Introducing the First Management Control Systems: Evidence from the Retail Sector

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ABSTRACT: Focusing on a sample of U.S. retailers, I study the management control systems (MCS) that firms introduce when they first invest in controls, and identify four categories of initial MCS, which are defined in terms of the purposes these MCS fulfill. The first category, "Basic MCS," is adopted to collect information for planning, setting standards, and establishing the basic operations of the firm. The other three categories are contingent on more specific purposes: "Cost MCS" focus on enhancing operating efficiencies and minimizing costs; "Revenue MCS" are introduced to foster growth and be responsive to customers; and "Risk MCS" focus on reducing risks and protecting asset integrity. I hypothesize and find that the choice among these categories reflects the firms' strategy, and that firms that choose initial MCS better suited to their strategy perform better than others.

Keywords: *management control systems; corporate strategy; entrepreneurial organizations; firm growth.*

I. INTRODUCTION

Managerial concerns tend to change frequently in young companies in an early-stage of their growth phase (hereinafter "early-stage" firms). New functions emerge, levels in the management hierarchy multiply, jobs become more inter-related, and new coordination and communication needs arise (Greiner 1998). A growing firm confronts not only an internal transformation, but also increasing environmental complexity (Miller and Friesen 1984). As a result, managers of early-stage firms introduce formal management control systems (hereafter, MCS), which are "formal (written and standardized) information-based procedures and statements, used by managers to monitor and influence the behavior and activities in a firm" (Simons 1994, 5). Such MCS enable

managers not only to cope with increasing information needs, but also to avoid loss of control because of lack of monitoring (Child and Mansfield 1972). However, MCS are costly and time-consuming to install and operate. As a consequence, early-stage firms are likely to choose their first set of MCS selectively.

Prior accounting research has studied MCS choices in mature firms; however, the issues underlying the choices of MCS in early-stage firms differ from those confronted by mature firms for three reasons. First, mature companies usually have an extensive amount of formal systems already in place and, thus, are less concerned about running ''out of control'' than early-stage firms.[1] Second, the first MCS introduced provide a foundation for the future development of MCS in the firm (Davila 2005; Davila and Foster 2005b; Nelson and Winter 1982). In this respect, while the main concern in a mature company will be how to integrate new MCS with the existing ones, a young firm must consider how the first MCS will affect the choice of future MCS. Third, early-stage firms utilize informal control systems more intensely than do mature firms (Cardinal et al. 2004; Moores and Yuen 2001) and, thus, they might decide to invest only in those formal MCS that liberate managers from routine operations and allow them to informally focus on the firm's strategy.

Notwithstanding that MCS are critical to the success, and even the survival, of early-stage firms (Merchant and Ferreira 1985), academic work in this area has been sparse and offers little guidance to practitioners. Thus, conditional on the firms' decision to start investing in MCS, this study examines managers' choices regarding the first MCS they introduce in early-stage firms (hereafter, ''initial MCS'').

The study is conducted in two phases using data from 40 field interviews and 97 responses to a survey directed to early-stage store-based retailers. In the first phase, based on the field study, I sought to understand what initial MCS were introduced in early-stage firms and why. I found that the initial MCS introduced in early-stage firms could be categorized usefully based on their purpose. In the second phase I use the survey data to test: (1) whether the strategy pursued by an early-stage firm significantly determines the firm's choice of particular categories of initial MCS, and (2) whether early-stage firms with a better fit between the initial MCS and their strategy experience superior performance.

The first phase interviews reveal that entrepreneurs characterize initial MCS in terms of the *purposes* MCS should fulfill, rather than in terms of individual control systems such as budgets, inventory controls, etc., mostly because individual control systems can be used to achieve different purposes (e.g., inventory control systems could be used by some firms to learn about customers' preferences and by other firms to prevent merchandise theft) and it is the purpose that entrepreneurs really care about. Four categories of initial MCS, defined in terms of the MCS purposes, emerge from the data: Basic MCS, which constitute a ''common-platform'' across all firms, are used to collect information for planning and establishing the basic operations; Cost MCS are introduced to achieve operation efficiencies and cost minimization; Revenue MCS are used to achieve growth and to learn and respond to the market; and Risk MCS are used to reduce risks and protect asset integrity. It is important to highlight that individual control systems are classified into these categories based on the purpose they fulfill. For example, a marketing database used to understand and respond to customer preferences (purpose) would be classified as a Revenue MCS,

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[1] An ''out of control'' situation is one where a firm is likely to have poor performance, despite having a reasonable strategy in place (Merchant and Van Der Stede 2003, 10). Stinchcombe (1965) argued that new organizations suffer a *liability of newness,* that is, a greater risk of failure than older organizations, because they lack structure and legitimacy. Empirical studies have supported that such risk persists even after controlling for different contingencies such as size and industry (Singh et al. 1986).

while a system of internal auditing and transaction tracking used to prevent theft (purpose) would be classified as a Risk MCS.

The second stage of the study examines whether firms adapt their initial MCS to the firm's strategy, and the performance consequences of such adaptation (see Figure 1). I predict and find that firms emphasizing differentiation strategies tend to choose as their most important initial MCS a set of Revenue MCS—as well as individual control systems such as marketing databases and sales productivity controls—rather than Cost MCS or Risk MCS.[2] For firms emphasizing low-cost strategies I hypothesize a more intense use of Cost MCS and Risk MCS, but find only weak evidence for this prediction. There are two possible

FIGURE 1
Conceptual Diagram: *FIT* between the Strategy and (non-basic) Initial MCS[a]

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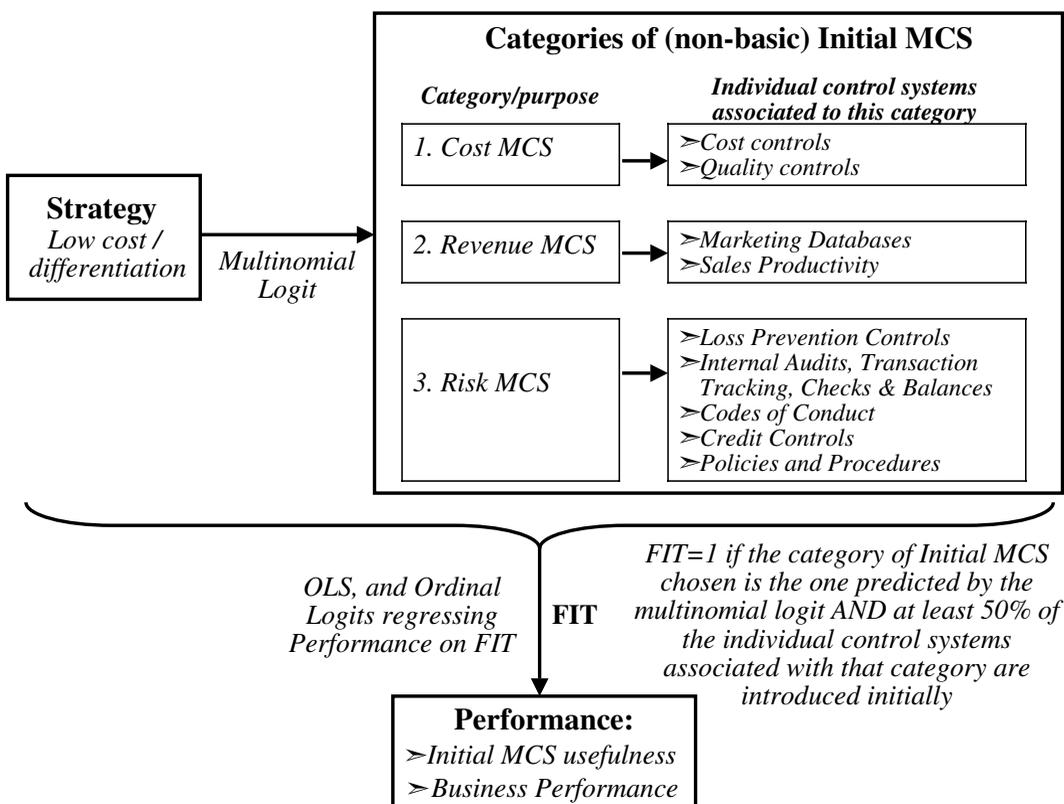
[a] Note the (non-basic) Initial MCS exclude the "Basic MCS" category. I do not test a relation between the firm's strategy and this category, since "Basic MCS" are a common platform introduced by most early-stage firms, regardless of specific purposes pursued by the firm.

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[2] Interestingly, when I further distinguish between two types of differentiation strategies—customization and product leadership—I find that the above result only holds for customizers, while product leaders tend to place more emphasis on Cost MCS. While apparently counterintuitive, this finding is consistent with Kaplan and Norton's (2004) notion that, once product characteristics are determined, product leaders focus on controlling costs.

reasons for this: (1) Basic MCS already fulfill some of the information needs required by low-cost leaders; (2) Cost MCS and Risk MCS are implemented more broadly than Revenue MCS (i.e., most early-stage firms implement at least some Cost MCS and Risk MCS, even if their strategy is not one of "low cost"), perhaps to avoid the risk of failure that most start-ups confront, or to control routine operations that distract managers from informally focusing on strategic decisions. Finally, regarding the performance consequences of the choice of initial MCS (bottom of Figure 1), results indicate that a better fit between initial MCS and firm strategy is associated with a higher perceived usefulness of MCS and perceived business performance, as well as higher store and sales growth.

This study contributes to the management control literature in two ways. First, it complements an emerging literature related to the introduction of MCS in early-stage firms. This emerging research has focused on the time start-up companies take to adopt formal control systems as well as the determinants of such adoption. For example, Moores and Yuen (2001) show that young firms in their early growth stage increase the formality of their MCS, while Davila (2005) and Davila and Foster (2005a, 2005b) find that age, size, the presence of outside investors, a change in CEO, CEO experience, and a planning culture, are positively associated with the rate of adoption and the sequence of introduction of different categories of MCS. Second, this study contributes to the contingency research that relates strategy to MCS in mature companies (Langfield-Smith 1997), but which is usually influenced by confounding effects such as the need to integrate new MCS to the existing ones and the need to develop a strategy aligned with previously existing MCS. By analyzing the first set of MCS introduced by early-stage firms, this study provides a cleaner setting to understand the causal relationship between strategy and MCS choice.

Besides contributing to the academic literature on MCS, this study offers important insights to practitioners—entrepreneurs, investors and consultants—about the value and appropriateness of particular categories of MCS for early-stage firms. While some studies have suggested that the very implementation of MCS—by inhibiting risk taking and ability to react quickly to changes in the environment—runs contrary to the entrepreneurial spirit (Morris and Trotter 1990; Adizes 1988), managers and investors generally agree that in early-stage, high-growth firms some form of control is needed and the real question is not *whether* MCS are needed, but *which* MCS are best suited to the contingencies of each firm.

The remainder of the paper proceeds as follows: Section II develops the research questions, while Section III describes sample selection and data collection methods. Section IV focuses on the first stage of the study by developing a categorization of initial MCS. Sections V and VI develop the second stage of the study, by investigating the relationship between the choice of particular categories of initial MCS and the strategy pursued by the firm, and the performance implications associated with that choice, respectively. Section VII concludes.

II. RESEARCH QUESTIONS

A number of studies, spanning several disciplines and developed largely on the basis of experience—hereafter referred to as life-cycle studies—propose that certain categories of MCS are introduced at particular stages of firm growth and suggest that MCS introduced in early-stage firms usually focus on plans, budgets, and incentives (Flamholtz and Randle 2000; Simons 2000; Greiner 1998; Miller and Friesen 1984, 1983; Churchill and Lewis 1983). While highlighting the importance of the firm's growth stage in the choice and use of MCS, for the most part these studies do not consider the role of contingencies within each growth stage, implicitly assuming that all firms in the same growth stage introduce the same types of MCS.

In contrast, the contingency-based research in managerial accounting shows that large, mature organizations design their MCS as a function of a number of contextual variables, including strategy, environment, technology, organizational structure, and firm size (for a summary of this literature see Chenhall 2003), resulting in differences in the type of information collected.[3]

Combined, these two avenues of research lead to the first research question:

Research Question 1: What types of initial MCS do early-stage firms put in place? Do initial MCS vary across early-stage firms?

Another logical question is: What are the determinants of the choice of particular types of initial MCS? Since the 1980s, the contingency literature in managerial accounting has focused on strategy as the most important driver of MCS design. Extensive research has documented an association between MCS and strategy in mature firms (see Langfield-Smith [1997] for an overview). In part, strategy has dominated other contingencies because it constitutes the means by which managers can influence all other contextual variables (external environment, technology, etc.) that were previously treated as exogenous (Chenhall 2003). Strategy also gained importance following insights from the organization theory literature suggesting that a strategy supported by the firm's organization design and control systems could be a powerful source of competitive advantage (Chandler 1962; Porter 1980; Miller and Friesen 1982). I explore the choice of the type of initial MCS by examining the following question:

Research Question 2: Are the choices of particular types of initial MCS in early-stage firms associated with the firm's strategy?

Note that the type of initial MCS introduced will not reflect the firm's strategy if early-stage firms rely heavily on informal communications to support their strategy (Lorange and Murphy 1984; Churchill and Lewis 1983), e.g., if these firms introduce their first MCS mostly to "liberate" management's time from routine matters so that management can informally focus on the strategy, or if the initial MCS are exclusively intended to reduce the risk of failure typically faced by new organizations (Singh et al. 1986; Freeman et al. 1983; Stinchcombe 1965). Under any of these scenarios, the type of initial MCS would not relate to the strategy but would instead aim at monitoring nonstrategic routine issues or collecting risk-related information.

A natural follow-up question is related to the performance implications of the choice of the type of initial MCS. In the context of mature firms, Chenhall and Langfield-Smith (1998), Simons (1987), and Govindarajan and Gupta (1985) found evidence suggesting that certain combinations of strategies and MCS lead to superior performance. In early-stage firms, the adaptation of initial MCS to the strategy may be even more relevant for future performance, since these MCS provide the foundation over which future MCS are developed (Davila 2005; Davila and Foster 2005b). This leads to the third question of this study:

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[3] Contingency research has found differences in MCS with respect to the content of information: (1) internal versus external (Guilding 1999; Gordon and Narayanan 1984); (2) financial versus nonfinancial (Van der Stede 2000; Ittner and Larcker 1995); (3) tight versus flexible (Chenhall and Morris 1995; Simons 1987; Merchant 1984); and (4) used for learning versus used for monitoring (Kaplan and Norton 2004; Margison 2002; Abernethy and Brownell 1999; Simons 1987); as well as with respect to attributes of information (Bowens and Abernethy 2000; Chenhall and Morris 1986): (1) aggregation, by time period, by functional area, or by formula; (2) integration, if it contributes to the coordination of subunits; (3) timeliness, if frequent or by immediate request; and (4) broad scope, if external, forward looking and nonfinancial.

Research Question 3: Are business performance and the perceived usefulness of initial MCS related to the fit between the initial MCS introduced and the firm's strategy?

I explore Research Question 1 through field interviews and Research Questions 2 and 3, by using a survey-based database to test hypotheses detailed in Sections V and VI respectively.

III. SAMPLE AND DATA COLLECTION

I develop this study using exploratory interviews with experts in entrepreneurship and retailing, as well as a survey-based database for a sample of U.S. store-based retailers. Focusing on a single industry provides depth to the study and allows me to control for several industry-specific conditions that may be relevant to the introduction of MCS in a company. Relative to other sectors, the store-based retail sector presents two major advantages, namely, more variation along the different contingencies that typically affect the choices of MCS (strategy, organizational structure), and more visible control problems associated with the growth of early-stage firms (e.g., an increase in the number of stores increases risk of theft, difficulty in understanding customer needs, problems of ineffective replenishment of inventory, lack of coordination and the need to train employees and align them to the company's strategy).[4]

I base my analysis on two main sources of information. First, I utilize information from 18 exploratory interviews that I conducted with professionals with expertise about entrepreneurial control systems and/or the retail sector. Second, I use data from a survey of top managers in 97 early-stage retail companies. The first section of the survey gathers information on each firm's strategy and asks about any major changes in strategy since the firm's inception. The second section focuses on the description of the initial MCS introduced by the firm (purpose of the initial MCS, time of introduction of different individual control systems, etc.). Other questions ask managers to self-assess the overall performance of the firm and the usefulness of MCS in the firm's development, or are designed to obtain a set of control variables.

After designing and pilot testing the questionnaire, I sent it to the CEOs of U.S.-based retailers no more than 20 years old[5] that distributed their products through at least 20 stores or retail points. These criteria were chosen to ensure that the resulting sample was composed of young but growth-oriented firms (i.e., excluding ''mom-and-pop'' retailers). Through a search in Compustat, One Source, Thomson Research, and Career Search, I identified and contacted 598 firms satisfying these criteria, including 104 publicly traded firms.

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[4] A number of other reasons made the store-based retail sector an attractive candidate for this study: (1) the diversity of retailers (jewelry, electronics, restaurants, apparel, home improvement) facilitates the generalizability of results; (2) it is a sector characterized by multiple start-ups, a necessary condition to achieve a meaningful sample size for statistical analysis; (3) it is a relatively mature industry, thus it does not suffer from the lack of stability in performance that affects most of the other industries with numerous start-ups (e.g., biotech, computer software and hardware); (4) the retail sector's performance relies heavily on MCS, as opposed to other factors such as R&D discoveries; and finally; and (5) it is a significant sector of the economy, accounting for approximately 25 percent of the U.S. GDP and with an average annual growth rate of 5 percent during the last two decades.

[5] I assumed that managers could only recall relatively recent information. Therefore, I limited the sample to firms where the founder or a veteran employee was available to answer the survey, and the firm's age was equal or less than 20 years (a company's founding date was defined as the time when the first store was opened). For the resulting sample, the time between the introduction of the initial MCS and the survey response (that is, how far the respondent had to recall) was, on average, nine years (median of eight years).

Of the 598 firms targeted, I gathered survey data from 131 (32 public and 99 private), for a response rate of 21.9 percent.[6] In 22 cases, the survey was completed in face-to-face interviews, providing me with an opportunity to explore the reasoning behind the respondents' answers. After eliminating unsuitable responses (see Table 1, Panel A), 97 completed surveys were utilized in the analyses. In most cases, the respondent was either the president or the CEO of the firm (see Table 1, Panel B). The average (median) retailer in the sample had 130 (45) stores, and the age of the surveyed firms ranged between 2 and 20 years, averaging 13 years. Table 1, Panel C shows that 17 percent of these retailers emerged as a subsidiary or spin-off of a corporation, and 26 percent were funded by venture capitalist firms. Although most firms pursued their growth internally, 22 percent were franchisors.

In terms of industry composition, a Chi-square test shows that the sample of respondent firms is not significantly different from the target population (see Table 2, Panel A). Similarly, I find no evidence of differences in size and age between respondents and non-respondents (see Table 2, Panel B).[7] Thus, at least with respect to size, age, and industry composition, nonresponse bias does not appear to be a concern.

IV. FIELD STUDY ON INITIAL MCS

The first goal of this research—corresponding to Research Question 1—was to explore the types of initial MCS introduced in early-stage firms, i.e., the first set of MCS in which the firm made a significant investment.[8] This section describes a field study that followed an iterative grounded approach, where I went back and forth between the data collected through interviews and surveys, and the emerging categories of initial MCS (Strauss and Corbin 1998). The section concludes with a summary of the findings, which suggests four categories of initial MCS.

I started off by consulting publications about retailers and conducting exploratory interviews with retail experts, to identify individual control systems used in the retail industry. I came up with a list of 20 individual control systems[9] presented in the first column of Table 3. As I conducted my interviews, I tried to identify which of these specific control systems were most important in early-stage firms.[10] However, after conducting a few interviews, it became very clear that interviewees conceived initial MCS in terms of the purposes initial MCS were meant to fulfill, not in terms of individual control systems, since (1) different individual control systems can be used to achieve the same purpose—e.g., a firm trying to learn about customer service could use marketing databases or mystery shoppers to achieve the same purpose—and (2) the same individual control system can be used to achieve different purposes—e.g., inventory control systems could be used by some firms

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[6] To maximize the rate of response, I sent one or two packets to each firm including the survey, a stamped return envelope, a pen, and an introductory letter directed to the CEO that briefly described the motivation for the study, offered a copy of the results, asked to direct the questionnaire to a qualified respondent, and guaranteed confidentiality. I followed up this mailing with two rounds of faxes and at least three telephone calls. I offered respondents a choice of completing the survey online or on paper, and public firms had the additional option of completing the survey through a telephone or face-to-face interview.

[7] The nonresponse bias analysis presented in Table 2, yields equivalent results when the 598 target firms are compared to the 97 firms used in the final sample (instead of the 131 firms that responded the survey).

[8] The date of the firm's first significant investment in MCS is determined based on the respondent's answer to a specific question in the survey. Focusing on the first significant investment in MCS also reduces the "low saliency" problem that often increases the memory error (Silk 1990).

[9] Notice most of these individual control systems are used in other industries as well, although "pricing controls," "shoplifting," and "mystery shoppers" tend to be more relevant for retailing than for other industries.

[10] Examples of exploratory questions I asked are: "If you were starting a new business intended to grow fast, what control systems (if any) would you put in place?" "What are the main functions that control systems should accomplish in an early-stage firm?" "What types of situations lead to the introduction of control systems in most early-stage firms?"

TABLE 1
Sample Description

Panel A: Sample Selection

Number of young retail firms targeted	598
Number of respondents (21.9 percent)	131
Less—Incomplete or invalid surveys	(17)
Less—Respondents not fitting the selection criteria:	
• Firms from other industries	(5)
• Firms older than 20 years	(8)
• Firms resulting from an acquisition	(4)
Final Sample	97

Panel B: Position of the Respondents

• President	29	(30%)
• Chief Executive Officer	24	(25%)
• President and Chief Executive Officer	21	(22%)
• General Management (VP, Chief Administrative Officer, Director)	7	(7%)
• Finance or Information Management (CFO, CIO, VP Controller, VP Information Systems)	7	(7%)
• Operations Management (COO, VP related to operations)	5	(5%)
• Others (Founder, Chairman, Owner)	4	(4%)
Total Sample	97	(100%)

Panel C: Descriptive Statistics of the Sample (n = 97)

Variable	Mean	Std. Dev.	Lower Quartile	Median	Upper Quartile
SIZE (# Stores)	129.73	211.18	28	45	125
AGE (in # years)	13.27	5.18	9	15	18
PUBLIC	0.24	0.43	—	—	—
VC DUMMY	0.26	0.44	—	—	—
SUBSIDIARY	0.17	0.38	—	—	—
FRANCHISE	0.22	0.41	—	—	—

to learn about customers' preferences; by some other firms to keep track of merchandise that could otherwise be stolen; or still by other firms to learn about the efficiency of their logistics.

To learn more about the purposes pursued by entrepreneurs when they made their first investments in MCS, I continued my data collection and, after each exploratory interview, analyzed the purposes described by each individual. Different individuals described diverse purposes that I classified into three analytical categories:[11]

- **Minimize Cost:** These initial MCS are implemented to control costs, improve the efficiency of operations, and achieve internal learning by constantly setting targets and comparing actual performance against these targets. According to the interviewees, this type of initial MCS help entrepreneurs:

[11] In order to achieve theoretical saturation, I completed 18 interviews. No additional purposes emerged from the last three interviews, confirming that theoretical saturation was indeed achieved.

TABLE 2
Sample Description: Nonresponse Bias

Panel A: Retail Industry Composition

Retail Industry	Target Firms		Sample Firms	
	# of Firms	%	# of Firms	%
Sporting goods stores	5	0.8	2	1.5
Building materials and hardware stores	6	1.0	2	1.5
Jewelry stores	7	1.2	2	1.5
Automotive dealers and gasoline service stations	8	1.3	3	2.3
Drug stores	9	1.5	1	0.8
Optical goods stores	11	1.8	1	0.8
Radio, TV, and Computer stores	11	1.8	3	2.3
General merchandise stores	17	2.9	3	2.3
Stationary, games, hobbies and gift stores	23	3.9	8	6.1
Home furnishings and equipment stores	32	5.4	8	6.1
Apparel and accessory stores	42	7.0	8	6.1
Food stores	65	10.9	9	6.9
Eating and drinking establishments	351	58.7	76	58.0
Other miscellaneous retail stores	11	1.8	5	3.8
Total	598	100%	131	100%

Chi-Square Test[a]

Chi-Square = 10.48
Degrees of Freedom = 13
Pr > Chi-Square = 0.654

Panel B: Differences between Target and Sample Firms

Variable	Mean for		Difference in Means	t-test (Pr > t)	Wilcoxon Test (Pr > z)
	Respondent Firms	Nonrespondents			
SIZE (# Stores)	109.6	121.6	−12.0	0.67	0.48
AGE (in # years)	14.2	14.5	−0.3	0.53	0.38

[a] The Chi-square statistic is calculated as $Q = \sum_i \frac{(f_i - e_i)^2}{e_i}$, where f_i are the observed frequencies of each industry in the sample of respondents (f_i = Respondents' Sample Size * %Responding Firms in Industry i) and e_i are the expected frequencies based on the industry composition of the target firms (e_i = Respondent's Sample Size * %Target Firms in Industry i).

- manage and understand costs (how are employees spending resources?);
- distinguish controllable from fixed costs;
- control costs once competition steps in and squeezes gross margins;
- provide information to help employees do their work efficiently and productively;
- define goals (but without imposing constraints on how to achieve those goals);
- learn how to react to contingencies;
- learn how to forecast and plan under different scenarios; and

TABLE 3
Introduction of Individual Control Systems

Individual Control Systems[a]	Proportion Introduced Initially[b]		Time to Introduce Control System (years)[c]			
	Mean	**Std. Dev.**	**Mean**	**Median**	**n**	**Std. Dev.**
a. Quality standards and controls	0.762	0.428	2.15	0	87	3.96
b. Policies and procedures	0.721	0.450	2.97	2	92	4.30
c. Pricing system	0.711	0.455	2.43	0	86	4.10
d. Budget controls	0.680	0.469	3.27	0	89	4.81
e. Inventory control systems to optimize stock levels and replenishment	0.649	0.479	3.63	0	88	5.33
f. Internal audits, transaction tracking, and checks and balances of information	0.649	0.479	3.60	2	92	5.02
g. Cost controls	0.649	0.479	2.48	0	80	4.13
h. Codes of business conduct	0.598	0.493	3.24	1.5	84	4.87
i. Performance-based compensation systems	0.577	0.497	3.85	2	83	5.10
j. Credit rules and controls	0.557	0.499	3.33	0	73	5.40
k. Restrictions to strategic choices (e.g., products not to be sold, customers not to be served, etc.)	0.546	0.500	2.22	2	76	3.72
l. Key performance indicators	0.536	0.501	3.78	2	88	4.84
m. Sales productivity standards (input-output measures: sales/employee, sales/square foot, etc.)	0.505	0.502	3.85	2	83	4.87
n. Loss prevention/shoplifting controls	0.495	0.502	3.21	2	77	4.69
o. Controls on employee behavior and development (turnover, training, etc.)	0.464	0.501	4.60	2	86	5.36
p. Statement of purpose/mission/credo	0.454	0.500	4.32	2	83	4.56
q. Controls for investment in long-term assets	0.453	0.500	4.52	2	80	5.10
r. Mystery shoppers	0.361	0.483	4.23	2	74	4.81
s. Externally oriented information systems, other than those related to direct customers (e.g., Market share data, data from A. C. Nielsen, Information Resources Inc, etc.)	0.309	0.464	5.00	2	64	5.27
t. Marketing databases (e.g., Customer Relationship Management systems, etc.).	0.257	0.439	5.93	3	70	5.97

Source: Survey Data

[a] The 20 Individual Control Systems were classified in the questionnaire into: Strategy Related Controls (controls k, l, p, and q); Market/Customer Related Controls (controls r, s, and t); Ongoing Operations Controls (controls a, c, d, e, g, j, and m); Personnel Controls (controls i and o); and Risk Minimization Controls (controls b, f, h, and n).

[b] Individual Control Systems are defined as introduced initially if they were introduced in the year (or before the year) when, according to the interviewee, the firm made its first significant investment in Control Systems.

[c] Summary measures of number of years from founding date to introduction of each control system. Each line includes only the n firms (from a total of 97) that had introduced the system at the time they answered the survey.

- • learn how to manage inventory and eliminate the costs of obsolescence.
- • **Enhance Revenue:** The second category consists of MCS used to analyze external information, to learn and respond to customers, and to foster and support fast growth. Examples classified in this category suggest these initial MCS are used to:
  - • learn about the market and competitors;
  - • learn about prospective new store locations and their inventory needs;
  - • implement a strategy and culture that leads to growth;
  - • attract financial investors that would help the company grow;
  - • direct the attention to the maximization of sales-per-square-foot;
  - • build customers' confidence;
  - • understand customer preferences; and
  - • learn the drivers of sales (which products are selling, how effective are the ads).
- • **Minimize Risk:** The last initial MCS are meant to protect asset integrity, and avoid internal risks and out of control situations (defined in footnote 1). Interviewees explained that these initial MCS are used to:
  - • avoid inconsistencies in information;
  - • secure and audit the systems;
  - • define consistent rules and routines throughout the company;
  - • avoid out-of-control situations that would harm the firm's growth and financial health;
  - • control theft, by checking cash and inventory levels; and
  - • (in subsidiaries) limit exposure to risks that would harm the parent company's brand.

After learning about the three main purposes of initial MCS from the exploratory interviews, and identifying 20 individual control systems used in the retail industry, I explored whether the three major purposes affected the frequency of introduction of any specific individual control systems. Thus, I incorporated two sets of questions into the survey instrument. The first set explored *which* of the 20 individual control systems were introduced in each firm, and *when*. Table 3 summarizes the survey responses. For each individual control system, the table shows: (1) the proportion of firms that adopted it initially, i.e., in the year the firm made its first significant investment in controls; (2) the average and median time from the firm's founding date (date the company opened its first store) to its introduction; and (3) the number of firms that had introduced the particular control by the time they answered the survey (n). Table 3 suggests that most of the individual control systems introduced early are internal and relate to operations, while individual control systems used to learn about customers and to scan external information are introduced later. For example, the most frequent individual control systems introduced initially include quality controls, policies and procedures, pricing controls, and budgeting. In

contrast, marketing databases and externally oriented information systems tend to be introduced at a later stage.[12]

A second set of questions in the survey asked about the *purposes* of introducing the initial set of control systems (minimize cost, enhance revenue, minimize risk). Each purpose was ranked in a Likert scale from 1 to 7, where 1 indicated that the first set of controls systems were ''not used at all'' and 7 indicated that they were ''used to a great extent'' for the purpose in question. To formally evaluate whether the choice of individual control systems relates to the three MCS purposes, I conducted the following analysis. For each of the 20 individual control systems ($j = 1, 2,...,20$) identified in Table 3, I ran a logistic regression where the dependent variable was a dummy indicating whether the individual control system j was introduced among the initial set of control systems in firm i (*INITIALCS$_{ji}$* $= 1$, or 0 otherwise), and the independent variables were the Likert values for the three purposes (*COSTLIKERT$_i$*, *REVENUELIKERT$_i$*, and *RISKLIKERT$_i$*):[13]

$$Pr(INITIALCS_{ji} = 1) = \alpha + \beta_1*COSTLIKERT_i + \beta_2*REVENUELIKERT_i$$
$$+ \beta_3*RISKLIKERT_i + \varepsilon_i \qquad (1)$$

Results in Table 4 indicate that eight of the 20 MCS are significantly related to one of the three purposes (minimize cost, enhance revenue, minimize risk). This suggests an association between those individual control systems and the corresponding initial MCS category (or purpose). The analysis also suggests the presence of three individual control systems that do not appear to be associated to any particular purpose pursued by the firm, yet were introduced by most of the sample firms among the initial set of control systems (more than 60 percent as indicated in Table 3). I describe these individual control systems as a set of ''Basic MCS,'' which are commonly adopted because they are believed to be essential to the development of early-stage firms. These systems, which were utilized broadly, seem to be in line with some of the needs previously attributed to the purpose ''Minimize Cost.''

To summarize, as a result of the above analysis, I propose a categorization of initial MCS that includes two sets of systems, a set of ''Basic MCS'' introduced by most early-stage firms, regardless of the specific purposes emphasized by the firm, and a set of MCS chosen by early-stage firms based on specific purposes. This latter set includes ''Cost

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[12] To verify the robustness of the order of introduction of these individual control systems, I repeat the analysis in Table 3 by:

(1) redefining the founding date as the incorporation date instead of the date the first store opened. The resulting order is almost equivalent to that in Table 3, with four individual control systems moving one position and only one control system changing two positions.

(2) using a subset of firms less than ten years old ($n = 30$), on the grounds that technological changes may have affected the rate of introduction of individual control systems (by reducing costs, etc.) and that a memory bias may lead older firms to ''group'' together individual control systems that were actually put in place at different times. The order of introduction of the individual control systems is basically unchanged, with ''budgets'' being the individual control system most often introduced initially and ''marketing databases'' and ''external controls'' being the least often introduced initially. Noticeably, the average time to introduction for the 20 individual control systems decreases from 3.6 years for the full sample to 1.3 years for the less than ten year-old subsample, an indication of significant changes in the economics of the decision to adopt controls.

[13] In untabulated tests I also include industry dummies to verify the robustness of the results.

TABLE 4
Logit Regressions Linking MCS Purposes to the Decision to Introduce Individual Control Systems Initially[a]

Dependent Variable

Dummy = 1 if control system was introduced early	Intercept	p-value	*COST LIKERT*	p-value	*REVENUE LIKERT*	p-value	*RISK LIKERT*	p-value
1 Cost controls	−0.22	0.38	0.21	0.08	−0.07	0.32	0.07	0.28
2 Quality standards and controls	−0.86	0.15	0.23	0.08	0.14	0.19	0.16	0.15
3 Sales productivity standards	−0.28	0.34	−0.23	0.05	0.26	0.04	0.07	0.29
4 Marketing databases	−2.41	0.00	0.09	0.28	0.24	0.07	−0.02	0.44
5 Loss prevention/shoplifting controls	−1.91	< 0.01	0.08	0.32	−0.06	0.35	0.50	< 0.01
6 Internal audits, transaction tracking, and checks and balances of information	−0.32	0.33	0.09	0.26	−0.08	0.29	0.25	0.03
7 Policies and procedures	−0.17	0.41	−0.05	0.37	0.09	0.28	0.29	0.03
8 Codes of business conduct	−1.23	0.05	0.08	0.28	0.11	0.22	0.23	0.04
9 Credit rules and controls	0.17	0.40	−0.06	0.33	−0.07	0.30	0.17	0.09
10 Budget controls	0.40	0.29	0.03	0.41	−0.01	0.47	0.07	0.29
11 Pricing system	1.01	0.10	0.06	0.34	−0.19	0.10	0.12	0.19
12 Inventory control systems	−0.86	0.12	0.14	0.16	0.07	0.37	0.17	0.10
13 Performance-based compensation systems	0.35	0.30	−0.08	0.28	0.12	0.19	−0.06	0.32
14 Controls on employee behavior and development	−1.51	0.02	0.15	0.13	0.17	0.11	−0.002	0.50
15 Controls for investment in long-term assets	0.30	0.33	−0.02	0.45	−0.07	0.30	−0.03	0.40
16 Externally oriented information systems	−0.57	0.22	−0.18	0.11	0.03	0.43	0.11	0.19
17 Restrictions to strategic choices	1.20	0.05	−0.05	0.35	−0.18	0.09	−0.004	0.49
18 Key performance indicators	0.81	0.12	0.05	0.35	−0.25	0.04	0.04	0.38
19 Statement of purpose/mission/credo	1.33	0.03	−0.14	0.16	−0.26	0.04	0.03	0.39
20 Mystery shoppers	−0.71	0.16	−0.11	0.21	0.10	0.23	0.05	0.33

[a] p-values are one-tailed.
COSTLIKERT, REVENUELIKERT, RISKLIKERT: Likert values describing the extent to which initial MCS are used to (1) minimize cost and achieve operation efficiencies, (2) increase revenue and adapt to the market, and (3) minimize risks, respectively, where 1 indicates ''not used at all'' and 7 ''used to a great extent.'' Shaded values indicate a significantly positive relation between the early introduction of the individual control systems and *COSTLIKERT, REVENUELIKERT*, or *RISKLIKERT*.

MCS,'' ''Revenue MCS'' and/or ''Risk MCS.'' These categories are described as follows:[14]

Category of Initial MCS	Purposes fulfilled by these Initial MCS	Individual control systems associated with these Initial MCS
Basic MCS	• To set plans, standards, and support basic operations (this is a general purpose shared by almost all firms).	• Budget • Pricing System • Inventory Controls
Cost MCS	• To minimize costs, and improve operation efficiencies, using internal and financial information.	• Cost Controls • Quality Controls
Revenue MCS	• To enhance revenue, support growth, and learn about the market, using external and nonfinancial information.	• Marketing Databases • Sales Productivity
Risk MCS	• To avoid internal risks and protect asset integrity, using internal rules and procedures.	• Loss Prevention Controls • Internal Audits, Transaction Tracking, Checks and Balances • Codes of Conduct • Credit Controls • Policies and Procedures

Note that given my classification criteria, nine of the 20 individual control systems in Table 3 were not assigned to any of the four types of initial MCS, because (1) I did not find convincing evidence of a systematic relation between their frequency of introduction among the set of initial set of control systems and the early-stage firms' purposes, and (2) even when introduced somewhat frequently, they did not seem to fit the definition of ''Basic MCS'' for early-stage firms.[15] This should not be viewed necessarily as a limitation of the analysis, since my objective was not to classify *all* the individual control systems introduced by retailers, but to provide an intuitive framework that would capture the individual control systems *most often* introduced by early-stage firms with different purposes.

V. THE CHOICE OF INITIAL MANAGEMENT CONTROL SYSTEMS

The second research question is to determine whether a relationship exists between the strategy followed by an early-stage firm and the categories of initial MCS it chooses. This section describes the research design used and presents the corresponding analyses and results.

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[14] Note that I could have established the association between individual control systems and the different categories of Initial MCS using alternative classification criteria, and thus the third column of the table should be viewed as tentative. For example, if I had started defining the ''Basic MCS'' category before assigning the individual control systems to different purposes, quality controls would most likely have been classified as ''Basic MCS'' rather than ''Cost MCS.''

[15] For example, among the unassigned individual control systems, the one most frequently introduced initially (but less frequently than the ones categorized as Basic MCS) was ''performance-based compensation systems.'' I did not classify it as Basic MCS for two reasons: (1) many of the firms not introducing ''performance-based compensation systems'' explained that, since they were just starting to measure performance, they had no clear expectations as to set targets for compensation purposes; this is a common issue in early-stage firms and cautions against viewing such systems as ''Basic''; (2) firms introducing ''performance-based compensation systems'' initially over time moved toward a higher percentage of performance-based compensation and lower use of subjective measures of performance, suggesting that the use of ''performance-based compensation systems'' was initially not heavy.

Research Design

I examine Research Question 2 by testing two hypotheses relating the categories of initial MCS to the firm's strategy, which I characterize based on the firm's strategic positioning as a cost leader and/or a differentiator (Porter 1980).[16]

Several studies involving mature companies have found that firms following cost leadership strategies (or similar strategies such as defender or harvest strategies) focus on cost objectives that are translated into operating goals and cost monitoring, and controls that promote efficiency and problem solving (Langfield-Smith 1997; Dent 1990; Miles and Snow 1978). Porter (1980) suggests that, in order to be successful, cost leaders should introduce cost controls and compare the cost of every activity over time and among business units and competitors (i.e., against different targets). They should also emphasize quality controls to guarantee that their products/services are comparable to those in the market (Kaplan and Norton 2004). Such characterization of MCS can be closely related to my Cost MCS category of initial MCS and the individual control systems that relate to Cost MCS (i.e., cost controls and quality controls).

Miles and Snow (1978) also indicate that firms following this strategy use MCS to reduce uncertainty and to secure conformance with planned activities, creating highly specialized jobs and standard procedures. The desire to minimize uncertainty, standardize procedures, and contain costs related to inventory shrinkage or cash shortages in a retail firm, may also lead cost leaders to introduce Risk MCS at an early stage. These studies suggest the following hypothesis:

H1: Early-stage retailers following low-cost strategies will introduce Cost MCS and Risk MCS initially more intensively than retailers not following low-cost strategies.

Firms following differentiation strategies (or similar strategies such as prospector or build strategies) use fewer formal controls and more flexible structures and processes to respond rapidly to competition and environmental change (Kaplan and Norton 2004; Guilding 1999; Porter 1980; Miles and Snow 1978). Several studies show that differentiators collect information related to customer needs and utilize subjective and nonfinancial measures to evaluate performance in an attempt to promote a long-term orientation in the firm (Langfield-Smith 1997; Simons 1987; Govindarajan and Gupta 1985; Porter 1980). These MCS characteristics can be more closely related to my Revenue MCS.[17] In the context of initial MCS, the above findings suggest the following hypothesis:

H2: Early-stage retailers following differentiation strategies will introduce Revenue MCS initially more intensively than retailers not following differentiation strategies.

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[16] Porter (1980) describes differentiation and cost leadership as the two predominant sources of competitive advantage. "Differentiation" consists of differentiating the product or service, and thus offering to the market something that is perceived as unique. "Cost Leadership" consists of achieving overall cost leadership by excelling in operations. Cost leaders offer highly competitive prices combined with consistent quality, ease and speed of purchase, and excellent, though not comprehensive, product selection.

[17] In contrast with some of the research described above, Simons (1987) finds that firms following differentiation (prospector) strategies use financial control systems more intensively than cost leaders (defenders), while Chenhall and Langfield-Smith (1998) find that differentiators receive greater benefits from quality systems than cost leaders. Both of these findings would suggest a potential relationship between differentiators and Cost MCS.

Note that I do not expect the strategy to influence the choice of Basic MCS, given that Basic MCS are a common platform introduced by most early-stage firms, regardless of specific purposes pursued by the firm.

To test H1 and H2 in a univariate setting, I compare firms following different strategies along the dimensions of cost leadership (Low Cost versus No Low Cost) and differentiation (High Differentiation versus Low Differentiation).[18] For these dimensions I analyze:

- Differences between subsamples in terms of their average emphasis on the three categories of initial MCS—*COSTLIKERT, REVENUELIKERT, RISKLIKERT*—described in Section IV.
- Differences between subsamples in terms of the proportion of firms introducing initially the particular individual control systems associated with each category of initial MCS.
- In a multivariate setting, I develop the following choice model (a multinomial logit model, see Figure 1):

$$Pr(CHOICEMCS_i = MCS\_category)$$
$$= f\,(LOWCOST_i, DIFFERENTIATION_i, CONTROLS_i)$$
$$(2)$$

CHOICEMCS is a categorical variable describing the three categories of initial MCS. This variable is coded as 1 for firms mostly emphasizing Risk MCS, 2 for Revenue MCS, and 3 for Cost MCS. Each of these emphases was rated by the survey respondents based on a Likert scale. In particular, for each firm, I define as the "most emphasized" category of initial MCS the one that received the highest Likert value. Firms with ties between two or more categories of initial MCS were excluded from the analysis, resulting in a sample size of 67 observations (with 30 firms emphasizing Cost MCS, 19 emphasizing Revenue MCS, and 18 emphasizing Risk MCS).

The main independent variables in this model consist of the strategy variables, *LOW-COST* and *DIFFERENTIATION*, constructed as composite measures from a set of survey questions that characterize the strategy of the firm. The *LOWCOST* measure reports higher values for strategies emphasizing low price, and lower values for firms and customers indifferent to prices. The *DIFFERENTIATION* measure reports higher values for strategies putting more emphasis on uniqueness, and vice versa. See the Appendix, Panel A for a definition of these measures.

The model includes a set of control variables (*CONTROLS*, defined in the Appendix, Panel A). At an organizational level, I control for the degree of *DECENTRALIZATION* of the firm, the *DIVERSITY* of its activities and whether the firm is still developing its strategy or not (dummy variable *SEARCHSTRAT*). Previous literature on mature firms (Merchant 1984, 1981; Bruns and Waterhouse 1975) indicates that more decentralized firms use formal operating control systems more heavily. Thus, I expect that decentralized firms use Risk MCS and Cost MCS more intensely to achieve tighter control over the units. Accounting theories also predict that higher diversity in products and processes induces firms to use more sophisticated cost allocation systems (Kaplan 1998; Banker et al. 1995). Thus, I expect firms with more diverse assortments to use Cost MCS more intensely. Finally, other studies

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[18] Unlike Porter (1980), I do not assume that these dimensions are mutually exclusive, since subsequent research has shown that these generic strategies may indeed be linked in a variety of ways (Hill 1988; Jones and Butler 1988; Murray 1988).

have indicated that MCS are utilized differently depending on whether they are used for strategy formation or for strategy implementation (Margison 2002; Ittner and Larker 2001; Simons 1990, 1994). I predict that firms in the process of developing their strategy (dummy *SEARCHSTRAT* = 1) will use Revenue MCS and Cost MCS more intensely than Risk MCS, so as to learn more about the business. In the multinomial regression, both the *LOWCOST* and *DIFFERENTIATION* strategy measures are set to zero in the cases when *SEARCHSTRAT* = 1 (13 percent of the observations). This is achieved by interacting each of the strategy variables (*LOWCOST* and *DIFFERENTIATION*) with the variable (1 − *SEARCHSTRAT*).

I also control for ownership structure—since it has been shown to affect the control structure of the firm (Baker et al. 2002; Pfeffer and Salancik 1978)—by including three dummies indicating whether the firm grew through franchising (*FRANCHISE*), whether it was a subsidiary or spin-off of another company (*SUBSIDIARY*), and whether it received financing from a venture capitalist prior to the introduction of initial MCS (*VCDUMMY*). I expect *FRANCHISE* companies to emphasize Revenue MCS and Risk MCS over Cost MCS as these types of companies focus on building the brand while relying on the incentives provided by the ownership structure to achieve cost efficiencies. Presumably, *SUBSIDIARY* firms will use Risk MCS more intensely to protect the parent company's image, whereas *VCDUMMY* firms may be more interested in Revenue MCS to increase the firm's option value for the venture capitalists holding equity in the firm.

Finally, I control for industry effects by introducing a dummy (*RESTAURANT*) indicating whether the firm is an ''eating and drinking establishment'' (the most represented retail subsector in my sample, see Table 1) or not. I expect *RESTAURANT*s to place more emphasis on Cost MCS and Risk MCS—given their intense focus on operations, processing of food, managing short-lived inventories, complying with FDA standards, and avoiding the risk of food theft.

Results

The univariate results shown in Table 5 provide some support for H1 in that firms pursuing a low-cost strategy place more emphasis on the use of initial MCS to Minimize Costs (see *COSTLIKERT*, p-value = 0.059) and, as a consequence, introduce cost controls initially more frequently (p-value = 0.088).[19] They also place significantly less emphasis on initial MCS to enhance revenues, perhaps an indication that differentiation and low-cost strategies are not often pursued simultaneously, as suggested by Porter (1980).

The univariate tests summarized in Table 5 also provide support for H2. Firms following a differentiation strategy place significantly greater emphasis on the use of Revenue MCS and, consequently, are more likely to adopt sales productivity controls and (more weakly) marketing databases early on, consistent with their need to be responsive to the market and collect data related to customers. Firms following a differentiation strategy also tend to place less emphasis on the use of Cost MCS, consistent with Simons (1987). However, they place a special emphasis on the use of policies and procedures.

To control for other factors expected to affect the introduction of initial MCS, in a multivariate setting I analyze the multinomial logit proposed in the research design section. Because of the small sample size, Table 6, Panel A includes only the strategic determinants and the three organizational characteristics as independent variables. Panel B extends this model to include the ownership and industry variables, presenting the complete set of

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[19] The rate of introduction of quality controls is not different for low-cost strategy firms. However, this finding is not surprising given the widespread use of quality controls early on across all firms documented in Table 3.

TABLE 5
Univariate Tests Relating Strategy to the Introduction of Initial MCS

CATEGORIES OF INITIAL MCS Individual control systems by category	Low Cost Strategy[b]					Differentiation Strategy[c]				
			Difference in Means					Difference in Means		
	Low Cost[d]	No Low Cost[d]	Predicted Sign		p-values[a]	Differentiation Strategy[d]	No Differentiation[d]	Predicted Sign		p-values[a]
COSTLIKERT	4.67	4.10	+	0.57	0.059	4.12	4.65	?	−0.53	0.074
Cost Controls	0.71	0.58	+	0.13	0.088	0.64	0.65	?	−0.01	0.470
Quality Controls	0.76	0.77	+	−0.01	0.428	0.79	0.73	?	0.06	0.256
REVENUELIKERT	3.88	4.44	?	−0.56	0.054	4.56	3.75	+	0.81	0.010
Marketing Databases	0.20	0.31	?	−0.11	0.112	0.31	0.20	+	0.11	0.112
Sales Productivity Controls	0.49	0.52	?	−0.03	0.381	0.58	0.42	+	0.16	0.063
RISKLIKERT	3.79	3.43	+	0.36	0.161	3.65	3.59	?	0.06	0.441
Loss Prevention Controls	0.51	0.48	+	0.03	0.381	0.52	0.47	?	0.05	0.308
Internal Audits	0.67	0.62	+	0.05	0.310	0.69	0.61	?	0.08	0.220
Codes of Business Conduct	0.65	0.54	+	0.11	0.133	0.64	0.55	?	0.09	0.172
Credit Controls	0.55	0.56	+	−0.01	0.455	0.60	0.51	?	0.09	0.177
Policies and Procedures	0.67	0.77	+	−0.10	0.143	0.81	0.63	?	0.18	0.022
Number of observations	49	48				48	49			

[a] p-values present one-tailed results.
Strategy Measures:
[b] The *low cost strategy* measure is a composite drawn from two survey questions, one on the firm's emphasis on low price and promotions, the other on the price sensitivity of its customers, both measured on a Likert scale.
[c] The *differentiation strategy* is a composite drawn from three survey questions, measured by a Likert scale, on the firm's emphasis on uniqueness (in terms of products and customization).
[d] Firms that place the most emphasis on the particular strategy (above sample median) are compared to those that place the least emphasis (below median).
Initial Management Control Systems:
- *COSTLIKERT, REVENUELIKERT, RISKLIKERT*: Likert values describing the extent to which initial MCS are used to (1) minimize cost and achieve operation efficiencies, (2) increase revenue and adapt to the market, and (3) minimize risks, respectively, where 1 indicates "not used at all" and 7 "used to a great extent."
- Cost Controls, Quality Controls, Marketing Databases, Sales Productivity Controls, Loss Prevention Controls, Internal Audits, Codes of Business Conduct, Credit Controls and Policies and Procedures: Dummy variables indicating if each control system was introduced initially (1) or not (0). Results present the % firms introducing each individual control system.

TABLE 6
Multinomial Logit: Strategic Choice of Initial Management Control Systems

| | Comparison of Emphases of MCS | | | | | |
| | *REVENUEMCS/ RISKMCS* | | *COSTMCS/ RISKMCS* | | *REVENUEMCS/ COSTMCS* | |
	Coefficient	Pr > ChiSq	Coefficient	Pr > ChiSq	Coefficient	Pr > ChiSq
Panel A: Strategic and Organization Determinants of Initial MCS (n = 61, Count R² = 0,56, AdjCount R² = 0.21)						
Intercept	−0.120	0.772	0.385	0.292	−0.505	0.189
LOWCOST * (1 − *SEARCHSTRAT*)	−0.074	0.722	−0.163	0.409	0.089	0.636
DIFFERENTIATION * (1 − *SEARCHSTRAT*)	0.109	0.546	−0.220	0.169	0.328	0.041
DECENTRALIZATION	−0.320	0.072	−0.191	0.241	−0.129	0.399
DIVERSITY	−0.107	0.092	−0.030	0.483	−0.077	0.210
SEARCHSTRAT	0.852	0.419	0.451	0.642	0.401	0.652
Panel B: Add Ownership Controls and Industry (n = 61, Count R² = 0.66, AdjCount R² = 0.38)						
Intercept	0.740	0.409	0.921	0.287	−0.180	0.796
LOWCOST * (1 − *SEARCHSTRAT*)	−0.071	0.744	−0.205	0.316	0.135	0.493
DIFFERENTIATION * (1 − *SEARCHSTRAT*)	0.099	0.612	−0.217	0.212	0.316	0.068
DECENTRALIZATION	−0.232	0.297	−0.197	0.321	−0.035	0.851
DIVERSITY	−0.158	0.096	−0.034	0.586	−0.124	0.160
SEARCHSTRAT	1.033	0.356	0.754	0.463	−0.279	0.770
FRANCHISE	0.399	0.679	−0.686	0.489	1.085	0.243
VCDUMMY	−0.198	0.860	−0.844	0.398	0.646	0.512
SUBSIDIARY	−0.516	0.641	−0.744	0.421	0.228	0.831
RESTAURANT	−1.359	0.276	−0.199	0.863	−1.159	0.256

Source: Survey Data
Dependent Variable:
It was constructed utilizing the categorical variable *CHOICEMCS*, which indicates what initial MCS does the firm emphasize: Risk MCS, Revenue MCS, or Cost MCS. For details, see Section V.
Strategy Variables (see details in Section V):
  LOWCOST = composite measure that proxies for the firm's emphasis on cost leadership. It takes higher values for firms emphasizing low costs strategies; and
  DIFFERENTIATION = composite measure indicating the extent to which a firm pursues a differentiation strategy.
Control Variables (see details in Appendix, Panel A):
DECENTRALIZATION = composite measure from two variables, describing the extent of decentralization in the firm;
  DIVERSITY = proxy for heterogeneity of activities, measuring the diversity of the assortment offered by the retailer;
  FRANCHISE = dummy indicating whether a firm grew mostly through franchising (1) or not (0);
  SEARCHSTRAT = dummy indicating whether the firm defined its strategy after introducing its MCS (1) or not (0);
  SUBSIDIARY = dummy equal to 1 if the firm is/was a subsidiary or spin-off from a larger company, and 0 otherwise;
  VCDUMMY = dummy on whether the firm received VC funding (1) or not (0) before the introduction of initial MCS; and
  RESTAURANT = dummy equal to 1 if the retail firm is an eating and/or drinking establishment, 0 otherwise.

hypothesized determinants of the choice of initial MCS. Consistent with H2, results show that firms following a differentiation strategy tend to place more emphasis on Revenue MCS than on Cost MCS (right column of Table 6).[20] This result is robust across the two panels and is consistent with the univariate tests in Table 5. The multinomial test, however, does not provide support for H1: low-cost strategies do not appear associated with a more intense use of Cost MCS. This may occur either because Basic MCS already incorporate controls that support a low-cost strategy, or because Cost MCS and Risk MCS are implemented to some extent by most early-stage firms—even if they their strategy is not one of "low cost"—perhaps to avoid the risk of failure, or to control routine operations that distract managers from informally focusing on strategic decisions. Table 6 also shows that a higher degree of decentralization and product diversity is associated with more emphasis on Risk MCS relative to Revenue MCS. The former result is consistent with a number of studies that have documented a greater use of tight (less subject to discretion) control systems in decentralized organizations (Bruns and Waterhouse 1975; Child 1972). As for product diversity, a potential explanation is that early-stage firms that grow rapidly by offering a diverse assortment of products need to invest in Risk MCS to avoid running out of control. The multinomial model predicts correctly the choice of initial MCS in 66 percent of the cases. A more refined measure of fit is the adjusted count R^2 (Long 1997), which is equal to 38 percent and can be interpreted as the extent to which the multinomial model reduces errors in prediction relative to a model that predicts that all firms will emphasize the most frequent type of initial MCS.[21]

Additional Results on Differentiation Strategies

To provide further insights into H2, I analyze two types of differentiation strategies, one based on Customization and one based on Product Leadership.[22] Univariate and multivariate analyses (untabulated) show that, consistent with the results for differentiators in general, both firms following product leadership and firms focused on customization place stronger emphasis on the use of Revenue MCS. However, this emphasis translates into a higher rate of adoption of two different revenue-related individual control systems: marketing databases for products leaders, and sales productivity controls for customization firms. Two other interesting aspects that distinguish customizers from product leaders are:

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[20] Results are presented in three columns (expressed in the form A/B) where the coefficients represent the log-odds of outcome "A" versus outcome "B": $\ln\left[\dfrac{\Pr(CHOICEMCS = ``A")}{\Pr(CHOICEMCS = ``B")}\right]$. For example, the next to last column expresses the log-odds that a firm chooses *REVENUE MCS* versus *COST MCS*. In Panel A, results indicate that for a unit change in the "differentiation strategy" measure, the log-odd ratio of *REVENUE MCS* versus *COST MCS* is expected to increase by 1.39 times, where $1.39 = \exp(0.328)$.

[21] I verify the robustness of the results in the multinomial logit model in two ways: (1) I use the Hausman and McFadden (1984) test to verify the Independence of Irrelevant Alternatives (IIA) assumption implicit in the multinomial logit and find that the assumption cannot be rejected; (2) I conduct three logit regressions where the dependent variable reflects the relative emphasis on two categories of initial MCS (e.g., Revenue MCS and Risk MCS) while the emphasis on the third category (e.g., Cost MCS) is explicitly controlled for as additional independent variable. The results (untabulated) are generally consistent with the findings in the multinomial model. Firms following differentiation strategies emphasize Revenue MCS over Risk MCS and Risk MCS over Cost MCS, while firms with a more diverse assortment of products and a more decentralized structure put more emphasis on Risk MCS than Revenue MCS.

[22] Customization strategies are focused on building long-lasting relationships with the customers, requiring that the firm develop excellent service capabilities and employees' responsiveness to targeted customers. Product leadership strategies consist of offering unique products that customers are willing to pay a premium for. "Product leaders" must develop systems to discover new opportunities for superior products and services but should also reduce costs once product characteristics have been stabilized (Kaplan and Norton 2004; Treacy and Wiersema 1995).

first, customizers place more emphasis on Risk MCS than Cost MCS, possibly because of the importance that the customizers give to ''policies and procedures'' aimed at maintaining a long-term relationship with customers; and second, while firms focused on customization (similar to differentiators in general) place much less emphasis on the use of Cost MCS, product leaders tend to place more emphasis on such use, and as a consequence, are significantly more likely to introduce quality controls and cost controls. This apparently puzzling result is consistent with Kaplan and Norton's (2004) observation that firms differentiating through product leadership need to control costs once product characteristics are defined. In the case of retailers, this might reflect the product leaders' focus on negotiating favorable terms with suppliers.

VI. PERFORMANCE IMPLICATIONS OF THE CHOICE OF INITIAL MANAGEMENT CONTROL SYSTEMS

The multinomial logit analysis yields a model of fit between the category of initial MCS chosen (emphasized) by a firm and its strategy and organizational characteristics. In this section, I assume that such model captures, on average, optimal behavior, and I use deviations from the model's predictions to answer Research Question 3—i.e., whether business performance and the perceived usefulness of initial MCS relates to the fit between initial MCS and firm's strategy. Specifically, I test the following hypothesis:

H3: Early-stage firms with a better fit between their initial MCS and their strategy experience (a) superior business performance and (b) a higher perceived usefulness of initial MCS.

Research Design

To test H3, I classify the sample firms in two groups based on whether their choice of a category of initial MCS deviates from the ''optimal'' choice predicted by the multinomial logit model. For each firm, I identify the category of initial MCS with the highest probability of being selected according to the multinomial logit and define a dummy variable, *FIT*, equal to 1 if the firm actually chose (i.e., placed most emphasis on) that predicted category of initial MCS and introduced at least 50 percent of the individual control systems related to that category, and 0 otherwise. As a result, firms are classified into: ''High-Fit'' (*FIT* = 1), and ''Low-Fit'' (*FIT* = 0). I then compare these two groups in terms of the usefulness of initial MCS and three measures of business performance:

- *USEFULMCS*: This is a categorical variable based on a survey question where managers were asked to assess from 1 to 7 the overall usefulness of their firms' initial MCS (with 7 being most useful).
- *PERCPERFORM*: This is a categorical variable drawn from a survey question where managers were asked to evaluate the firm's overall performance since founding, relative to the retail industry. The scale of this variable is described as 1 if the firm's performance is in the bottom 10 percent, 2 if it is in the bottom 25 percent, 3 if it is average, 4 if it is in the top 25 percent and 5 if it is in the top 10 percent.
- *SALESGROWTH* and *STOREGROWTH*: These variables are the geometric average of the annual growth in sales and number of stores, respectively, since the year of introduction of initial MCS (or the first subsequent year with available data).[23]

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[23] Notice that I measured performance *after* the introduction of Initial MCS to mitigate concerns with endogeneity. These data were obtained from Compustat, Lexis-Nexis, and a follow-up telephone call to the respondents (to obtain number of stores).

The first two measures are based on the respondents' assessment and thus represent measures of *perceived* usefulness of initial MCS and business performance, respectively. The other two variables represent instead measures of *actual* business performance.

To perform the multivariate test, I run two Ordinal Logit Models where the dependent variables are the measures of perceived usefulness of initial MCS and perceived performance described above—*USEFULMCS* and *PERCPERFORM*—and two Ordinary Least Squares Models where the dependent variables are the two measures of actual performance (see Figure 1). In these regressions, the independent variables include the dummy variable *FIT* and a number of control variables:

$$USEFULMCS_i \text{ or } PERFORMANCE_i = f(FIT_i, CONTROL\ VARIABLES_i). \qquad (3)$$

I include a set of control variables from the literature (see the Appendix, Panel B for detailed definitions), which are correlated both with the introduction of MCS and the performance of an early-stage firm. These variables include *CEOCHANGE*, *VCDUMMY*, *EXPERIENCE*, *SIZE*, and *AGE*. Previous literature has found that the change of CEO and the presence of VC funding are positively associated with improved performance and increased probability of effectively introducing initial MCS (Davila 2005; Certo et al. 2001; Hellman and Puri 2002; Willard et al. 1992; Singh et al. 1986). Similarly, I predict that the presence of a CFO/top manager with previous experience introducing MCS in a growing firm will increase the chances of introducing effective MCS and, thus, enhance performance (Bruderl et al. 1992). Size and age have also been associated with performance as well as with the emergence of MCS in companies. With respect to performance, older firms are more likely to survive—i.e., achieve higher performance—than younger firms (Hannan and Freeman 1989; Singh et al. 1986; Freeman et al. 1983), and smaller firms have been documented to experience lower operating performance than larger firms (Fama and French 1995), presumably because small companies tend to be riskier and large firms can improve performance through economies of scale.[24] With respect to the use of MCS, literature in accounting has found a more intensive use of MCS in larger and older firms (Davila 2005; Davila and Foster 2005a, 2005b; Merchant 1981; Khandwalla 1977; Bruns and Waterhouse 1975), suggesting a right *FIT* of initial MCS may be most useful and more likely to enhance performance in such firms. On the other hand, *USEFULMCS* might be negatively associated with age, given that technologies have become more available and less expensive in recent years, increasing the potential benefits younger firms can derive from initial MCS.

Results

Univariate results in Table 7, Panel A show that firms with a better fit based on the multinomial logit and the associated individual control systems (High-Fit) appear to perform better than the other firms (Low-Fit), in terms of both perceived and actual performance, consistent with H3. For the variables *PERCPERFORM*, *USEFULMCS*, and *SALES-GROWTH*, the difference in mean performance across the two subsamples is statistically significant. For *STOREGROWTH*, though insignificant, the difference is in the predicted direction.

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[24] Note that since my measure of size is based on current data, a positive association with performance can partly reflect a survivorship bias (Brown et al. 1997) or simply that top performers grew bigger.

TABLE 7
Performance Tests

Panel A: Univariate Results[a]

Performance Variable	Mean for Subsample		Difference in Means	t-test (Pr > t)	Wilcoxon Test (Pr > z)
	High-Fit *FIT* = 1	Low-Fit *FIT* = 0			
PERCPERFORM	3.94	3.50	0.45	0.038	0.064
USEFULMCS	5.78	4.33	1.45	0.001	0.001
SALESGROWTH	0.47	0.24	0.23	0.059	0.032
STORESGROWTH	0.28	0.22	0.06	0.174	0.121

Panel B: Multivariate Results

$$Performance = f(FIT_i, \ CEOCHANGE_i, \ EXPERIENCE_i, \ VCDUMMY_i, \ SIZE_i, \ AGE_i)$$

	Performance Measure			
	Ordinal Logits[b]		OLS Regressions	
	PERCPERFORM	*USEFULMCS*	*SALES GROWTH*	*STORE GROWTH*
Constant			0.635	0.144
p-value			0.031	0.204
FIT	1.288	2.209	0.321	0.158
p-value	0.032	<0.001	0.020	0.016
CEOCHANGE	−2.468	−0.039	−0.120	−0.014
p-value	<0.001	0.947	0.480	0.842
EXPERIENCE	0.339	0.552	−0.055	0.128
p-value	0.592	0.373	0.746	0.068
VCDUMMY	0.688	0.169	−0.025	0.076
p-value	0.346	0.813	0.860	0.314
SIZE	0.004	0.003	0.0002	0.0001
p-value	0.019	0.044	0.347	0.342
AGE	0.081	−0.100	−0.031	−0.009
p-value	0.156	0.077	0.058	0.173
R^2 (n)	0.156[c] (55)	0.111[c] (55)	0.297 (22)	0.161 (42)
Prob > χ^2: **Likelihood ratio test of proportionality of odds**	0.494	< 0.001		

[a] p-values in the univariate analysis describe one-tailed tests.
[b] Cutoff points predicted for the ordinal logit are untabulated.
[c] Pseudo-R^2s are reported for ordinal logit results.

PERCPERFORM =	a categorical variable drawn from a question in the survey, measuring managers' perception of firm's performance since founding, in a scale where 1 indicates bottom performance and 5 top;
USEFULMCS =	a categorical variable from the survey where managers were asked to assess from 1 to 7 the overall contribution of initial MCS to the development of their firms (with 7 being most useful);
SALESGROWTH, STOREGROWTH =	the geometric average of the annual growth of sales and number of stores respectively, starting on the year MCS were first introduced in the firm (using all data available);

TABLE 7 (Continued)

            FIT = a dummy equal to 1 if the firm implemented the MCS predicted as the
                    most probable by the multinomial logit model, and 0 otherwise;
    CEOCHANGE = a dummy variable that indicates whether the founder was replaced by a
                    CEO (1) or not (0);
   EXPERIENCE = a dummy indicating if CFO had experience introducing MCS in growing
                    firms (1) or not (0);
      VCDUMMY = a dummy indicating whether firm received VC funding (1) or not (0);
          SIZE = the number of stores in the firm; and
           AGE = the number of years since the date of founding.

Multivariate results in Table 7, Panel B, show a significant positive association between *FIT* and all the performance measures, providing further support for H3.[25] As for the control variables, as predicted *SIZE* and *EXPERIENCE* are positively related to the measures of initial MCS usefulness and business performance, although the relation is statistically significant only in some cases. *AGE* is negatively related to *USEFULMCS* and *SALES-GROWTH*, perhaps since *AGE* captures improvements in technology that may have resulted in more useful initial MCS, as well as higher growth possibilities in younger retail firms. Somewhat surprisingly, *CEOCHANGE* is negatively related to most performance variables, although significantly so only when *PERCPERFORM* is the dependent variable.

To verify the robustness of the univariate and multivariate results, I also redefined the variable *FIT* in two ways: (1) *FITabove40*, a dummy equal to 1 if the firm emphasizes a category of initial MCS with a predicted probability of being selected above 40 percent (based on the multinomial logit model) and introduced at least 50 percent of the individual control systems associated to that category, and 0 otherwise; and (2) *FITdegree*, a continuous variable measuring the probability that the firm emphasized the observed category of initial MCS, based on the multinomial model. The key findings remain unchanged (untabulated results).

Note that the performance effect presented above cannot be exclusively attributed to the fit between the initial MCS and the strategy, since the multinomial model is also based on other organizational variables separate from the strategy. I conduct two additional analyses to better understand whether the fit between initial MCS and strategy plays a role on performance: (1) I replicate the results in Table 7, Panel B for the subsample of firms with a differentiation score above median, given that differentiation was the only strategy variable that was a significant predictor in the multinomial model; (2) I replicate the results in Table 7, Panel B using a re-defined *FIT* variable, where the multinomial model is substituted for one that only includes the strategy variables as explanatory variables. The *FIT* variable is positively related to the usefulness of initial MCS and all business performance measures in both tests (1) and (2). However the result becomes insignificant when the dependent variable is *STOREGROWTH* in test (1), and when the dependent variables are *PERCPER-FORM* and *SALESGROWTH* in test (2).

VII. CONCLUSIONS

This study provides insights about the choices made by entrepreneurs when deciding what type of initial MCS to introduce, and the determinants and consequences of such

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[25] In the bottom row of Table 7, Panel B, I test the proportional odds assumption implicit in the Ordinal Logit model. The assumption is not rejected for the test using *PERCPERFORM* as the dependent variable. However, the assumption is rejected at the 1 percent level when *USEFULMCS* is the dependent variable. To verify the robustness of the *USEFULMCS* results, I additionally run an OLS regression and find similar results (i.e., *FIT* remains positively and significantly related to *USEFULMCS* at the 1 percent level).

choices. Looking at a sample of store-based retailers, I find that early-stage firms tend to introduce four categories of initial MCS based on the purposes pursued: Basic MCS, which are similar across all firms, are used to collect information for planning and establishing basic operations; Cost MCS, which are introduced to achieve operation efficiencies and cost minimization; Revenue MCS, which are used to achieve growth and learn about—and be responsive to—the market; and Risk MCS, which are used to reduce risks and protect asset integrity.

I hypothesize and find that the choice among these categories of initial MCS depends on the firm's strategy and structure, and that firms that choose initial MCS better suited to their strategy perform better than other firms. The findings, however, should be interpreted with caution. First, the focus on a single industry—the retail sector—rather than multiple industries may limit the ability of generalizing the results, particularly with respect to manufacturing companies where technological considerations may affect the choice of the types of initial MCS (see Chenhall [2003, section 5.2] for a summary on technology contingencies). Second, ideally this study should have used ''real-time'' data, rather than relying on the recollections of survey respondents, and should have employed triangulation (i.e., more than one respondent per firm) to minimize memory and interpretation biases. In practice, such an approach would have been prohibitively costly and time consuming. Third, the weak results relating the low-cost strategy with the use of Cost MCS and Risk MCS should not be taken as conclusive, since this finding may be reflecting lack of power due to the small sample size. Finally, the study also presents potential survival and self-selection biases. I partially mitigated the survival bias by including firms ranging from 2 to 20 years old, the self-selection problem by increasing efforts to maximize the rate of response.

Notwithstanding these limitations, the results presented in this study contribute to an emerging literature in the accounting, control, and entrepreneurship fields concerned with the development of MCS in early-stage businesses. By establishing the importance of contingencies in the choice of different types of initial MCS in early-stage firms and by providing evidence on the performance implications of that choice, this study calls for more work to deepen our understanding of the trade-offs faced by early-stage firms when implementing MCS.

APPENDIX
Variables for Models of Choice and Performance

Panel A: *CHOICEMCS$_i$ = f(LOWCOST$_i$, DIFFERENTIATION$_i$, CONTROLS$_i$)*

	Expected Relation to Dependent Variable
LOWCOST is a principal components measure that captures 81 percent of the variation in two questions: (1) the extent to which the firm's customers search for lower prices and, (2) the emphasis the firm places on lower prices and promotions as a way to attract and retain customers. The corresponding Cronbach's alpha is 0.77.[a]	Emphasis on: Cost and Risk MCS

DIFFERENTIATION is a principal components measure that captures 65 percent of the variation in three questions: (1) the customer's demand for uniqueness, (2) the extent to which the firm offers unique products highly valued by target customers, and (3) the extent to which the firm emphasizes service and customization to the customers. The Cronbach's alpha in this case is 0.70.[a]	Emphasis on: Revenue MCS
DECENTRALIZATION is a composite measure developed through principal components analysis of items describing the extent of decentralization in the firm. It explains 78 percent of the variation found in two questions in the survey that ask about the extent to which store managers have authority to make decisions about: (1) hiring and firing personnel, (2) signing invoices. Cronbach's alpha is 0.56. Higher values indicate higher levels of decentralization (decision making by managers rather than head office).	Emphasis on: Cost and Risk MCS
DIVERSITY is a measure of the heterogeneity of activities in the firm. It is a composite measure developed through principal components analysis that captures 86 percent of the variation of four questions (three Likert-based questions on the firm's strategic emphasis on the diversity and the relative breadth and depth of the assortment, and one question indicating the number of SKUs offered by the retail company). The Cronbach's alpha is 0.70.	Emphasis on: Cost MCS
FRANCHISE is a dummy indicating whether a firm grew mostly through franchising or not.	Emphasis on: Risk and Revenue MCS
SUBSIDIARY is a dummy indicating whether the retail firm is/was a subsidiary or spin-off from a larger company (general information, first section of the survey).	Emphasis on: Risk MCS
VCDUMMY is a dummy indicating whether the firm received VC funding or not before the introduction of initial MCS.	Emphasis on: Revenue MCS
RESTAURANT is a dummy indicating whether the firm is an eating and/or drinking establishment (SIC 5812) or not (obtained from One Source and Career Search).	Emphasis on: Risk and Cost MCS
SEARCHSTRAT is a dummy indicating whether the firm defined its strategy after introducing its MCS (1) or not (0).	Emphasis on: Cost and Revenue MCS

Panel B: *PERFORMANCE$_i$ = ƒ (FIT$_i$, CONTROL VARIABLES$_i$)*

CEOCHANGE is a dummy indicating whether or not the founder was replaced by a CEO before the introduction of initial MCS.	Positive
EXPERIENCE is a dummy indicating whether the person introducing the initial MCS (e.g., CFO) had previous experience introducing controls in growing firms.	Positive
AGE is the number of years since the date of founding.	Positive
SIZE is the number of stores in the firm.	Positive

VCDUMMY is a dummy indicating whether the firm received   Positive
VC funding or not before the introduction of initial MCS.

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^a Chenhall and Langfield-Smith (1998) use similar questions to identify cost leadership and differentiation
   strategies.

[a] Chenhall and Langfield-Smith (1998) use similar questions to identify cost leadership and differentiation strategies.

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