Examining the impact of Management Control Systems use on the development of firm capabilities

Abstract: Organizations under great pressure to deliver value, believe that Management Control Systems (MCS) can help them in this task. MCS research has been done regarding design criteria, purposes, types and factors that influence the adoption or use, but less is known about MCS impact in the organizational capabilities that trigger performance. The research question is what is the impact of MCS use in generating capabilities of Entrepreneurial Orientation and Learning orientation in firms. The hypothesized relationship was supported by evidence from a study of 644 firms in Mexico. The main findings show that the type of MCS use is related to the capabilities of EO & LO, independently on its size or industry and somehow against the theory all relationships are positive. Resource-based-theory (RBT) (Barney, Ketchen, & Wright, 2011) and management control literature (Simons, 1995; Vandenbosch, 1999) are the context to explain the MCS role and relationship to capabilities.

Keywords: Management Control Systems (MCS), Performance Measurement Systems (PMS), Capabilities.

1. INTRODUCTION

As part of the strategic process, consisting of three main phases (Formulation, implementation, performance) (Hitt, Ireland, & Hoskisson, 2011; Rumelt, Schendel, & Teece, 1991), exists an activity that is common to all phases, where activities and results are monitored, so that actual performance can be compared with desired performance and managers can take corrective actions. Is in this activity where MCS are responsible for creating the models and systems to support the strategic process. MCS are defined as the process by which managers ensure that resources are obtained and used effectively and efficiently in the accomplishment of the organization’s objectives (Anthony, 1965). The information provided is relevant in all strategic process phases (Widener, 2007) providing information on the drivers of success and causes of failures (Mintzberg, 1994; Simons, 1995). Over the last two decades, the development of the MCS has been exponential and has triggered the need for a better understanding of his role and how they can meet managerial needs. In the line of approaches that see MCS as more than mechanistic tools, but also as powerful devices to stimulate and manage the emergence of strategies, this research focuses on four MCS’s uses (Monitoring, Legitimizing, Attention Focusing, Strategic Decision-Making) and its relationship with two firm organizational capabilities that are related to superior performance (Ripollès & Blesa, 2005), Learning and Entrepreneurial Orientations (LO & EO).

From the resource-based perspective (Barney, 1991), MCS (resources) do not generate rents per se, but rather are a function of the way they are used (Penrose, 1995). Even assuming that MCS can be employed for different uses, there is a lack of prior empirical research examining his use. Some studies suggest that capabilities are shaped by MCS, but how?. Research on MCS use & capabilities have yielded valuable, but ambiguous, inconclusive or sometimes contradictory results. We can see positive (Cruz, Scapens, & Major, 2011; Simons, 1990; 1991; 1995) or negative (Bisbe & Otley, 2004) relationships between MCS and innovation or learning (Ahn, 2001; Chenhall, 2005; Godener & Söderquist, 2004), or mixed depending on how the MCS are used; positively related (used interactively) or negatively (used as diagnostic) with capabilities (Henri, 2006a; 2006b). Except the one done by Henri (2006a, 2006 b), there are no studies linking the various MCS uses and its impact on firm strategic capabilities (Berry, Coad, & Harris, 2009). Despite all these studies, there is still a need to better understand the impact of the various MCS uses on organizational capabilities in different kind of firms (i.e. SME’s or services).

Based on the studies insights and the fact that the impact of MCS on capabilities remains unclear, this work argued that the different MCS uses (Simons, 1995; Vandenbosch, 1999) could encourage the development of strategic firm capabilities. Specifically the research question in this work is: What’s the impact of MCS use in generating capabilities in the firm?. This work also seeks to investigate how MCS uses determine LO & EO capabilities and the role-played by the firm characteristics in this relationship. Contributions of this study are to improve understanding of how the various MCS uses can be a source of competitive advantage and to perform an empirical application in a big sample of different sectors (Manufacturing, Services, Trade and Banking). Previous studies have been in samples of 100-300 and focused only on manufacturing firms (Bisbe & Otley, 2004; Cruz et al., 2011; Henri, 2006a; 2006b), also such studies were not performed in SMEs and have not been compared with large firms.

2. THEORETICAL FRAMEWORK

This work draw on the principles of Resource Based View (RBV) (Barney, 1991; Day, 1994; Wernerfelt, 1984) and capabilities literature (Teece, Pisano, & Shuen, 1997), to explain how firms achieve sustainable competitive
advantages. RBV rests on the principle that competitiveness is a function of the strength, exploitation and leveraging of specific internal resources and capabilities controlled by a firm (Lengnick-Hall & Wolff, 1999). Some studies provided evidence to suggest that firm-level resources and capabilities, not industry characteristics (Porter, 1980), are the primary determinants of firms’ performance (Hoskisson, Hitt, Wan, & Yiu, 1999). Capabilities are a link between resources and their deployment, because they are organizational processes and routines to integrate, reconfigure, gain and release resources (Eisenhardt & Jeffrey, 2000; Grant, 1996). Learning Orientation (LO) capability was defined as the development of ideas, knowledge and relations among past actions and future actions (Fiol & Lyles, 1985), and is considered to be an important facilitator of competitive advantage by improving a firm’s information processing activities at a faster rate than rivals do (Baker & Sinkula, 1999; Hurley & Hult, 1998).

Entrepreneurial Orientation (EO) capability is the set of processes, practices and decision-making activities undertaken to successfully manage the entry of a new company to market (Covin & Lumpkin, 2011; Covin & Slevin, 1989; Lumpkin & Hess, 1996). A permanent attitude of the company that is proactively seeking new business opportunities (Rumelt et al., 1991; Zahra & Garvis, 2000) favoring the generation of competitive advantage (Lumpkin, Cogliser, & Schneider, 2009).

Management Control Systems are formal (planning, budgeting or reporting systems, etc.) or informal (weekly meetings, daily checks, emails, etc.) procedures (Simons, 1991) present in common business management practices (Mintzberg & Waters, 1985). This study combines two MCS uses classification and relates both to identify the expected relationships: The theoretical levers of control (LOC) proposition (Simons, 1995) with four types of MCS use: Beliefs (systems to secure commitment towards goals and to inspire employees), Boundaries (administrative controls hierarchically based), Diagnostic (control over organizational goals), and Interactive (two-way processes of communication between managers and subordinates). In this study we focused in these last two uses (diagnostic and interactive uses) because MCS are present and related with them (Simons, 1990).

The second MCS use classification (Vandenbosch, 1999) has four MCS uses: 1.Score keeping (Monitoring): standardized processes to answer the question: How am I doing? (Simon, Guetzkow, & Kornetsky, 1954), similar to diagnostic control (Simons, 1995); 2.Problem solving (Strategic decision making) provide information to support the analytical processes of strategic decision-making, similar to interactive control (Simons, 1995); 3. Focusing organizational attention contributes to the emergence of new strategies (Mintzberg, 1978; Simons, 1990) by responding to the question, what problems must we focus on? (Simon et al., 1954), similar to interactive control (Simons, 1995); and 4.Legitimizing decisions, refers to justify a decision that has been made and validate past actions, similar to diagnostic control (Simons, 1995).

Theoretical model and hypotheses

The next figure presents the conceptual model of this work and also represents the relationships that we seek to demonstrate. The major premise behind this model is that monitoring and legitimization uses (Vandenbosch, 1999), acting in a diagnostic mode (Simons, 1995), influence negatively on the capabilities. Likewise, it is expected that attention focusing and strategic decision-making uses (Vandenbosch, 1999), acting in an interactive manner (Simons, 1995), can help to improve capabilities positively. Hence this work has 8 hypotheses: Monitoring MCS use exerts a negative influence on LO (H1a) and EO (H1b). Legitimizing MCS use
exerts a negative influence on LO (H2a) and EO (H2b). Attention focusing MCS use exerts a positive influence on LO (H3a) and EO (H3b). Strategic decision-making MCS use exerts a positive influence on LO (H4a) and EO (H4b).

3. DATA, VARIABLES AND METHODS

Data were collected from primary sources with a structured survey from business managers in the manufacturing, trade, banking and service sector in Mexico City. The target population consisted of 4750 Mexican firms listed in DENUE 2012 database. The response rate was 13.56% of the sample, 644 firms, of which 296 (46%) are large-size with an average of 4,257 employees and 44 years age, 191 (29.7%) medium-size firms with an average of 158 employees and 24 years age and 157 (24.4%) are small-size with an average of 32 employees and 11 years age. The respondents are 79 CEOs (12.3%), 109 divisional-directors (16.9%), 111 department-directors (17.2%) and 345 managers (53.6%). Firms are distributed in four sectors: 105 manufacturing (16.3%), 51 trading (7.9%), 407 services (63.2%) and 81 banking (12.6%).

Table 1. Convergence and discriminant validity

<table>
<thead>
<tr>
<th>Exploratory Factor Analyses</th>
<th>MCs uses (27 items)</th>
<th>Capabilities (18 items)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KMO</td>
<td>0.956</td>
<td>0.961</td>
</tr>
<tr>
<td>Bartlett’s Test</td>
<td></td>
<td></td>
</tr>
<tr>
<td>of Sphericity</td>
<td>Chi-Square</td>
<td>df</td>
</tr>
<tr>
<td></td>
<td>11860</td>
<td>351</td>
</tr>
<tr>
<td></td>
<td>Sig.</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Cronbach’s Alpha</td>
<td>0.958</td>
<td>0.952</td>
</tr>
<tr>
<td>N of Items</td>
<td>27</td>
<td>18</td>
</tr>
</tbody>
</table>

The questionnaire was designed following the steps suggested by the literature (Dillman, 2000) and checked for potential non-response bias; no significant differences (p < 0.01) were found. Several procedures and tests were conducted to establish the validity of constructs and reliability: questionnaire pre-test in three steps (Academic professors, top managers, MBA group); Exploratory Factor Analysis (EFA) to tests convergence and discriminant validity (table 1). All constructs reflect strong validity and reliability (Nunnally, Bernstein, & Berge, 1967) and two normality test (Kolmogorov-Smirnov, Shapiro–Wilk), supporting the normality of all constructs. The variables in the model were measured using previously validated scales and all questions were asked using a five-point Likert scale (table 2).

Table 2: Variable measurement

<table>
<thead>
<tr>
<th>Construct</th>
<th>Source</th>
<th>Dependent &amp; independent variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCS uses</td>
<td>27-item scale, adapted version for Henri (2006b) of Vandenbosch (1999)</td>
<td>Independent: Monitoring; focusing attention; strategic decision-making; legitimizing</td>
</tr>
<tr>
<td>Learning Orient.</td>
<td>4-item scale proposed by (Hult 1998)</td>
<td>Dependent One dimension Scale (LO)</td>
</tr>
<tr>
<td>Entrepreneurial Oriet.</td>
<td>14-item scale by (Lumpkin et al. 2009)</td>
<td>Dependent Five dimensions Scale (EO)</td>
</tr>
<tr>
<td>Control var.</td>
<td>System amplitude, firm size (10-50 small; 51-250 medium; &gt; 250 Large), firm age, industry and gender</td>
<td></td>
</tr>
<tr>
<td>Measurements</td>
<td>A higher factor score indicates a more intense MCS use, a more Learning-Entrepreneurial Oriented firm</td>
<td></td>
</tr>
</tbody>
</table>

Analysis models

The methodologies selected are twofold: 1) Analysis of variance (ANOVA) with the control variables (size & industry) as factors and the MCS Uses result of the EFA as dependent variables. 2) Multiple linear regressions, a) full sample in two models (Model A: LO & EO and control variables and Model B: LO & EO, MCS uses and control variables) and to test the robustness of the model, b) Dividing it into sub-groups by size and industry. Statistical analysis was performed using SPSS (V.21).

4. RESEARCH FINDINGS

ANOVA results: In the Firm-size analyses regarding MCS uses, the results show that only monitoring use shows significant differences, with two groups: One group of small firms with a mean below the average for the entire group (-0.257) and another group of medium (0.052) and large (0.103) firms. In the Firm-size analyses regarding capabilities, LO results show two
groups: Group of small with higher and positive mean (0.141) and group of large firms (-0.088) with a negative mean, suggesting that smaller companies present greater LO (\(p<0.10\)). The Firm-Industry analysis regarding capabilities, show differences in EO between the banks (-0.246) and the manufacturing industry (0.200), suggesting that manufacturing, followed by services firms, have higher EO than trade and banking (\(p<0.05\)).

**MRL results** (MCS uses vs. LO & EO): For LO, the MCS use with more impact is legitimizing, followed by Attention Focusing, Strategic Decision-Making and Monitoring. For EO, the MCS use with more impact is Attention Focusing, followed by Legitimizing, Monitoring and Strategic Decision-Making. Both capabilities (LO & EO) are more related with legitimizing and focusing attention uses but Monitoring and Strategic Decisions-Making uses are positive and significant too. Globally, significant and positive relationship is observed for small firms in both capabilities, which can be understood as a higher propensity of small firms to develop both LO & EO. The results show that belonging to manufacturing or service industry, relates in a positive and significant manner with EO. In the complete sample, hypotheses H1 (a&b) and H2 (a&b) are contrary to the expected direction (positive instead of the expected negative direction). Hypotheses H3 (a&b) and H4 (a&b) are supported.

### MRL sub-group analyses (Size & Industry)
To test whether these relationships hold in the same way previously shown, in different company sizes and industry, the multiple regression analysis was repeated but now dividing the sample into subgroups by size and industry. These analyses show results in the same line: H1 a&b and H2 a&b are not supported, although the relationship is positive and significant in most cases. H3 a&b receives complete support for firms of all sizes and all industries with exception of LO-Trade industry where it is not statistically significant. H4 a&b receives partial support, except for LO-Medium and EO-Small sized firms, LO-Trade firms, EO-Manufacturing and EO-Trade firms where it is not statistically significant.

### 5. IMPLICATIONS AND CONCLUSIONS
In general, the literature in management control systems (MCS) used an explicitly or implicitly RBT approach (Barney, 1991; Teece et al., 1997; Wernerfelt, 1984) and together with levers of control framework (Simons, 1995),
shows that MCS influence the strategic capabilities in organizations through the routines they stimulate. Based on
the RBV we can see the MCS as available resources in an organization, which generate a competitive advantage in
terms of the use made for them (Lengnick-Hall & Wolff, 1999). Therefore, understanding how these systems can
be used in a better way, generate a source of sustainable competitive advantage. The general findings of this work
are aligned with Simons’ (1990) arguments in terms of raising the contribution of MCS over a tool for monitoring
and evaluation, and offer them as a catalyst for the complete strategic process, which supports and encourages
the creation and execution of strategies across the organization.

The overall results suggest that MCS use as monitoring shows significant differences between small and Medium-
large companies, being large companies that make more use of their MCS in a monitoring way. Small firms have a
greater propensity to learn (p<0.10) than large companies and even more, the negative coefficient in large
companies suggests an inverse relationship between the size and orientation to learning. Manufacturing, followed
by services firms, have higher entrepreneurial orientation than trade and banking (p<0.05) firms.

The four MCS uses contribute positively to capabilities and highlight a positive impact of diagnostic use
(Monitoring and Legitimizing) on capabilities, contrary to the expected direction identified in previous studies
(Henri, 2006a). We can identify positions for and against this relationship. Some authors (Grafton, Lillis, &
Widener, 2010) argues that diagnostic use of MCS facilitates exploitation of existing capabilities and in the same
line, Vandenbosch (1999) argued that the discussion triggered by the diagnostic use leads to corrective action as a
way of learning, but Henri (2006a) argues that corrective actions are not sufficient to sustain such capabilities. This
would mean that in theory, even if diagnostic use works against the deployment of capabilities, it may contribute
to performance through organizational capabilities. Therefore by providing the necessary information, diagnostic
use of MCS could help to increase the positive effects of an interactive use on capabilities. Therefore, further
research should be developed to have a better understanding of these relationships.

Under the conceptualization that "what is not measured, is not controlled" (Kaplan & Norton, 1992), MCS use as
monitoring, is a necessary condition, but not sufficient to generate a capability. Necessary condition for providing
the information to challenge the context, the content and validity of the strategy followed by firms, by translating
the strategy into deliverables and measures, helps managers to measure and ensure business (Hall, 2008).

Executives in organizations often use MCS’s not only to confirm or deny their own prior beliefs (justify decisions),
also to legitimizing prior ideas ensuring their interpretation influencing and guide decision-making processes
(Vandenbosch, 1999).

Other possible explanation for our results could emerge from the context in which our research was conducted.
Mexico is a newly developed country and has the characteristics of an emergent economy. This has implications
for example, competition is at an early stage and companies mostly use traditional MCS in a diagnostic way. They
face the challenge to know how to use a MCS in an interactive manner.

6. LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

Although we used valid measures and empirical results indicate that the instrument used is a reliable, future
research could refine and further validate the instrument. The results were obtained through a survey, and using
the survey method to collect data creates the potential for bias due to common response.

Previous research indicates mixed (+/-) results in the MCS-capabilities relationship, thus future research could
retest the meaning of these relationships in other contexts or contextual factors like the uncertainty perception,
the measurement diversity or human capital factors, as the results shown so far cannot be conclusive. This study
focused on evaluating the impact of MCS in only two capabilities, therefore how other strategic orientations may
be impacted by the MCS uses can be developed.
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6. REFERENCES


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