of challenges they have faced in that process. In addition, we enquired into the business logic, history of the company and business units. In this study we use the concept PMS in its widest meaning to cover the processes of budgeting and target setting; evaluation and incentives; implementation, use and evaluation of performance measures; ERP system as IT infrastructure for gathering and storing the data for performance measurement; management meetings; and profit centre control and transfer pricing.

Gathering an extensive and rich data set collected by three researchers and comprising taped and transcribed records of interviews with multiple managers at different levels of the organization, an opportunity to observe operations at most production sites, and data from archival sources was followed by an analysis that involved each of the researchers working separately and together to code and recode data through a series of iterations. The use of multiple sources of evidence allowed us to utilise triangulation in order to reduce bias and improve convergent validity (Denzin, 1978; Eisenhardt, 1989b; Yin, 2003). In order to improve the accuracy of the analysis we compared data from different sources and different types. When inconsistencies between data sources were encountered we conducted a second round of on-site interviews or obtained additional data from the interviewees through follow-up e-mails. Interpretation based on theories was constantly part of the reading of the research material. The views of multiple investigators were compared to validate the empirical evidence and findings of our case study. When different interpretations between researchers were met we made new rounds to analyse the material and discuss the findings until all researchers shared the same understanding.

The first phase was to describe the structure of PMS as well as the related managerial practices in different parts of the organization. The case analysis had two levels: the management of the 15 business units and three divisions, and the company as a whole, were analysed as separate cases. Noticing problems with PMS was part of the initial analysis. The number of business units and divisions called for a case-wide analysis. Because there were great differences between the business units in terms of size and type of capacity, customers and their end customers and the experience of managers, it was reasonable to seek these types of contextual explanations for the differences in PMS practices.

This data analysis brought up a number of inductive explanations for the problems with PMS. Tensions between flexibility and efficiency, autonomy and coordination or vertical and horizontal control were among the explanations, and they were used to further categorize our findings. After these initial stages of analysis we started finding explanations for our findings from more general theories. The findings were generalized through the process of theorizing and discussion with other researchers in the group. The next section examines how PMS is used to support horizontal and vertical integration.

4. Research findings

4.1. PMS in vertical integration

The need to develop a PMS to support centralized financial control within the complex and growing corporate entity is based on the information requirements of Capital and its top management. The main management control mechanism at Unimet is budgetary control. The annual budget is reported and analysed on a monthly basis. Business unit managers are responsible for profit and meeting the budgeted targets. Targets were

decided by the board and the main owner, and further instructed to the business unit by the division managers. At the business unit level, the target of 10–20% organic growth in turnover per annum is heavily emphasized. In the business units these target levels were often considered too demanding and unrealistic.

On a monthly basis, business unit managers were required to report a set of standardized financial and operational figures together with brief details to the top management. Top management collects this data and prepares the group reporting for the board. Even though all the business units are reporting the same standardized performance measures, the usage of them varies greatly between the units. In addition to the standard set, business units were encouraged to use unit specific performance measures to support the local management.

The companywide standardized set of performance measures included 4 financial and 7 operational measures. The financial measures in the system are: 1) turnover, 2) sales margin, 3) gross margin, 4) ebit (earnings before interests and taxes). The operational measures in the system are: 1) productivity, 2) delivery rate, 3) current assets, 4) material usage rate, 5) 3-month sales forecast, 6) sick days, and 7) production lag in euros.

Today, the PMS has a central role in formal communication between the headquarters and divisions. The PMS has received a uniform structure and is instantly implemented in all acquired business units. At the group level, the CFO will collect PMS reports for the monthly report and the board meeting. PMS reports have a central role in formal monthly meetings where the Unimet PMS measures in each business unit will be talked through. However, the usage of the PMS in the business units varies, largely depending on the manager of the business unit and his previous business experience.

The majority of business unit managers feel that the company PMS lacks decision usefulness. In many business units, the Unimet PMS measures are reported only because of the headquarters' requirements.

“If we look at this report, this is not for me. It goes to the headquarters, but I can't say what does it give for them.” (BU Manager LK)

Analyses are made mostly comparing the monthly actual figures to the budget. Business unit managers check each line on a daily, weekly and monthly basis. The monthly and cumulative turnover compared to the monthly and annual budget is the principal control mechanism among business unit managers. Investment decisions are made at the head office where the responsibility for the return on investments is also located.

To support the alignment of business units and employees to company targets, every employee at Unimet was involved in an incentive system. Bonuses for shop floor workers were based mainly on the business unit's success and were paid on a monthly basis, but partly also for the success of Unimet as a whole. Similarly, the bonuses for the division managers were based on the success of the division and Unimet as a whole. Profit consciousness is created through actively informing the employees about changes in the

financial and operative performance of the business unit. Business unit managers feel that incentive bonuses are the most effective management control system in the business units.

“If I think how I am using the system, I go through this report with my blue collars once a month because the bonus system is linked to it, and that is what interests them very much.”
(BU Manager EH)

At the business unit level, they feel that target levels have been given from the top management and they have no possibilities to discuss them. For example, the turnover targets are typically set higher, even if there are no obvious signs the growth is possible or likely. Business unit managers also feel that they cannot increase turnover with the current capacity. Starting with new customers or products takes months, while that process includes planning, testing and piloting the production and then ramping up the production from small series. On the other hand, losing even one customer may have a serious impact on business unit turnover. Therefore, business unit managers feel that the PMS does not provide any value for them for managing operations. Instead, the focus is on customer relations, and therefore, the key figure is the delivery rate.

In vertical integration, the standardization of practices at Unimet is one of the main issues for the top management, but also for venture capitalists. Business unit managers fulfil their duties by reporting in the PMS format for executive level purposes, but they are conscious that in doing so they also free themselves from the strict daily and operative control of the top management. When the targets and reporting standards of the company are met, the profit centre status gives the business unit managers broad decision-making rights and autonomy in running their businesses. On the other hand, measures developed top down do not help BU managers in their local managing activities. Moreover, the profit centre status makes customers look like the customers of single BUs, not customers of the Unimet group. Accordingly, the profit centre structure limits capacity management to individual BUs instead of considering the capacity of the company as a whole.

4.2. PMS in horizontal integration

PMS was also expected to support the horizontal integration between the machine shops. Top management argues that the targets of organic growth and profitability will be reached through more extensive services, material sourcing and capacity planning. From the top management’s perspective, Unimet has great opportunities to benefit from economies of scale and scope. Investing in production, quality and management control systems become also possible in a larger company. A larger subcontractor can also respond to the needs of larger customers more efficiently than small machine shops alone. All this, however, requires more horizontal integration between the business units.

“It is very important that our sub units are operating together as well as possible, because our strategy is to offer as long value chains in subcontracting for our customers as possible. Instead of focusing to the production of individual machine shops, there is

only one Unimet for our customers. It is our job to allocate resources between our sub units.” (COO)

However, business unit managers expect the transfers between the machine shops might only cause extra costs and reduce their unit’s profitability. Therefore, they do not see any reason to increase integration in production between the units.

“There is lot of discussion that we should add co-operation between the sub units. However, all of us have our own customers and own production. We are not open to take production orders from other units, because for us it is just extra work. If there was a continuum for standardized production orders from other sub units, it might be possible.” (BU Manager MM)

Even though the machine shops may produce similar products and services, they are doing this in very different ways. This is mainly because of the different kinds of machines, which makes it difficult to organize fast transfers between business units. One challenge in production transfers is also quality control, which differs between the machine shops. In many units there is also a strong entrepreneurial spirit that the machine shops should be allowed to operate independently.

Business unit managers feel that centralized control and common company rules create inflexibility in operations, and therefore, reduce the customer service. Being flexible and agile in their minds is essential in serving the customers. Small machine shops are seen to be good in quickly responding to changes in the business environment and new demands from customers. As they often operate at the same plant with the customer this instant transfer of information about customer needs is seen to improve this kind of agility. This is illustrated by a comment from one business unit manager, stating that serving the sub unit’s own customers is more important than Unimet as a whole:

“For us it is most important to provide service to our customers (the sub unit’s own customers) as well as possible. I understand that there is a danger that the sub units are only looking after their own business, instead of Unimet as a whole, in practice that should be the task of the divisions managers.” (BU Manager AV)

Almost all business unit managers emphasize that the co-operation between the business units does not work. Working under the head office management is just seen to be an obstacle for flexible and agile operations. To support horizontal integration, the ERP system was implemented in the business units straight after acquiring them. The purpose was to support more centralized capacity planning between the units and to gather information on the performance of operations from the units. An issue of importance was also the idea of more centralized production control that was in contradiction with profit autonomy at unit level.

Management meetings at the divisional level were organized in order to promote the integration of the division’s business units. At the management meetings, however, the main topic was to present the financial situation of each business unit to the other

managers. The most active agents in horizontal integration seem to be the three division managers who go around the business units trying to advance cooperation between them.

Altogether, horizontal cooperation if there was any was not intensive. The transfer pricing rule was to use market prices between the business units if needed but the exchange between the units was not active. The profit centre structure resulted in a sub-optimization tendency, and the new PMS did not help the situation. The ERP system was implemented in order to provide a platform for a centralized supply-order chain, but the autonomy of the business units made it impossible to use it in this way. This autonomy also meant that the group wide capacity planning, integration of production and customer relationship management were not materialized.

5. Discussion

In this study we have examined how an organizational PMS is used and how it influences horizontal and vertical integration. We found that PMS has an important role in vertical integration in situations where company growth is based on acquisitions. The challenges identified in the implementation and use of the PMS for vertical integration are similar to findings from previous studies (Jones, 1985; Granlund, 2003).

Previous studies on PMS used in post-acquisition situations typically cover the integration of two companies (Granlund, 2003; Busco et al., 2008), whereas, as in Micheli et al. (2011), our study covers 15 acquisitions. The active owner together with the activity in the company acquisitions makes the case reported in this paper quite extreme. In addition, even though the relationship between the PMS and the strategy process has been an issue in previous studies, what kinds of strategies are in play has not been explicated. This flaw may partly explain why previous findings on the role of PMS in organizational integration are so contradictory (Roberts, 1990; Micheli et al, 2011). Today, however, cases where private equity companies exploit opportunities for industry rearrangements may not be rare, even though they have not gained a lot of attention in PMS or OM research.

The advantages of PMS for integration were observed to deal with the financial coordination and enhancement of strategic targets defined by the top management, and with the general promotion of profit and strategic consciousness. Annual budgeting and monthly reporting serve the financial control of the central management. Non-financial measures and top down measures serve in communicating the strategic priorities to the shop floor business units. Divisional monthly meetings serve the promotion of the profit-, cost- and strategy consciousness.

We also observed several PMS related problems in relation to integration management. The profit centre structure, incentives based on profit centre performance and fixed annual budget with tight control style creates barriers to cooperation between the machine

shops. Non-financial measures, which are developed following a top-down approach, are not meaningful for shop floor level management in units. Even though they are standardized between the units, they do not stimulate cooperation and interaction between the units nor between the upper management and the units. These measures focus on sales growth, profitability, productivity and delivery times, and therefore, emphasize the financial goals of the firm, growth and profitability. However, they do not pay attention to quality, customer satisfaction or other strategic performance measures.

We found that PMS has the potential to support both forms of integration, but in the short term vertical integration is heavily emphasized. This is especially due to the objectives of private equity company to professionalize the management, implement financial reporting systems, a large IT infrastructure and prepare for exit within a few years. At the same time, however, the development of horizontal integration had commenced. Horizontal integration takes time when there are differences between the units in production infrastructure, products, customer needs and operation practices, as well as in the organizational cultures (cf. Micheli et al., 2011; van der Meer-Kooistra and Scapens 2008).

Horizontal integration has been emphasized in the strategy of the company, but in practice, co-operation between the units is almost non-existent. The only visible activities were the travelling of division managers across the business units trying to find synergies and ways of managing the capacity, resources and sales orders within the whole division. They also organized divisional level management meetings to discuss budgets, performance measures, strategy, and create a shared understanding between the managers of the division. Trust seems to be the prerequisite for the willingness for information sharing between the units and person-to-person forms of control are preferred in this situation (Tsai, 2002; Busco et al., 2008). Reorganizing the accountability structure may be the most important issue in order to enable horizontal integration.

The contingency theory based literature suggests that the overall control system of the organization should fit in the management context in order to help in improving performance (Bourne et al., 2000; Chenhall, 2003). Our analysis suggests that the organization can only combine horizontal and vertical organizational integration processes effectively if the demands of customer-focused production and financial management are aligned. In Figure 1, we present the theoretical model linking the strategic basis of corporate expansion to performance measurement system features and organizational integration. We use the contextual model as the basis in organizing our propositions concerning PMS.

(Figure 1. A model of expansion strategy, PMS design and organizational integration)

Next we present, based on combining prior theory with our case study findings, several propositions on the use of a PMS in the context of simultaneous vertical and horizontal integration. These propositions form a complete theoretical model of PMS for integration. At first we elaborate on the means required for vertical or horizontal integration separately. Then we elaborate on propositions that take into account the empirically

grounded possible pitfalls in combining the two directions with the propositions presented in previous literature.

Vertical organizational integration requires a hierarchical organizational structure in order to estimate, plan, control and report on the financial and strategic performance of a growing firm. This is a widely accepted way of thinking in management control literature. It is, however, worth noticing that there are different forms of financial responsibility structures – profit, cost, sales areas with different variations and combinations.

Proposition 1a: The delegation of profit responsibility to divisions is positively related to the vertical organizational integration.

Budgetary control is based on the hierarchy of responsibility areas and serves the financial control needs of the upper management as well as the providers of growth finance. Profit responsibility, however, should be limited to the corporate or divisional level in order to avoid problems with sub-optimization.

Proposition 1b: The delegation of profit responsibility to production units is negatively related to the vertical organizational integration but the delegation of separately defined responsibilities for sales, costs and strategy implementation to production units is positively related to vertical organizational integration.

Findings from our case study suggest that the delegation of profit responsibility to the level of production units may have unintended behavioural consequences. Profit responsibilities created the wrong incentives and obstacles for cooperation between the units, and consequently, for the implementation of the integration strategy of the firm. Benefiting from the increasing capacity of the firm in improved cost efficiency would require some centralized capacity planning.

Horizontal organizational integration requires a combination of market control within the organization and delegation of operative decisions to the production units. Market control may be used within the organization to direct attention to the needs of the firm's customers, efficient utilization of capacity and implementation of the chosen strategies.

Proposition 2a: If teams in the production units are responsible for major operational goals (i.e. productivity, capacity utilization levels, delivery times, quality and customer satisfaction), this has a positive effect on the horizontal organizational integration.

Delegation of decision-making rights on operational issues and customer relations to production units may have a positive effect on the quality of decision-making and increase motivation in the production sites. In the production units, teams should be responsible for production costs, delivery times, quality and customer satisfaction. These are the statements taken from the literature on horizontal organization that define organizational performance from the customer viewpoint. Non-financial performance measurement in production teams should provide instant feedback and enable feed-forward control of all aspects of performance.

Proposition 2b: Delegated decision-making on production allocation between the machine shops combined with the mechanism of market control has a positive effect on the horizontal organizational integration.

Decision-making on production allocation between machine shops should be delegated to the production units and combined with a mechanism of market control. The findings from our case study suggest that the centralization of decision-making on production allocation and capacity usage may be problematic. Responsibility areas and related responsibility accounting should be defined on the basis of customer relations and production processes, but according to our findings this combination should not result in profit responsibilities at the level of machine shops. In order to maintain responsiveness to customer needs, in subcontracting the business more particularly, customer responsibilities should be divided between machine shop managers, each of which are simultaneously responsible for the production of one machine shop. The significance of separating the customer responsibility from production responsibility, however, is to encourage managers to increase the overall role of the customers he or she is responsible for, and to utilize the total capacity of the firm. PMS may be useful in managing group-wide capacity (signalling problems) and monitoring capacity costs (fostering an awareness of the cost of unused capacity).

Proposition 3a: The participatory development of hybrid PMS has a positive effect on both vertical and horizontal organizational integration.

Simultaneous vertical and horizontal organizational integration requires a combination of command and market control within the organization. Top management should concentrate on strategic control, and operative decisions should be delegated to the production units. Market control may be used within the organization to direct attention to the needs of the firm's customers, efficient utilization of capacity and the implementation of the chosen strategies. Horizontal and vertical organizational integration requires participatory development of hybrid PMS comprising both financial and non-financial performance indicators.

Proposition 3b: When teams in the production units are responsible for the sales of a few named customers and the costs of production in the unit, this has a positive effect on the vertical and horizontal organizational integration.

If each customer has a responsible production unit, which has a limited number of customers that they are dedicated to serve, the responsibility for sales to these customers should follow this mode of operations. Delegation of decision-making rights on operational issues to production units may speed up decision-making, have a positive effect on the quality of decisions and increase motivation in the production sites.

Proposition 3c: Flexible budget-based evaluation of the cost efficiency of the production teams is positively related to vertical and horizontal organizational integration.

The evaluation of the cost efficiency of the production teams should be based on a flexible budget; that is, for actual sales and the sales mix. This is according to the controllability statement of the management control literature applied in situations where those who are responsible for costs have no control over sales volumes or mix. The use of fixed production cost budgets as the basis of evaluation might not suit customer-driven operations that require high adaptivity to customer needs.

Proposition 3d: A customer oriented definition of the value chain supported with activity-based analysis and costing is positively related to vertical and horizontal organizational integration.

Improvements in cost efficiency may be part of the targets set for acquisition strategies. The economies of scale and scope do not occur automatically but require active corporate planning and cost management. The top management may find a customer-oriented definition for the value chain useful, and apply activity-based analysis and costing in strategic planning:

- *to focus on the activities (processes) that generate value for customers
- *to eliminate activities that decrease value for the customer
- *to focus on fewer products and customers on the basis of profitability analysis
- *to define a sustainable cost-based pricing model for the sales responsible

Proposition 3e: A combination of bottom-up and top-down approaches and financial and non-financial measures in the design of PMS is positively related to vertical and horizontal organizational integration.

A PMS that is useful in team management creates a firm basis for meaningful interaction between the teams and between the upper management and the teams. The findings of our case study suggest that the top-down approach in PMS development may tend to lead to indicators that focus too narrowly on financial aspects of the firm. This is especially problematic when customer-focused production is emphasized and the management of operations is delegated to teams, and therefore, a bottom up approach to PMS development is necessary.

Proposition 3f: A few common performance measures within a division is positively related to the vertical and horizontal organizational integration.

A PMS within a division should include a few common performance measures to be used in divisional executive boards to foster strategy implementation and cultural integration. In the literature of management control, strategy implementation is understood to require mainly a top-down approach to PMS development.

Proposition 3g: Common performance measures between divisions is positively related to the vertical and horizontal organizational integration.

The PMS should serve as a basis for collective target setting, which encourages interaction and cooperation within and between divisions. That means a few performance

indicators that are uniform between the production units and aligned according to the overall targets of the firm must be allocated at different organizational levels.

Proposition 3h: An incentive system based on hybrid PMS is positively related to the vertical and horizontal organizational integration.

The PMS should serve as the basis for the incentive system in order to achieve:

- *The financial goals of the company.
- *Efficient implementation of integration strategies and customer-focused production strategies.
- *Improvements in the performance of operations, i.e. capacity utilization, customer satisfaction, quality, delivery times, production costs.

These propositions form the preliminary theoretical model of a PMS for total integration by presenting methods required by vertical or horizontal integration separately and then by identifying potential synergies and tensions between these two different types of integration. In addition, this research has also thrown up many questions in need of further investigation, like testing and elaborating the propositions in subsequent studies.

6. Conclusions, implications and limitations

This study explored the design and use of PMS in a situation where both vertical and horizontal, strategic and organizational integration are sought. This study has identified contradictory tendencies in PMS design that may easily hinder integration processes. The most effective approach to removing those problems would be through enhancing the conceptual understanding of the dynamics of PMS formation in practice. The findings of this study are expected to fulfil that requirement. The propositions and accompanying descriptions and explanations are grounded in empirical data.

The findings of this study are expected to contribute to both PMS/OS theory and practice. As far as we know this is the first study trying to answer the calls for empirical studies on PMS for customer-focused production or horizontal organization (Hansen and Mouritsen, 2007; Chenhall, 2008). As the outcome of our study we presented a more comprehensive theory of PMS that combines statements from previous theories of horizontal organization (Dean and Snell, 1991; Schonberger, 1996; Ostroff, 1999; Galbraith, 2005) and MA (Hansen and Mouritsen, 2007; Chenhall, 2008). The theory is especially valuable in proposing ways to overcome the contradictory statements on PMS developed in different fields of management. Our study also contributes to the contextual theory of PMS in company mergers and acquisition by better explicating the strategies in play and their relationship with PMS design and behavioural consequences (Jones, 1985; Granlund, 2003; Micheli et al., 2011). This finding opens an avenue for further studies where differences in PMS designs and practices ought to be explained with the differences in strategic reasons for company mergers and acquisitions.

Given the level of analytical abstraction used in this study, they can feed into future studies examining PMS usage in situations where both vertical and lateral integration are seen as a means to increase organizational efficiency. In terms of directions for future research, there have been calls to expand agency theory to a richer and more complex range of contexts (Eisenhardt, 1989a, 71). As these types of contexts are defined by substantial goal conflict, risk and uncertainty of outcomes, unprogrammed and team-oriented jobs, and where information systems are not well developed, there is a need for further studies on PMS motivated by combinations of contingency and agency theories. Another possible area of future research would be to make a case for the dynamics of PMS development and the practices of reconciling contradictions in organizing (Neely, 2005). This type of study could be based on longitudinal data and theories that explain change and stability in organizations (Burns and Scapens, 2000).

Our study has its limitations, which opens opportunities for future research. First, it was evident that the integration targets were influenced by the corporate strategy and level of differences and similarities in relation to the acquired production capacity. In future research, those influences can be further examined to see how variations in context and process could explain different PMS designs and performance outcomes. Second, the findings of this study could not be generalized to populations. Findings from a qualitative case study, however, are considered to be particularly useful in drawing conclusions that can be generalized to theoretical propositions that permit the modification and development of the theory. In order to apply sample-to-population generalizations, the propositions from this study need to be tested using large samples and preferably using statistical techniques.

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Figure 1. A model of expansion strategy, PMS design and organizational integration.