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The Effect of Conducting Systematic Marketing on Start-up Firm Valuation

Abstract

Start-up firms play a major role in the economy, but little is known about the role of marketing in their development. We develop a conceptual model explaining what characteristics lead start-up firms to conduct systematic marketing, how that marketing affects firm valuations, and how the firm's stage of development (early versus late) and primary customer-type (B2B versus B2C) moderate the marketing-firm valuation link. We test our conceptual model using a dataset from Equidam, a start-up firm valuator, which contains information on 1,178 start-up firms in the U.S., and financial statements for 373 of these firms. Among other results, we find that conducting systematic marketing is most beneficial to the valuations of early-stage B2B and later-stage B2C start-up firms. We also find that early-stage B2B start-up firms are the firms least likely to conduct systematic marketing. Additional analysis on a separate sample of 377 start-up firms supports our conceptual model and findings. Start-up firms can use these results to identify whether and when conducting systematic marketing provides the most benefits to the financial valuations of their firms.

Keywords: *start-ups; signaling theory; marketing-finance interface; entrepreneurship*

Start-up firms are often considered major drivers of economic growth, due to their impact on economic productivity, innovation, and job creation (Kauffman Foundation 2013). However, while the successes of a few start-up firms are well publicized (i.e., consider past "unicorns" or \$1 billion+ valued firms such as Google, Facebook, Airbnb, and Alibaba), start-up firms rarely reach the level of success of these well publicized firms. Indeed, it is actually quite difficult and rare for start-ups to succeed at any level. For example, according to U.S. government statistics, less than 0.05% of start-up firms in the U.S. make it to an initial public offering (IPO) (U.S. Census Bureau 2017b) and only around 1% of start-up firms obtain Venture Capital (VC) funding (U.S. Census Bureau 2017a). In addition, the vast majority (nearly 90%) of start-up firms fail (Patel 2015), with only around half of start-up firms surviving within five years of their formation (U.S. Bureau of Labor Statistics 2016).

For large and mature firms, the marketing field has developed generalizations and a good understanding on how marketing-mix efforts contribute to firms' financial performance and valuations. For example, Hanssens (2015), Edeling and Fischer (2016), and Moorman and Day (2016) review numerous studies on the effectiveness of marketing and how marketing-mix efforts can improve the performance of the firm. However, these reviews focus almost exclusively on large and mature firms. Further, these and the many other studies on marketing effectiveness in large and mature firms have almost always assumed that some systematic marketing is necessary and is being conducted. Thus, the focus of such studies has been on determining the optimal level and effectiveness of marketing spending.

In contrast to large and mature firms, start-up firms are 60 times more likely to report being resource constrained than to report sufficient resources for their development (Evans and Jovanovic 1989; Wasserman 2012). Consequently, for start-up firms, conducting systematic marketing ---when firms report conducting marketing on a systematic and on-going basis as opposed to not conducting marketing or only conducting marketing on an ad hoc and opportunistic basis --- often requires them to redirect scarce resources from other

aspects of their business. As a result, as confirmed through numerous interviews with the founders of start-up firms, many such firms do not report themselves as conducting systematic marketing, per Moorman and Day's (2016) four "C's" definition of a marketing organization: capabilities, configuration, (human) capital, and culture. One (typical) response in our interviews was "Marketing?? We don't do any real marketing ... we have much more important issues than marketing to focus on." A 2015 Capital One survey of small business owners supports this observation, reporting that 76% of owners face marketing challenges, 64% feel they are unable to effectively market their businesses, and 39% report that their firms have not executed any marketing initiatives in the past six months (Capital One 2015).

Thus, unlike for larger, mature firms, it is unclear (a) which, if any, start-up firms conduct systematic marketing, (b) what causes those start-up firms that conduct systematic marketing to do so, and (c) what benefit, if any, those start-up firms that conduct systematic marketing derive from that investment. In this paper, we address these largely unexplored questions.

A particular challenge to study start-up firms is that, in contrast to larger and more mature firms, many start-up firms report little or no current sales, and most have very little sales or financial history (Korteweg and Sorensen 2010). Hence, the sales and/or profit-response-to-marketing spending measures most often applied to large, mature firms noted above cannot be used for start-up firms. Further, data are difficult to obtain on a large scale for both start-up firms and their valuations (Shane and Venkataraman 2000, p. 219), limiting quantitative analysis on the topic (Wasserman 2017). Thus, the focus of most of the research in marketing on start-up firms has been on (atypically) successful later-stage start-up firms that are either VC-backed (e.g., DeKinder and Kohli 2008; Homburg et al. 2014) or attained an IPO (e.g., Kurt and Hulland 2013; Luo 2008; Saboo, Chakravarty, and Grewal 2016; Saboo and Grewal 2013; Saboo, Kumar, and Anand 2017; Xiong and Bharadwaj 2011).¹

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Consequently, both because of start-up firms' lack of resources that often restricts them from

conducting marketing, and due to data limitations inherent in the start-up environment, little is known about whether and how marketing impacts the financial valuations of start-up firms.

To help overcome this lack of knowledge, we followed a grounded theory approach (e.g., Fischer and Otnes 2006) and interviewed 29 founders, investors, and consultants working with start-up firms to gain a better understanding of the causes and consequences of start-up firms' conducting systematic marketing. We integrated the resulting insights with signaling theory (e.g., Spence 1973) and a literature review conducted across several business disciplines (i.e., marketing, entrepreneurship, management, and finance) to develop a conceptual model that identifies two moderators, the stage of the start-up firm's development (early vs. late stage) and its target customer (B2B vs. B2C), and focuses on how their interactions affect the relative benefits to a start-up firm of conducting systematic marketing. In addition, to account for systematic, structural reasons a start-up firm would conduct systematic marketing, we also identified a number of managerial, firm, and industry control variables based on a start-up firm's resources, the makeup of its top management team, and its industry environment.

To empirically test our model, we used cross-sectional data provided by EQUIDAM, a website that start-up firms use to obtain a valuation of their firm. The EQUIDAM data contain extensive information on 1,178 start-up firms in the U.S., and financial profit and loss statements for 373 of these firms, including a binary measure of whether start-up firms report themselves as conducting on-going, systematic marketing or not. Our empirical results, employing three distinct methods of financial valuation, support the proposed model: conducting systematic marketing is more beneficial to the valuations of early-stage B2B and late-stage B2C start-ups firms than to early-stage B2C or late-stage B2B start-up firms. We also find that early-stage B2B start-up firms are the firms least likely to report conducting systematic marketing. Further, we find that for early stage B2C firms, conducting systematic marketing is actually associated with a lower financial valuation than when such firms are not

conducting systematic marketing. Our results are robust across a number of alternative model specifications and financial valuation metrics as well as when tested on survey data from 377 firms unrelated to the Equidam sample.

Our conceptual model and empirical results contribute to theory and practice as follows. Our model identifies conditions under which start-up firms are more likely to conduct systematic marketing and when conducting such marketing is most beneficial to the financial valuations of start-up firms. Further, our results provide one of the few empirical analyses of the role marketing plays or should play in start-up firm valuation. In addition, from the perspective of practice, we find that more than half of early-stage start-up firms in our two samples could either improve their valuations by conducting systematic marketing (i.e. early-stage B2B start-ups that are not conducting systematic marketing) or improve their valuations by not conducting systematic marketing (i.e. early-stage B2C start-ups that are conducting systematic marketing). Consequently, as detailed later in the Discussion, these contributions provide a step towards theoretically and empirically understanding *whether and when* conducting marketing is associated with better or worse financial valuations for start-up firms.

We proceed as follows. The next section provides definitions of our core constructs. Subsequently, we detail our conceptual model and hypotheses. Then, we describe our empirical data and descriptive statistics. After, we detail our analytic approach, empirical results, and provide a summary of robustness tests and an additional analysis conducted on a second sample. We conclude with a discussion of our theoretical and managerial contributions, the limitations of our work, and the opportunities for future research.

Definition of Core Constructs

We first define our three core constructs: (1) what is a start-up firm? (2) how to determine if a start-up firm is conducting systematic marketing? and (3) what is a start-up firm's financial valuation?

To address construct (1), according to the Center for American Entrepreneurship (2018), the definition of a start-up is a firm that is:

"....managed by entrepreneurs, often under considerable personal and financial risk, and [are] temporary in duration, as a phase in a business's lifecycle. A key distinction between start-ups and other small or young businesses is an aspiration (realized or not) to substantially grow."²

To address construct (2), we must determine what it means for a firm to be conducting systematic marketing. To address this issue, we draw on Moorman and Day's (2016) four "C's" based definition of a marketing organization: capabilities, configuration, (human) capital, and culture. Based on that definition, we posit that start-up firms that conduct marketing on an on-going and systematic basis are more likely to be aligned with all four "C's" in the Moorman and Day (2016) framework than start-up firms that do not conduct systematic marketing or only conduct marketing on an ad hoc basis.

To validate this definition empirically, we first conducted 29 in-depth managerial interviews with a range of start-up stakeholders (see Web Appendix A). Those interviews revealed a major disparity between start-up firms that considered themselves as conducting marketing on an on-going and systematic basis and those that did not or only perceived themselves as conducted marketing on an ad hoc basis. Second, Equidam asked firms their most applicable type of promotion/ communication method for both online and offline marketing from a pre-set list of activities. While these lists of activities were not intended to be comprehensive, we found that firms that do not conduct systematic marketing were significantly more likely than firms that do conduct systematic marketing to indicate that none of these promotion / communication methods were applicable to their business (both $p < .01$). In fact, 23% (vs. 5%) of firms that did not (vs. did) conduct systematic marketing answered none of the online promotion/ communication methods were applicable to their business, while 29% (vs. 9%) of these firms answered that none of the offline methods were applicable. Further, firms that conduct systematic marketing were over two and a half times

(27% vs. 10%) more likely to report conducting Google Ads marketing as their primary online promotion / communication method ($p < .01$) and nearly twice (16% vs. 9%) as likely to report conduct press and other traditional media advertising as their primary offline promotion / communication method ($p < .01$).

Third, we collected and analyzed survey data from 377 start-up firms (see Appendix). Those data demonstrate that start-up firms that report they *do not* conduct marketing on a systematic basis *are much less likely* to have each component of Moorman and Day's (2016) four "C's" based definition of a marketing organization than firms that report they *do* conduct marketing on a systematic basis. For example, in terms of the marketing configuration of start-up firms, as reported in Appendix Table 1, 32% (vs. 0%) of those firms that do not (vs. do) conduct systematic marketing indicated they did not conduct any marketing at all and 37% (vs. 3%) of such firms indicated they do not consider any of the 4 types of P's as marketing in their firms. In terms of (human) capital, only 11% (vs. 75%) and 15% (vs. 84%) of start-up firms that do not (vs. do) conduct systematic marketing indicated they have a founder with a marketing background, or an employee dedicated to marketing tasks, respectively. Large disparities also exist between firms that do and do not conduct systematic marketing in terms of their marketing capabilities and culture (see Appendix Table 1). Thus, we consistently find in our interviews and empirical analyses that firms that do and do not report conducting systematic marketing vary greatly and are readily identified in line with Moorman and Day's (2016) four "C's" based definition.

To address point (3), we note that due to the uncertainty of the future for most start-up firms, venture capitalists and valuation specialists normally deploy multiple valuation approaches (e.g., McClure 2019). We follow the spirit of that approach here, focusing on three very different methods in our main analysis and assess the robustness of our findings in detail afterward.

Conceptual Model

Financial valuations of start-up firms are notoriously difficult to assess (Gompers 1995), largely due to the information asymmetry between start-up firms, their current and potential customers, and their current and potential investors (Wasserman 2012). Start-up firms' customers often lack information on the firms and the quality of their offerings, and the firms often lack information on their customers, their needs, and how best to satisfy them (Ofek, Muller, and Libai 2016). Similarly, this information asymmetry leads to uncertainty for current and potential investors, making it difficult to value such firms (Sanders and Boivie 2004). Hence, research in the entrepreneurship discipline has employed observable signals as surrogate indicators of quality since the true value of the start-up firm is often difficult to ascertain (Kirsch, Goldfarb, and Gera 2009).

The signaling theory framework, commonly used in the entrepreneurship literature (e.g., Sanders and Boivie 2004), views start-up firms' actual quality as unobservable. This inability to observe true quality exists for both current and potential customers, and current and potential investors who, as a result, must rely on observable signals provided by the firm to make inferences about a firm's financial value (Kirmani and Rao 2000). Current and potential customers and investors also face an adverse selection problem, where they possess little information to assess the start-up's products and services, so contextual information provides important indicators of quality (Gu et al. 2010). For higher-quality, higher-value start-up firms to signal themselves as such, they must send signals of their quality to the market by conducting costly and observable strategic actions that their lower-quality and lower-value competitors cannot afford to imitate. The strength of the signal produced depends on the extent of the uncertainty and information asymmetry in the market, and the perceived costs to send such signals (Mishra, Heide, and Cort 1998). Consequently, if the signal is costless, or if there is low information asymmetry in the market, the signal produced

is weak (Moorthy and Srinivasan 1995). In contrast, if the signal is costly and high information asymmetry exists, the signal produced is strong (Kalra and Li 2008).

For start-up firms, conducting on-going and systematic marketing should generally provide an important, observable signal to customers and investors that the firm seeks to improve its perceived level of quality (Gu et al. 2010). However, the internal and external environments of start-up firms vary widely, so the effect of the signal of conducting systematic marketing on financial valuations should vary depending on those factors as well. Yet, the literature on marketing's role in start-up firms has not identified such factors or contingencies.

To bridge this gap in the literature and develop a deeper knowledge on the role of systematic marketing in start-up firms, we followed a grounded theory approach. According to Fischer and Otnes (2006, pp. 21-22), a grounded theory approach is appropriate when fundamental "questions about the nature of a new construct" exists and when there are "previously unrecognized facilitators or implications of a construct." Hence, we conducted interviews with 14 founders, 5 investors, and 10 consultants, including heads of incubators, accelerators, and government managers that work with start-up firms. In Table 1 (shown after the references), we provide a sample of quotes obtained from the interviews. In Web Appendix Table 1, we provide characteristics of the interviewees.

Three insights emerged from these interviews, which we summarize here and refer the reader to Web Appendix A for detailed analysis. First, not all start-up firms conduct marketing on an on-going and systematic basis. Second, however, conducting such marketing provides a signal about the start-up firms' quality to the investment community. Third, these signals of quality vary depending on the type of customer (B2B/B2C) and stage of development (late/early). One investor summarized all three findings by stating that the benefits of conducting marketing on a systematic and on-going basis "... depends on what field you are in (B2B/B2C) and what stage (of development) you are in."

The next step of a grounded theory approach is to link such qualitative findings with established constructs and theories. For our research, the three insights garnered from our interviews nicely align with research in information transmission in marketing following Spence's (1973) original signaling framework. That research (e.g., Groening, Mittal, and Zhang 2016; Saboo and Grewal 2013) indicates that the viability and credibility of signals depend on two factors: (1) the presumed costs to send such a signal and (2) costly state falsification.

In our start-up firm context, the stage of development (early or late; i.e., whether the firm is consistently generating revenues) is likely to impact the credibility and viability of the signal provided by a start-up firm conducting systematic marketing by affecting the presumed costs of the signal, driving factor (1). This is because early-stage start-up firms typically possess fewer overall resources than late-stage start-up firms (e.g., Wasserman 2012), which increases the human, financial, and opportunity costs associated with such firms to be able to conduct systematic marketing.

The type of customer (B2B or B2C) should also impact the credibility and viability of the signal provided by start-up firms conducting systematic marketing, as B2B start-up firms are likely to face greater costly state falsification for providing false signals than B2C start-up firms, driving factor (2) above. In B2B markets, potential and current customers typically possess far greater knowledge of product and service offerings in their industry than potential and current customers in B2C markets (Kirmani and Rao 2000). B2B customers are also more connected with each other and are fewer in numbers than B2C customers. Hence, false signaling of quality by B2B start-up firms conducting systematic marketing would result in a more severe punishment in terms of their valuations than for B2C start-up firms, since that false signaling would leave such B2B start-up firms with fewer potential customers to purchase their products or services (Prabhu and Stewart 2001).

Further, the interactions between stage of development and target customer should affect the signals associated with conducting systematic marketing. For example, the stage of the development of the firm should impact the ability for certain target customers to extract costs and share information on the quality of the applied signal (Kalra and Li 2008). Thus, early-stage B2B firms, whose customers are typically knowledgeable but also limited in number, are likely to face a highly knowledgeable customer and investor base. That base is likely to have a better ability than early-stage B2C or late-stage B2B start-up firms' customers to judge the quality and costs of a signal provided by a such a firm conducting systematic marketing. In contrast, late-stage B2C start-up firms typically have a greater number of overall customers than do early-stage B2C or late-stage B2B start-up firms. Consequently, late-stage B2C start-up firms should be better able to communicate the true quality of the start-ups' offerings to a larger audience of potential and current customers than early-stage B2C or late-stage B2B start-up firms. Hence, to enrich our model and analyses, we focus our conceptual model and hypotheses on the four possibilities that emerge from the interactions between stage of development and target customer (B2B vs. B2C target customer X early vs. late stage of development).³

Integrating these managerial interview-based insights and theoretical arguments, we propose our conceptual model in Figure 1 (shown after references). Our primary focus is on the consequences of when firms consider themselves as conducting systematic marketing (right-side of Figure 1), while our secondary focus is on the antecedents (left-side of Figure 1). Table 2 (shown after references) provides a road-map for our conceptual model and hypotheses for whether and when conducting systematic marketing is expected to provide a greater benefit to start-up firms' financial valuations. We develop these hypotheses in more detail next.

Hypothesis Development

Main Effect of Conducting Systematic Marketing

To create disruptive technologies that produce the greatest financial rewards and achieve the highest start-up firm valuations, scholars in the strategy and entrepreneurship literature (e.g., Christensen 2015) suggest start-up firms need to build products or services beyond current customers' wants and needs. Further, as start-up firms are often valued based on the technical capabilities of the firm (Tzabbar and Margolis 2017), start-up firms may be concerned that conducting systematic marketing can take away needed resources from developing technically superior products or services, a view articulated by many founders and consultants in our interviews.

However, based on the literature on signaling and on the benefits of conducting marketing, there are several reasons to expect conducting systematic marketing to provide value and a signal to the marketplace about the start-up firm's quality, which should positively impact the firm's financial valuation. First, start-up firms compete in an highly uncertain environment where there is ambiguity about the firm, products or services offered, and the firm's relationships with current and potential consumers (Wasserman 2012). Thus, conducting (vs. not conducting) systematic marketing should provide customers and investors information about their firm and its products and services, and result in a reduction of such uncertainty. Second, conducting systematic marketing is a major expense for start-up firms, which are limited in resources (Higgins and Gulati 2006). Consequently, conducting systematic marketing should provide an observable signal about the legitimacy and sustainability of the start-up firm and its products. Third, conducting systematic marketing provides a signal of the start-up firms' orientations, strategies, and foci. By conducting systematic marketing, start-ups signal that they are trying to account for customers' wants and needs (Saboo, Kumar, and Anand 2017). Thus:

H1: Start-up firms that conduct systematic marketing will on average have higher financial valuations than start-up firms that do not conduct systematic marketing.

Relative Effects of Conducting Systematic Marketing

Early-Stage B2B vs. B2C Firms. The credibility and viability of signals of quality provided by start-up firms conducting systematic marketing is likely to depend on the ability of their current and potential customers to connect with one-another to validate the quality of the signal (DeKinder and Kohli 2008). In B2B markets, potential and current customers typically possess far greater knowledge of product and service offerings in their industry than potential and current customers in B2C markets (e.g., Kirmani and Rao 2000). Further, the buying processes of B2B customers are far more formalized and rational than for B2C customers (Webster and Wind 1972). Thus, for lower-quality early-stage B2B start-up firms, it should be more difficult to promote false signals of high-quality by conducting systematic marketing to a more educated target customer than for lower-quality early-stage B2C start-up firms. In addition, as there are typically fewer customers for early-stage B2B start-up firms to target than for early-stage B2C start-up firms, the penalty for providing false signals should exact a more severe punishment, since those false signals would leave such firms with fewer potential firms to purchase their products or services (Prabhu and Stewart 2001).

Hence, while early-stage B2C start-up firms may also need to conduct systematic marketing to attract new customers, lower-quality early-stage B2C start-up firms that provide a signal of high-quality by conducting systematic marketing face a less costly state falsification penalty than do lower-quality early-stage B2B firms. For example, many lower-quality early-stage B2C brands in a variety of industries, such as in mobile apps, conduct systematic digital marketing campaigns. However, the punishment from customers not adopting a product after realizing the marketing conducted by the B2C firm was a false signal of the firm's quality is not as costly to the firm because of the sheer number of additional potential customers. Further, for mostly unfamiliar "brand-less" early-stage B2C start-up

firms, conducting systematic marketing should be less effective than for early-stage B2B start-up firms who are mostly connecting with their professional networks, as this lesser recognition and ability to differentiate firm quality via marketing would diminish the signal's viability and credibility. Thus:

H2a: Conducting systematic marketing will have a greater positive association with the financial valuations of early-stage B2B start-up firms than for early-stage B2C start-up firms.

Early vs. Late-Stage B2B Firms. For B2B firms, success often depends on the extent of customers' trust and commitment to their relationships (Palmatier, Dant, and Grewal 2007). However, early-stage start-up firms typically possess minimal liquid assets and money, few employees, and little ability to specialize in various functions of the firm, especially compared to later-stage start-up firms (Wasserman 2012). Hence, early-stage B2B start-up firms often find it difficult to develop relationships with key customers (Saboo, Kumar, and Anand 2017), and these relationships with key customers often take a long time to develop and formalize in contracts (Zhang et al. 2016). Consequently, for early-stage B2B start-up firms to be rewarded for conducting systematic marketing, they must send a costlier signal of organizational commitment and buy-in by the top management team than later-stage B2B start-up firms.

Our interviews with founders of successful early-stage B2B firms revealed that their systematic marketing involved personal involvement in talking to, learning about, and improving how they marketed their offerings to current and potential customers. In addition, founders noted that they felt that only early-stage B2B firms confident of their quality and long-term prospects will engage in a relationship and provide a signal of their quality by conducting systematic marketing. Founders explained that they feared breaking the often-personal level of trust and commitment required between the founders of early-stage B2B firms and their B2B clients. In contrast, our interviews revealed that marketing specialists are

typically hired in late-stage B2B firms, so their top management does not engage in as much personal trust and commitment building with potential B2B clients. Thus:

H2b: Conducting systematic marketing will have a greater positive association with the financial valuations of early-stage B2B start-up firms than of late-stage B2B start-up firms.

Early vs. Late-Stage B2C Firms. Late-stage B2C start-up firms typically have a greater number of overall customers than early stage firms, and those customers should be better able to evaluate the true quality of the start-ups' offerings and share that evaluation with a larger audience of potential and current customers (Saboo and Grewal 2013). Therefore, it should be beneficial for high-quality late-stage B2C start-up firms to conduct systematic marketing to signal the firm's quality to the mass market in a manner similar to how large B2C firms operate; i.e., where customers and investors can determine whether the firm's products and services match marketplace wants and needs (e.g., Joshi and Hanssens 2010). Hence, investors in our interviews noted that they strongly rely on later-stage B2C start-up firms' customer metrics such as loyalty, acquisition and retention rates, and number and extent of enthusiasts of the product or service when making their investment and screening decisions . In contrast, the same investors noted less reliance on such customer metrics from earlier-stage B2C start-up firms who have not had the time to develop sufficient interactions with their customers. These early-stage B2C start-up firms likely have many potential customers, but connections with few of them, leading to low likelihood of customer-to-potential customer connections (DeKinder and Kohli 2008) and a less credible signal of firm quality derived from conducting systematic marketing. Thus:

H2c: Conducting systematic marketing will have a greater positive association with the financial valuations of late-stage B2C start-up firms than with early-stage B2C start-up firms.

Late-Stage B2B vs. B2C Firms. To increase late-stage B2C start-up firms' financial valuations based on investor evaluations of their customer-based metrics, late-stage B2C start-up firms must develop a large, devoted customer base. A manager of a state government

agency we interviewed, who was tasked with nurturing that state's start-up firm environment, described marketing as a key strategic activity late-stage B2C start-up firms need to engage in to signal to investors their ability to scale up to develop such a customer base. In contrast, for late-stage B2B start-up firms, successful founders spoke more about *passively* relying on their partners either via referrals or co-creating products and services to gain new customers and consistently grow. This passive approach to growth resulted in many late-stage B2B start-up firms relying on an ad hoc and opportunistic marketing approach, i.e., marketing when such opportunities arise, rather than an on-going and systematic marketing approach.

Thus:

H2d: Conducting systematic marketing will have a greater positive association with the financial valuations of late-stage B2C start-up firms than of late-stage B2B start-up firms.

Overall Rankings. Based on our earlier arguments, we expect conducting systematic marketing to have the greatest benefit for early-stage B2B firms. For such firms, conducting systematic marketing requires the top management team to engage in personal marketing with knowledgeable potential clients, who can enact costly state falsification on firms that promote false signals of quality. Hence, conducting systematic marketing necessitates organizational integration of marketing in early-stage B2B firms with this organizational integration and personal engagement producing a strong, viable, and credible signal of firm quality.

In contrast, we expect conducting systematic marketing to have the least effect on the financial valuations of early-stage B2C firms. Current and potential customers of early-stage B2C firms have very little ability to extract the true costs of conducting systematic marketing: those customers have little connection with those firms, and have little ability to punish poorer quality early-stage B2C firms for a false signal because such firms have a very large number of additional potential customers. Consequently, the credibility and viability of the

signal provided by early-stage B2C firms conducting systematic marketing should be low.

Thus:

H3a: Of the four contingencies (B2B/B2C x Early/Late), conducting systematic marketing will have the least positive association with the financial valuations of early-stage B2C firms.

H3b: Of the four contingencies (B2B/B2C x Early/Late), conducting systematic marketing will have the largest positive association with the financial valuations of early-stage B2B firms.

Controlling for Causes for Why Firms Conduct Systematic Marketing

In Table 2, we summarize our main hypotheses for when conducting systematic marketing is expected to provide a greater benefit to start-up firms' financial valuations. To account for the organizational and environmental processes that underlie whether or not start-up firms conduct systematic marketing, we control for characteristics of the firm, top management, and industry. We briefly summarize the theoretical reasons for considering these three sets of characteristics here and refer the reader to Web Appendix B for more detail. Table 3 (shown after references) lists the measures and the direction of the expected effect on whether start-up firms conduct systematic marketing.

Firm Strategy Resource Antecedents. Given their lack of overall resources, start-up firms need close management and control of resource allocation (Wasserman 2012). Resource dependence theory (RDT) states that when firm resources are scarce, as with start-up firms, such firms actively manage and control the resource flows across the firm via their firm strategies (e.g., Pfeffer and Salancik 1978). Thus, we consider the following commonly used firm strategy variables (e.g., Farris and Buzzell 1979; Verhoef and Leeflang 2009) as antecedents of start-ups' conducting systematic marketing: (1) whether the firm is an early-stage B2B start-up firm or not; (2) whether the start-up is a legal entity; (3) whether the start-up maintains strategic partners; (4) whether the start-up has an internet-based business model; and (5) the size of the start-up firm.

Top Management Antecedents. The actions and strategies of start-up firms are almost always a function of decisions made by a small group of top managers and internal and external advisors (Wasserman 2012). Upper echelons theory (UET) indicates that these key decisions are driven by top management's personal understanding of the situation (e.g., Hambrick and Mason 1984). Hence, we include four top management characteristics commonly used in the entrepreneurship literature (e.g., Tzabbar and Margolis 2017; Ko and McKelvie 2018): (1) whether a top management team (TMT) member has previous managerial experience; (2) whether a TMT member has successful start-up experience; (3) whether the firm has at least an informal board of directors; and (4) whether the firm is backed by professional investors.

Industry Institutional Antecedents. Start-up firms, by their nature, both lack and seek legitimization. In such an environment, institutional theory (Scott 2013) indicates that a firm seeking legitimization will mimic the industry environment's traditions and norms to legitimize the firm to its employees, customers, and competitors. Thus, we consider two commonly used sources of industry-based institutional pressure (e.g., Mintz and Currim 2013; Porter 1980): (1) market concentration; and (2) barriers to entry.

Data, Measures and Descriptive Statistics

Data Source

We employ data from Equidam, a start-up firm valuator, to test our conceptual model. Any start-up firm can go to Equidam's website, fill in information about their firm, founders, finances, and industry, and obtain a financial valuation of their firm (see Web Appendix C for further details). In a subsequent section, we provide descriptive statistics on the firms in our sample; we note here that the data set contains a wide-range of start-ups: successful and unsuccessful, large and small, and from a number of industries. Consequently, this wide-range of firms for analysis allows us to overcome the selection bias noted in the

well performing start-ups that have obtained VC funding or have grown well beyond start-up status by doing an IPO (e.g., Korteweg and Sorensen 2010; Wasserman 2017).

As start-up firms operate in uncertain environments, they are motivated to provide accurate information to Equidam in order to obtain an accurate valuation. Our founder, investor, and consultant interviews confirmed this observation, with many founders stating that they had no idea what their valuation was but were curious to know, regardless of the possibility of obtaining an investment. Hence, as detailed in Web Appendix D, self-selection or self-report bias should not be a major issue for our analysis. In addition, as described in the robustness section, we also collect survey data on 377 start-up firms to test the robustness of our conceptual model with a separate sample.

Equidam also encourages start-up firms to include their current and anticipated profit and loss financial statements in order to obtain a more accurate valuation. However, this information is asked separately from the main, rather lengthy questionnaire, so that firm and industry data may be obtained from a larger set of firms. We employ both sets of Equidam data for our analysis here. In our analysis, we control for potential reasons for why start-up firms are more or less likely to fill out their current and anticipated profit and loss financial statements. Web Appendix D provides further details.

Measures

Independent Variables. Our focal variable is a binary (yes/no) measure of whether the start-up firm *conducts systematic marketing*, operationalized in the Equidam dataset by whether the start-up firm reports that it has or has not begun marketing on a systematic basis. For empirical details on differences between firms that do and do not conduct systematic marketing, we refer the reader to the earlier section on the definitions of our core constructs, the Appendix, and Appendix Table 1.

We operationalize the start-up firm's *stage of development* as late-stage if the start-up

that are consistently generating revenues are typically more advanced and are at a later-stage than firms that are not consistently generating revenues, a point substantiated during our interviews with start-up founders, investors, and consultants. *Target customer* indicates whether the company's main business model is B2B, B2C, or both B2C and B2B. For our main analysis, we omit the mixed B2C and B2B firms but discuss their impact on firm valuations in the Robustness section.

Dependent Variable. Prior research on start-up firms in marketing has generally based the valuation of start-ups on market-based IPO values or VC-based funding. However, as mentioned earlier, this method cannot apply to start-up firms in general, as few attain this level of achievement. Other studies in marketing and entrepreneurship have used, among other metrics, current net profits, sales, or revenue growth to assess the firm's value. A major limitation of these financial measures is that they only capture a snapshot of the firm's current financial value and do not account for the firm's future value or full-worth (e.g., Wasserman 2012). In contrast, business valuation practitioners employ several different methods to estimate the start-up firm's terminal valuations (i.e., how much the firm would theoretically be worth if it were terminated) (e.g., McClure 2019).

To mirror investors' reliance on multiple methods and perspectives for their valuations of start-up firms, we sought multiple, distinct valuation procedures that could yield very different valuations and, hence test the robustness of conceptual model and hypotheses. The following methods satisfy those criteria: (1) the venture capital or VC method, (2) the discounted cash flow or DCF with long term growth method, and (3) the current revenues method. In addition, in the Robustness section, we test 42 variations of these measures.

The VC method (e.g., Sahlman and Scherlis 1987) computes the valuation of a start-up firm based on a projected exit valuation at the end of a forecast period that depends on the firm's expected earnings before interest, taxes, debt, and amortization (EBITDA), utilizes

industry multiples, and employs a relatively high discount rate that is contingent on the firm's stage of development. It is specified as follows:

$$(1) \text{ } VC \text{ Method} = (EBITDAr * IndMultiple)/(l + df)$$

where $EBITDA$ is the start-up firm's earnings before interest, taxes, debt, and amortization in the final (T) reported year of its forecast horizon of anticipated profit and loss financial statements. $IndMultiple$ is the industry multiplier to the valuation to account for heuristics often employed by investors to account for industry differences, and d is the discount rate, which depends on the stage of the start-up firm and is greater for earlier-staged firms.⁴

The DCF with long-term growth method measure is calculated based on the start-up's current and projected operating working capital based cash flows while accounting for anticipated growth, and the discounted time value of money. It is operationalized as:

$$(2) \text{ } DCF \text{ Growth} = \frac{WorkingCap_t}{(1+d)t+1} + \sum_{t=1}^{T-1} \frac{WorkingCap_{t+1} + (WorkingCap_t * g)}{(1+d)^{t+1}}$$

where $WorkingCap_t$ is the working capital of the start-up firm in the current year, calculated based on the firm's reported current assets minus current liabilities (i.e., receivables₁ + inventory₁ - payables₁). This variable measures the liquid or "free" cash flows available to the firm that are not tied up in the firm's debt or liabilities, for which value of the firm's growth can be assessed. t is number of years in the future, with $t=1$ indicating current year and $T=5$ for our main analysis; we selected $T=5$ to conform to the report that half of all start-up firms are out of business within five years (U.S. Bureau of Labor Statistics 2016). d is the discount rate, which we set at 15%, based on industry rule-of-thumb rates of 15-20% (e.g., Skok and Reiss); and g is the expected growth rate of the firm, which we set at 1.5%, based on consultations with Equidam's staff and analysis of the reported anticipated growth rates by firms in the data. Variations of each of these parameter specifications, including employing alternative metrics to working capital, are tested in the Robustness section, with similar results found.

The current revenues method is operationalized as the firm's most recent annual revenues. These three valuation measures differ conceptually and operationally.⁵ The *VC method* employs EBITDA and industry multiples, and rewards earlier-staged firms that are expected to grow at a greater rate but ignores the level of success or failure of such firms until the end of the projected time horizon. The *DCF with long term growth method* is based on start-up firms' working capital and its expected growth over the intermediate and long term but assumes a conservative level of growth and smaller discount rates. Finally, the *current revenues method* provides a snapshot of start-up firms' current level of success based on its current revenue stream but does not capture potential growth or risk of survival via the use of growth or discount rates.

Control Variables for Antecedents of Conducting Systematic Marketing. In Table 4 (shown after references), we provide the measures and variable means for the proposed antecedents of conducting systematic marketing. These variables are directly taken from the Equidam dataset.

Descriptive Statistics

We received data from Equidam on 693 U.S. B2B or B2C start-up firms that provided full information on firm, founder, and industry characteristics; 202 of these firms also filled out their full financial information for at least three years. The 693 start-up firm dataset enabled us to test and control for antecedents of whether start-up firms conduct systematic marketing, which we call the *antecedents dataset*; the 202 start-up firm dataset enabled us to test for consequences of conducting systematic marketing, which we call *the consequences dataset*. An additional 485 firms classified themselves as mixed B2C and B2B firms, with 171 of these mixed firms providing their financial information, which we discuss in more detail in the Robustness section. Overall our dataset contains 1,178 U.S. start-up firms (antecedents dataset) with 374 of these firms providing full current year financial information (consequences dataset). The data ranges between July 2016 -April 2018 (Web Appendix C).

As reported in Table 3, the average start-up firm in our B2B and B2C consequences dataset employs 18.65 workers (median of 7), and only about a fifth of the start-ups (18%) have the backing of professional investors, indicating the relatively small size of firms in the sample. Yet, around a third (36%) of the start-up firms in the consequences dataset have a TMT member with previous entrepreneurial success, and the majority (57%) have at least an informal board of directors, demonstrating that while perhaps smaller in size, they have characteristics associated with successful start-ups. Over two-fifths (42%) of the start-up firms classify themselves as B2C firms, a little less than three-fifths (58%) classify themselves as B2B firms, and around four-fifths (82%) classify themselves in a later-stage of development. Finally, firms in our sample are split almost evenly on the question of whether they conduct systematic marketing (55% do vs. 45% do not), providing empirical motivation for our research.

In our sample, the median start-up valuations are \$5,662,944, \$433,108, and \$1,250,000, respectively, based on the VC, DCF with long-term growth, and current revenues valuation methods. These differences in valuations by type of valuation method show the diversity and range of the different types of valuations, and why multiple, divergent financial valuation methods are needed. In Figure 2, Panel A (shown after references), we provide median valuations, split-out by our focal variables, based on their log-scaled measures. As expected, the VC Method provides far greater median valuations across each focal variable, and rewards early-stage firms more than the other two measures, which give results more similar to one-another.

Figure 2, Panel B (shown after references), shows how much conducting systematic marketing is associated with an increase in start-up firm valuation for each combination of stage of development and type of customer, using median values. Across the sample, firms who conduct systematic marketing are valued greater than those that do not, based on a

B2B, late-stage B2C, and late-stage B2B start-up firms who conduct systematic marketing have a greater valuation than such firms that do not conduct marketing in nearly all three types of valuations. In contrast, Panel B reports that early-stage B2C start-up firms that conduct systematic marketing are valued less than early-stage B2C start-up firms that do not conduct such marketing. To summarize these summary statistics, major differences appear to exist in the valuations of firms that do and do not conduct systematic marketing. We next provide statistical-based analysis to better analyze such differences.

Analytic Approach and Results

The model(s) and approach

We first discuss the model for antecedents of conducting systematic marketing, as we need to control for potential endogeneity from the antecedents in the subsequent model of consequences of conducting systematic marketing. Following our conceptual model, we specify the following probit model:

$$(3) \text{ } SysMktg = \beta_0 + \sum_{w=1}^5 \beta_w FSRes_w + \sum_{p=1}^4 \beta_p TopMgmt_p + \sum_{z=1}^2 \beta_z + 9 \ln dChar + 9 \\ + \sum_{m=1}^2 \beta_m Year_m + 11 + EsysMktg$$

where *SysMktg* is whether the firm conducts systematic marketing (=1) or not (=0). *FSRes* are the five firm strategy resource variables (early-stage B2B firms vs. not, type of target customer, legal entity, internet-based business, dependency on strategic partners, and $\ln[\text{firm size}]$). The inclusion of stage of development, legal entity, and firm size, in particular, control for potentially endogeneity emanating from the fact that larger and more developed firms are likely to possess greater resources, and hence, are more likely to conduct systematic marketing (see Web Appendix B for details). *TopMgmt* are the four top management characteristics (previous managerial experience, previous start-up success, board of directors, and professional investors backing). *IndChar* are high market concentration and low barriers to entry, and *Year* are two dummy variables for the year (2017 and 2018 vs. base level 2016)

to account for additional unobservables due to the economy, political events, etc. To incorporate potential dependency between the errors of observations belonging to the same industry, we employ a robust maximum-likelihood procedure with cluster-robust standard errors by industry (e.g., Cameron and Miller 2015; Huang et al. 2019).

For our model of the consequences of conducting systematic marketing, we specify:

$$(4) \ln(TermValue_k) = a_0 + a_1 SysMktg + a_2 StageCustomer_w + a_3 StageCustomer_q + a_4 (SysMktg * StageCustomer_J) + a_5 IMRSysMktg + a_6 IMRFjnData + a_7 Controls + a_8 FinValue$$

where *TermValue* is the terminal value of the start-up firm, and *k* is an indicator for which of the three financial valuation methods (VC, DCF with long-term growth, or current revenues method) is employed as the dependent variable. *SysMktg* is whether the firm conducts systematic marketing, *StageCustomer* is a series of dummy variables indicating the 2x2 combination of stage of development and type of customer (Early/Late and B2B/B2C), and *SysMktg * StageCustomer* is the interaction indicating whether the firm in the 2x2 combination of stage of development and type of customer conducted systematic marketing.

The use of dummy values for the four combinations of stage of development and type of customer enables easier interpretability and direct tests of our hypotheses. Further, results from such an alternative model employing interactions yields similar coefficient signs and significance levels for our focal variables (See Web Appendix Table 2 for further details).

IMRSysMktg is the Inverse Mills Ratio (IMR) of whether firms conduct systematic marketing, which controls for possible selection bias and endogeneity in terms of why firms conduct systematic marketing (Wooldridge 2010).⁶ *IMRFjnData* is the IMR that controls for potential self-selection biases in start-up firms' completing their current and anticipated profit and loss financial statements in the Equidam application (see Web Appendix D for details).

For *Controls*, because of sample size limitations, we take an exploratory approach to find control variables in addition to the two year-dummy variables included to control for unobservables related to that year. We first run a main effects regression with cluster-robust

standard errors by industry in which we include all variables in the Equidam data, except our focal independent variables, that, based on theory and practice, could potentially influence start-up firm valuations. Then, based on this analysis, we include the six variables found to significantly affect ($p < .1$) the financial valuation of start-ups in this explanatory analysis: (1) whether the firm has contacted strategic partners, (2) whether the firm has a founder(s) with previous managerial experience, (3) whether the firm has discussed a concrete exit strategy, (4) whether the firm has an internet-based business model, (5) whether the firm competes in an industry with low barriers to entry, and (6) the size of the firm (number of employees, log-scaled). Exclusion restrictions are met between Equations (3) and (4) with a large number of antecedents of conducting systematic marketing not significantly impacting the consequences equation. Similarly, exclusion restrictions are met between Equation (4) and the equation that controls for potential self-selection biases of firms' completing their financial information, as several variables in the self-selection equation are not found to significantly impact the consequences equation (see Web Appendix D).

As with our model of antecedents of conducting systematic marketing, to control for potential dependency between observations in the same industry, we employ a robust maximum-likelihood procedure with cluster-robust standard errors by industry for the model of consequences of conducting systematic marketing. In the robustness section, we also estimate a model including additional controls for characteristics of the top management team, which yields similar results. In Web Appendix Table 3, Panels A and B, we provide the pairwise correlation coefficients and variance inflation scores for the antecedents and consequences datasets, respectively. We find that none of the pairwise correlation coefficients are less than -.40 or over .40 other than between the year dummy variables and between firm size and the IMR terms. In addition, we find variance inflation factor scores computed for each independent variable are below 3, so that estimation is not expected to suffer from multicollinearity (Hair et al. 1998).

Results

Consequences of Conducting Systematic Marketing. In Table 5 (shown after references), we provide the results of our regression models. To test hypotheses 1 and 2, and make the tests easily interpretable, we estimate two sets of models. For the first set of models, reported in columns 1-3, we set early-stage B2B start-up firms as the base dummy value for *StageCustomer* in Equation (3) to test whether conducting systematic marketing benefits early-stage B2B start-up firms over early-stage B2C (H2a) and late-stage B2B start-up firms (H2b). For the second set of models, reported in columns 4-6, we set late-stage B2C start-up firms as the base dummy value for *StageCustomer* in Equation (3) to test whether conducting systematic marketing benefits late-stage B2C start-up firms over early-stage B2C firms (H2c) and late-stage B2B start-up firms (H2d).

To test whether conducting systematic marketing benefits all start-up firms (H1), we examine the main effects of each model in Table 5. We find conducting systematic marketing is significantly associated with an increase in the VC method ($p < .01$; see column 1) and DCF with long-term growth financial valuations ($p < .05$; column 2) of early-stage B2B start-up firms, but not for the current revenues of such firms ($p = \text{n.s.}$; column 3). Further, we do not find conducting systematic marketing to be significantly associated in any of the three different types of financial valuations for late-stage B2C start-up firms (each $p > .1$; columns 4-6). Thus, we do not find overall support for H1, that conducting systematic marketing benefits all start-up firms.

Next, we directly compare the situations (interactions) where conducting systematic marketing is expected to provide a greater benefit to start-up firms' financial valuations (H2). First, we find that conducting systematic marketing benefits the financial valuations of early-stage B2C start-up firms and late-stage B2B start-up firms significantly less than for the financial valuations of early-stage B2B start-up firms (each $p < .05$; columns 4-6). We also find this effect is consistent across each of the three types of financial valuation methods.

Thus, we find that conducting systematic marketing is associated with a significantly more beneficial financial valuation for early-stage B2B start-up firms than for early-stage B2C (H2a) and late-stage B2B start-up firms (H2b), providing support for H2a and H2b. Second, we find that conducting systematic marketing benefits each of the three types of financial valuations of early-stage B2C start-up firms significantly less than for the financial valuations of late-stage B2C start-up firms (each $p < .05$; columns 4-6), as expected in H2c. In contrast, for H2d, we find conducting systematic marketing significantly benefits late-stage B2C firms more than late-stage B2B firms when employing the VC method ($p < .01$; column 4), but not when employing either the DCF with long-term growth or current revenues methods ($p = \text{n.s.}$; columns 5-6). Consequently, we find support for H2c and partial support for H2d.

Finally, we test whether conducting systematic marketing benefits the financial valuations of early-stage B2C start-up firms the least (H3a) and benefits the financial valuations of early-stage B2B start-up firms the most (H3b), both in comparison to the other combinations of stage of development and type of customer. To test H3a (H3b), we alter the *StageCustomer* dummy variable in Equation (3) to be a binary value of 1 for early-stage B2C (early-stage B2C) start-up firms or 0 if not. In both sets of models, reported in Table 6 (shown after references), we examine whether the interaction term between this binary *StageCustomer* dummy value and conducting systematic marketing has a significant coefficient.

We find, as hypothesized, that conducting systematic marketing is significantly less beneficial for the financial valuations of early-stage B2C start-up firms than in the other three combinations of stage of development and type of customer (each $p < .05$; see columns 7-9). In contrast, we find conducting systematic marketing is significantly more beneficial on the financial valuations for early-stage B2B start-up firms than in the other three combinations (each $p < .05$; columns 10-12). Further, we find these results are consistent across each of the Marketing Science Institute Working Paper Series three types of financial valuation methods. Thus, we find support for H3a and H3b,

suggesting that conducting systematic marketing is most (least) beneficial for early-stage B2B (early-stage B2C) start-up firms.⁷

Antecedents of Conducting Systematic Marketing. Web Appendix Table 4 provides details of the analysis of the antecedents for why start-up conduct systematic marketing. First, we report on the five proposed firm strategy resource antecedents. We find that early-stage B2C start-up firms are significantly less likely to conduct systematic marketing than all other types of start-up firms ($p < .05$) (in spite of our finding above that conducting systematic marketing is most beneficial for such start-up firms). In addition, we find that when start-up firms (i) have an internet-based business model ($p < .05$) and (ii) are larger **in** size ($p < .01$), they are more likely to conduct systematic marketing, but find no significant differences in the likelihood of start-up firms that are legal entities and possess strategic partners (each $p > .1$) to conduct such marketing. Consequently, with three of five proposed drivers found to significantly affect the likelihood of start-up firms conducting systematic marketing, firm strategy resources appear to be a major driver of whether start-up firms conduct or do not conduct systematic marketing.

Next, we consider top management characteristics. We find that start-up firms are more likely to conduct systematic marketing when they have managers with previously successful entrepreneurial experience(s) ($p < .01$) and are backed by professional investors with a financial stake **in** the firm ($p < .05$). In contrast, we do not find that start-up firms with managers with some previous managerial experience or with a board of directors (each $p > .1$) are more likely to conduct systematic marketing. Therefore, we find only partial support that top management characteristics influence whether start-up firms conduct systematic marketing.

Finally, we consider industry institutional environment antecedents. We find limited support of the industry's institutional environment affecting whether firms conduct systematic marketing as neither of our industry variables, market concentration and low

barriers to entry, are found to have a significant effect (each $p > .1$). Thus, it appears that industry's institutional environment has a negligible impact on whether start-up firms conduct systematic marketing, at least in our sample.

To summarize the analysis of antecedents of conducting systematic marketing, resource dependent-based firm strategy variables have the greatest impact on whether firms conduct systematic marketing, upper echelon-based top management characteristics have a lesser impact, and the institutional-based industry environment have the least impact.

Robustness Tests

We now summarize additional analyses conducted to establish the robustness of our results. For in-depth details, we refer the reader to Web Appendices E and F.

Alternative Model Specifications. To test whether the results of our focal models are sensitive to our modeling approach, we make five types of modifications to the computation of our dependent variable in Equation (4), using the DCF with long-term growth financial valuation method. These modifications, detailed in Web Appendix E, include: (i) using effects (vs. dummy) coding for all categorical variables, (ii) employing additional control variables, (iii) using different cut-points when Winsorizing the financial variable, (iv) including industry dummy variables, and (v) estimating separate regression models split-out by our three focal independent variables (i.e., only B2B, only B2C, etc.). In the nine sets of re-estimated models, we find support for the original results in 96% (44 of 46) of the applicable hypotheses tests conducted (see Web Appendix Table 5). Consequently, our original results appear robust to variations of the model specification.

Alternative Metrics for Start-up Firm Financial Valuations. Due to the uncertainty in the start-up valuation process, investors typically employ a variety of financial metrics and a variety of parameters underlying their assumptions in their start-up firm valuation process (e.g., Gompers 1995). Therefore, in Web Appendix E and Web Appendix Table 6, we detail Marketing Science Institute Working Paper Series analysis on 42 alternative financial valuation methods, including (i) computing 16 alternative

DCF measures with long-term growth financial valuations, (ii) analyzing 9 valuations based *solely on reported financials* by the start-up firms, (iii) accounting for heuristics based on industry multiples investors often employ by computing 12 financial valuations based on the start-up's EBITDA and EBIT and their industry multiples (e.g., McClure 2019), to create alternative DCF based measures, and (iv) testing our hypotheses on the five additional financial valuations computed by Equidam's proprietary algorithm. To summarize these 42 additional analyses, we consistently find statistical support for our main results in terms of coefficient significance levels and expected signs, providing evidence supporting the robustness for our conceptual model and hypotheses.

Mixed B2C and B2B Firms. For mixed B2C and B2B firms, we find conducting systematic marketing has an effect on the financial valuations of start-up firms that is in-between the effects of marketing on B2C and B2B early and late-stage focused firms, a result providing support for our analyses (see Web Appendix Figure 1). In addition, when including mixed B2C and B2B firms, we also find that early-stage B2B firms are still significantly less likely to conduct such marketing than all other types of start-up firms (Web Appendix Table 7, $\beta = -.37$, $p < .01$).

Sample Dependence of Results. To assess the robustness of our findings to their reliance on the Equidam data, we conducted analysis on the 377 start-up firms from our independent survey to examine when conducting systematic marketing is more beneficial to their financial outcomes. We estimated three models, which, as discussed in Web Appendix F, are reduced forms of Equation (3) to account for both the benefits and limitations of the survey data collection methodology. The first model is a robust-standard errors regression similar to Equation (3), with the dependent variable of firm performance based on the Jaworski and Kohli (1993) construct of performance; the two additional models are ordinal probit models that employ dependent variables based on firm sales and firm profitability

In each of three models, we find results similar to those using the Equidam data: they indicate that conducting systematic marketing is significantly more beneficial for early-stage B2B and late-stage B2C start-up firms than for other categories of firm (each $p < .1$; see Web Appendix Table 8). In addition, these results are further supported when including additional control variables such as market concentration, barriers to entry, and whether the firm has at least an informal board of directors into the model. Consequently, these results provide additional support for our conceptual model and the robustness of our main findings.

Discussion

This research investigates whether and when conducting systematic marketing benefits start-up firms, an important topic that has been rarely addressed in the marketing literature. We develop a conceptual model of the consequences of conducting systematic marketing that focuses on the interactions of two conditions, stage of development and type of customer, to determine when conducting systematic marketing should be more or less beneficial to start-up firms. We test our conceptual model using a rich dataset on start-up firms provided by an online start-up firm valuator, and, through a wide range of robustness tests, including tests from a survey of a separate sample of start-up firms, find strong support for our conceptual model. One key finding from our research challenges current practice: while we find that conducting systematic is more beneficial to early stage B2B start-ups firms than to any other category of firm, such firms are the least likely to conduct such marketing.

Theoretical Contributions

Our research contributes theoretically by documenting the signaling and resource constraint challenges that start-up firms face when deciding whether to use systematic marketing and demonstrating when conducting such marketing is more or less beneficial to such firms. Start-up firms are significantly more resource deprived than larger and more mature firms that are typically studied in the marketing literature. Thus, for start-up firms to marketing systematic marketing together, they must make difficult decisions involving diverting

resources from other parts of the firm and foregoing additional opportunities or actions it could pursue. Hence, the proposed conceptual model and empirical results complement the nascent academic literature in marketing on start-up firms (Anderson, Chandy, and Zia 2018; DeKinder and Kohli 2008; Homburg et al. 2014; Molner, Prabhu, and Yadav 2019) by focusing on a much broader universe of start-ups than most previous studies: previous studies have primarily focused on the atypical, highly successful firms that have obtained large-scale seed funding or are seeking an IPO. We focus on the more basic and largely overlooked research questions: what causes start-up firms to conduct systematic marketing in the first place, and when is conducting such marketing is beneficial to the firm? We provide both a new conceptual model, and a robust empirical analysis that supports that model.

By linking a start-up firm's strategic actions with financial outcomes, our work also contributes to the entrepreneurship literature, which to date has focused most heavily on the importance and roles of founding team members (Wasserman 2017), investigating the impact of having a defined business plan (Kirsch, Goldfarb, and Gera 2009), and researching which factors lead to additional VC or angel capital funding (Bernstein, Korteweg, and Laws 2017). Our work also extends the literature on how marketing-mix efforts contribute to firms' financial performance and valuations (e.g., Hanssens 2015; Edeling and Fischer 2016) by examining the potential role and importance of marketing at the very early and resource constrained stages of firms. A perhaps surprising finding is that conducting systematic marketing is associated with lower financial valuations for early-stage B2C start-up firms. This result likely stems from the high-risk/high-reward or "moon-shot" nature of investing in B2C start-ups, which our interviews revealed, often causes such investors to prefer firms that rely on disruptive advancements not necessarily aligned with an understanding of current customers.

Managerial Implications

Our empirical results and proposed conceptual model offer empirical-based evidence on the consequences of conducting systematic marketing for start-ups. The results demonstrating that conducting such marketing is beneficial for most start-up firms, across three distinct types of financial valuation methods, should inform the challenging resource allocation decisions such firms face. In addition, our results provide useful insights for venture and angel capitalists seeking signals about the quality of start-up firms that indicate those of the highest quality and future potential.

Further, we find that the decision to conduct or not to conduct systematic marketing has the greatest impact on the valuation of start-ups in the early stage of development: early-stage B2B start-ups have much to gain by investing in systematic marketing while early-stage B2C firms are better off not investing in systematic marketing. Yet, in the Equidam sample, we find that 11 of the 16 (69%) early-stage B2C firms invest in systematic marketing (and would be better off *not* doing so), while 10 of the 19 (53%) of early-stage B2B firms do not invest in systematic marketing and would be better off doing so. Thus, overall, 60% of early-stage start-ups in the Equidam sample get the decision on whether to invest in systematic marketing wrong. For the survey sample, we find comparable numbers, with 61% of the early-stage start-ups getting the decision wrong. Hence, it appears that founders of both B2B and B2C start-ups are misinformed about how the investor community values their resource allocation decisions, a situation our research has the potential to redress.

Limitations and Future Research

A unique aspect of our study is that the data employed relies on a mixture of successful and unsuccessful start-up firms. Nevertheless, the limitations of the data also provide fruitful future research opportunities. For example, more detailed information (beyond that collected in our supplemental analysis) on the types of marketing conducted, whether the start-up firms employ top managers with a marketing background and use of Marketing Science Institute Working Paper Series panel data would enable deeper analyses on the consequences of marketing for start-up firms.

Such data would also allow future research to expand on our investigation of *whether* marketing impacts start-up firms' financial valuations to examine *which* specific marketing-mix efforts such firms should pursue and when.

In addition, it would be useful to examine whether our results on the effects of conducting systematic marketing hold when examining other outcome variables beyond financial valuation, like the start-up firm's likelihood of survival, being acquired, or obtaining an IPO or VC funding. Identifying additional boundary conditions on whether and when conducting marketing helps start-up firms, including accounting for cross-cultural differences, is important and should also be studied.

Finally, we have uncovered a number of firm strategy, top management, and industry antecedents for whether start-up firms conduct systematic marketing. Our results suggest that a start-up firms' strategy-based resources are the antecedent that has the most powerful effect on whether a start-up firm conducts systematic marketing, while its industry-based institutional environment has the least. Future research can expand beyond our variables from the Equidam dataset to develop a greater understanding on this important topic for how marketing develops and evolves in such firms.

Conclusion

Our work is the first in marketing, to our knowledge, to investigate the antecedents and consequences of typical start-up firms conducting systematic marketing. Our findings document a reluctance by many of start-up firms to conduct systematic marketing and identifies conditions in which conducting such marketing is associated with greater financial valuations. The unique data employed in our analysis, despite its limitations, provides a rich, nuanced view of a broad spectrum of start-up situations that the marketing literature has overlooked. We hope that our results (and their robustness) provide insights for the stakeholders of the many start-ups that develop each year and encouragement for other researchers to further study the appropriate role of marketing to help start-up firms succeed.

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Footnotes

¹ Exceptions in the marketing literature include Anderson, Chandy, and Zia (2018), who conduct a field experiment testing whether providing South African entrepreneurs finance or marketing skills leads to better performance outcomes, Molner, Prabhu, and Yadav (2019), who explore how start-up firms manage market ambiguity avoidance or acceptance, and Srinivasan, Lilien, and Rangaswamy (2008), who investigate how diversification of products affect a start-up firm's likelihood of survival.

² We only limit our research to only those start-up firms with a product or service that is ready to be sold; i.e., we do not consider firms with a prototype or other product or service that is not currently available.

³ For simplicity, we omit mixed B2C and B2B firms but discuss their impact on firm valuations in the Robustness section.

⁴ Industry classifications and multiples taken from Aswath Damodaran's New York University website <http://pages.stern.nyu.edu/~adamodar/>, while the discount rate employed is 48.60% for expansion stage, 89.12% for startup stage, 114.74% for development stage, and 135.93% for idea stage. Firms reported which of these stages they are currently in, which we aggregate, for simplicity, when creating our early (i.e., development and idea stage) vs. late stage (i.e., expansion and start-up stage) of development measure.

⁵All three employed valuation methods are log-scaled and winsorized at the 2.5% and 97.5% levels to lessen the impact of outliers, control for skewness in the financial valuations across firms, and reduce start-up firms' valuations sensitivity to the precision of the self-reported financial inputs.

⁶ We calculate this value as the ratio of the probability density function to the cumulative density function from the probit model examining the antecedents of conducting systematic marketing (Equation 3).

⁷ We also find a significant and negative coefficient in the majority of our models for the IMR term that controls for characteristics that likely are associated with start-up firms completing their anticipated profit and loss statements. This demonstrates that start-up firms with characteristics *opposite* of those likely to fill out their anticipated profit and loss statements, such as without an informal board of directors or are not legal entities, are associated with greater financial valuations, and a potential opportunity in the market for investors.

Figure 1. Conceptual Model

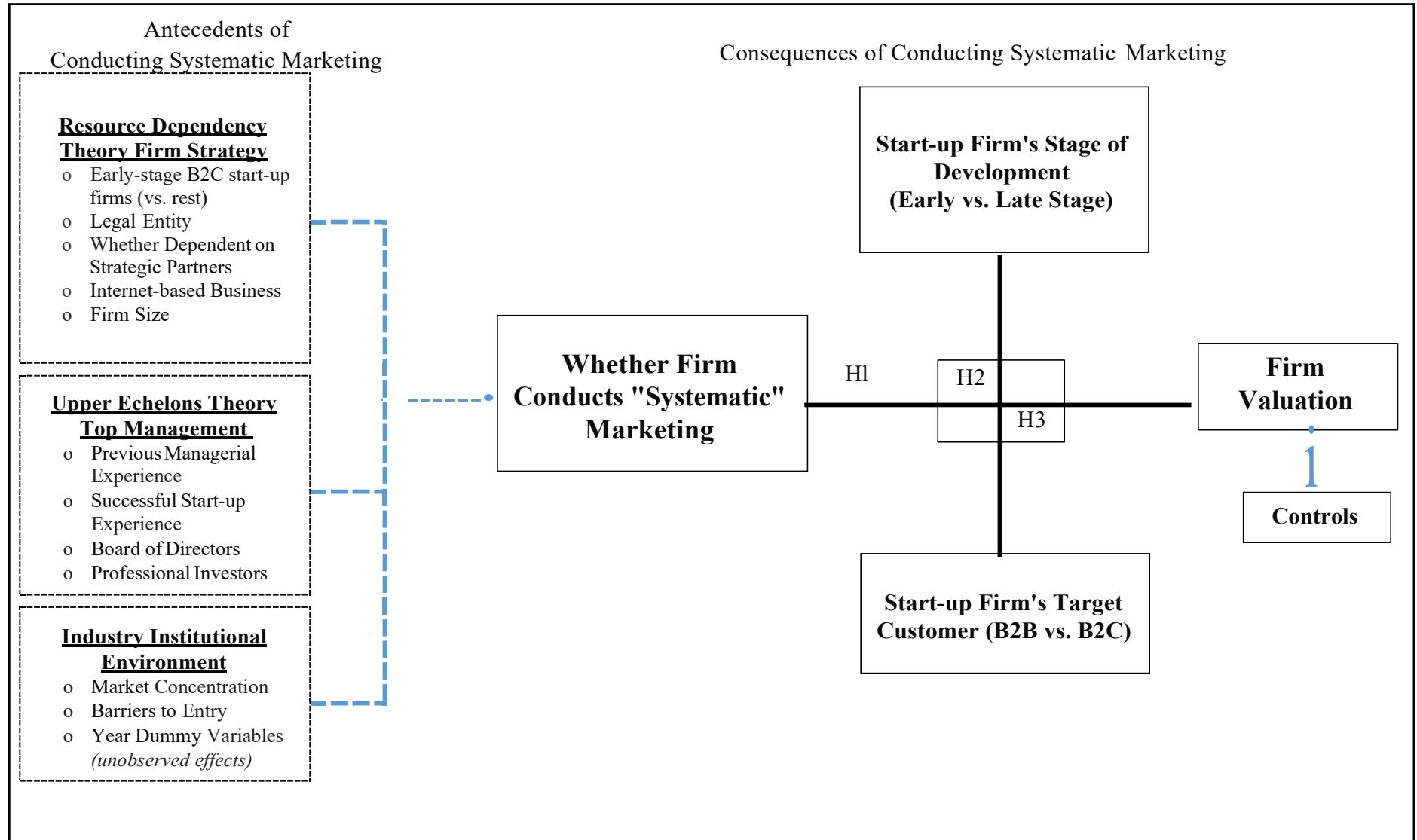
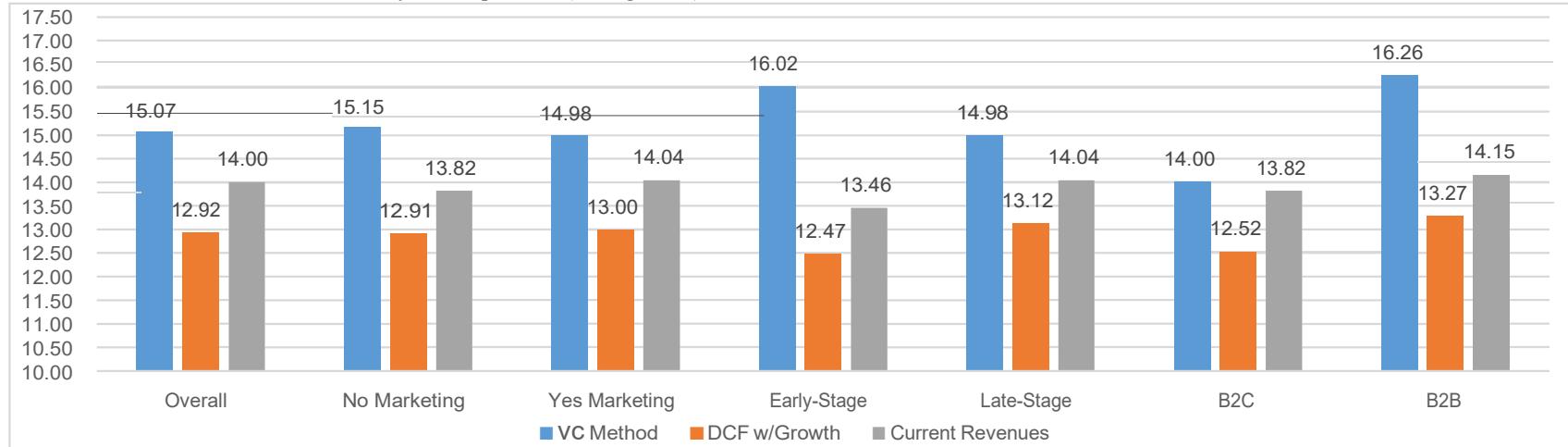
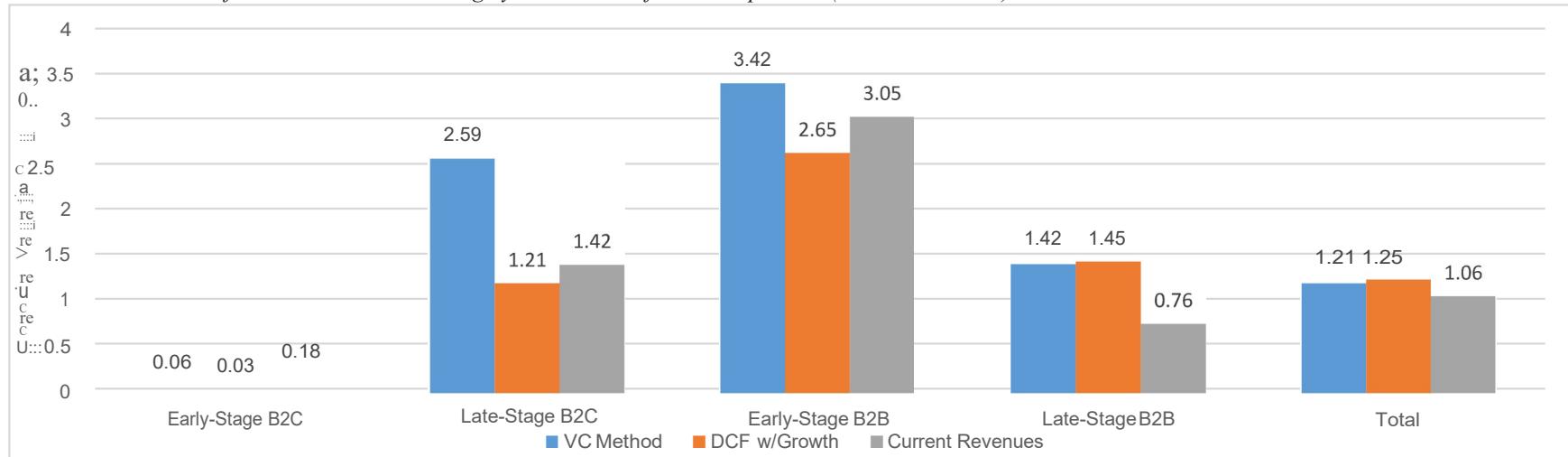


Figure 2. Median Valuations

Panel A. Median Financial Valuations of Start-up Firms (on log-scale)



Panel B. Median Value for How Much Conducting Systematic Benefits Start-up Firms (on nominal scale)



Calculated by: median valuation for a start-up firm conducting systematic marketing in a given condition

median valuation for a start-up firm *not* conducting systematic marketing in a given condition

Table 1. Insights and Notable Quotes from Interviews

Theme	Notable Quotes
Do start-ups conduct systematic marketing?	<p>Founders (multiple times)*: "Marketing?? We don't do any real marketing"</p> <p>Investor: "No... I made at-shirt for it (in order to provide advice to start-ups)"</p> <p>Consultants (multiple times)*: "Start-ups often are clueless on marketing and understanding their customers"</p>
Whether conducting marketing is beneficial?	<p>Founders (multiple times)*: "We have much more important issues than marketing to focus on"</p> <p>Investor: "I want to know how intimately you [a start-up firm] know your customer."</p> <p>Investor: "It depends on what field you are in (B2B/B2C) and what stage you are in"</p> <p>Investor (multiple times)*: "Does the start-up understand its target customer and how its product or service fits in the market"</p> <p>Consultants (multiple times)*: "Of course marketing can help start-up firms, but they could really use a lot of help with it"</p>
Early B2B	<p>Founder: "We were all enthusiastic amateurs (in marketing), so we did it as part of our day jobs ourselves, so we invested a fair amount (of effort) so we are quite well versed and knowledgeable of our marketing"</p> <p>Investor*: "Does the start-up have an established relationship with a firm"</p> <p>Investor*: "Does the start-up product or service fix an established need in market"</p>
Early B2C	<p>Founder*: "We designed this product to help people with this health issue"</p> <p>Investor*: "Hard to judge success of marketing at this point; too small a sample size"; "We only seek out B2C start-up firms who can grow to exponential valuations"</p> <p>Investor: "What I do see is graphs of revenue and customer numbers off to the right, and it is very difficult to achieve this unless you hit on something viral"</p> <p>Consultant: "Take own example and (assume) true for all"</p> <p>Consultant*: "They often do a Facebook ad (of poor quality) and give up after seeing no results"</p>
Late B2B	<p>Founder: "We try to rig the race... we had products that we built that we had clients that were going to buy them the minute they were ready. We had co-creators and companies willing to co-create with us"</p> <p>Founders (multiple times)*: "Our customers provide the marketing by providing us direct referrals"</p>
Late B2C	<p>Investor: "It is a bit more formulaic ... to partner in mass to scale you up"</p> <p>Investor*: "I only look at how devoted are the firms customers to the firm's product or service"</p>

* Indicates paraphrased quotes, as we were not given permission or unable to record interview due to the interview setting; Founders= recent founders of start-up firms; Investor= angel or venture capitalist investors; Consultants= consultants focused on start-up firms, or heads of accelerators, incubators, and other related organizations devoted to help start-up firms grow.

Table 2. Summary of Hypotheses and Results

Hypothesis	Effectiveness Comparison by Start-up Firm Type (see table in note below)	Supported in VC Method Valuation Model	Supported in DCF with Growth Valuation Model	Supported in Current Revenues Valuation Model
H1: Conducting systematic marketing benefits <i>all start-up firms</i>	N/A	X	X	X
H2a: Conducting systematic marketing benefits <i>early-stage B2B start-up firms > early-stage B2C start-up firms</i>	A>B			
H2b: Conducting systematic marketing benefits <i>early-stage B2B start-up firms > late-stage B2B start-up firms</i>	A>C			
H2c: Conducting systematic marketing benefits <i>late-stage B2C start-up firms > early-stage B2C start-up firms</i>	D>B			
H2d: Conducting systematic marketing benefits <i>late-stage B2C start-up firms > late-stage B2B start-up firms</i>	D>C		X	X
H3a: Conducting systematic marketing <u>least</u> benefits <i>early-stage B2C start-up firms</i>	B < rest (A, C, and D)			
H3b: Conducting systematic marketing <u>most</u> benefits <i>early-stage B2B start-up firms</i>	A > rest (B, C, and D)			

= p < .1 in expected direction; X = p 2:_.1

Note: Effectiveness Comparison Table		Type of Customer	
		<i>B2B</i>	<i>B2C</i>
Stage of Development	Early	Cell A	Cell B
	Late	Cell C	Cell D

Table 3. Summary of Expected Effects of Firm, Manager, and Industry Control Antecedents of Conducting Systematic Marketing

Variable	Expected Effect	Supported
<i>Firm Strategy Resource Antecedents (RDT)</i>		
Early-stage B2B firms (vs. other firms)		
Legal entity	+	X
Internet-based start-up	+	
Strategic partners		X
Firm size (ln)	+	
<i>Top Management Antecedents (UET)</i>		
Previous managerial experience	+	X
Previous managerial start-up success	+	
Board of directors	+	X
Professional investors backing	+	
<i>Industry Institutional Antecedents (Inst. Theory)</i>		
High market concentration		N/A
Low barriers to entry		N/A

+ = positive expected relationship (more likely to conduct systematic marketing); - = negative expected relationship (less likely to conduct systematic marketing); --- = no hypothesized relationship

= supported ($p < .1$ and coefficient sign in expected direction); X = not supported; N/A = not applicable

Table 4. Variables, Operationalization, and Means

Variable	Operationalization	Antecedents Sample Mean (StDev if not binary)	Consequences Sample Mean (StDev if not binary)
Conducts systematic marketing	Whether the start-up indicated that it has (=1) or has not (=0) begun marketing on a systematic basis	.57	.55
Stage of development	Whether the start-up is currently in startup or expansion stage of development, i.e., later-stage (=1) or is in the idea, development, seed, or pre-revenue stage, i.e., early-stage (=0)	Early-stage: .14	Early-stage: .18
		Late-Stage: .86	Late-Stage: .82
Target customer	Whether the start-up's main business model is B2B (=0) or B2C (=1)	B2B: .50	B2B: .58
		B2C: .50	B2C: .42
Legal entity	Whether the firm is a legal entity (=1) or not (=0)	.78	.85
Internet-based start-up	Whether the start-up's business model is internet-based (=1) or not (=0)	.35	.44
Strategic partners	Whether the start-up has contacted, identified, and/or made informal or formal agreements with partners (=1) or not (=0)	.19	.19
Firm size	Number of employees working for the start-up, log-scaled	17.01 (42.14)	18.65 (51.43)
		LN: 2.01 (1.14)	LN: 21.98 (1.25)
Previous managerial experience	Whether at least some members of the top management team have worked as top-tier managers (=1) or not (=0)	.43	.48
Previous managerial start-up success	Whether at least some members of the top management team have had a previous entrepreneurial experience conclude in a successful exit (=1) or not (=0)	.35	.36
Board of directors	Whether the start-up has at least an informal board of advisors (=1) or not (=0)	.53	.57
Professional investors backing	Whether professional investors such as banks, incubators, angel capitalists, or VC's possess a financial stake in the start-up (=1) or not (=0)	.22	.18
High market concentration	Whether the industry is dominated by single or several players (=1) or not (=0)	.32	.32
Low barriers to entry	Whether the industry has very low to low barriers of entry (=1) or mid to high barriers of entry (=0)	.25	.21
No exit plans	Whether start-up firm did not think about exit strategies so far (=0) or did think about exit strategies (=1)	.45	.42
Yes know founder beforehand	Whether the members of the management team known each other professionally before working together for this company (=1) or not (=0)	.69	.76
Year	Year data was collected	2016: .12	2016: .19
		2017: .71	2017: .59
		2018: .17	2018: .21
Industry	In which industry is the company operating? Charity (Ch), Culture & Arts (CA), Education & E-learning (EE), Entertainment (Ent), Food (Fd), Games (Gm), Health & Fitness (HF), High-tech (Ht), Legal & Finance (LF), Products & Services (PS), Software & IT (SIT), Sustainability (SUS), and Tourism, Hospitality & Real Estate (THR)	Ch: .002	Ch: ---
		CA: .009	CA: .010
		EE: .039	EE: .030
		Ent: .031	Ent: .074
		Fd: .069	Fd: .074
		Gm: .002	Gm: .010
		HF: .116	HF: .119
		Ht: .057	Ht: .055
		LF: .037	LF: .040
		PS: .378	PS: .282
		SIT: .190	SIT: .267
		SUS: .003	SUS: ---
		THR: .069	THR: .040
Number of Positive Financial Valuations	Total number of firms with positive financial valuations		VC Method: 193
			DCF w/Growth: 159
			Current Rev.: 201
<i>Number of Observations</i>		693	202

Table 5. Results of When Conducting Systematic Marketing is Associated with Increased Valuations (H2)

Base Value	Early-stage B2B Start-up Firms as base			Late-stage B2C Start-up Firms as base		
Type of Valuation Method	VC Method	DCF w/Growth	Revenues	VC Method	DCF w/Growth	Revenues
(Column)	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	14.85***	12.40***		13.28***	14.15***	12.48***
<i>Main Effects</i>						
Conduct systematic marketing	1.70***			0.94		0.41
Early-Stage B2C firms	1.03	0.272		0.86	1.74**	1.44
Late-Stage B2B firms	1.14*	1.19***		0.86***	1.84***	1.11
Late-Stage B2C firms	-0.70	0.08		0.13	0.70	-0.08
<i>Interactions</i>						
Conduct systematic marketing *						
Early-Stage B2C (vs. Early-Stage B2B)	-3.89***	-3.17**		-2.61**	-2.76***	-2.87**
Conduct systematic marketing*						
Late-Stage B2B (vs. Early-Stage B2B)	-2.38***	-1.02**		-1.37**	-1.25*	-0.72
Conduct systematic marketing *						
Late-Stage B2C (vs. Early-Stage B2B)	-1.13**	-0.30		-0.79	1.13**	0.30
<i>Controls</i>						
Strategic partners	-0.48	-0.12		-0.28	-0.48	-0.12
Previous managerial experience	0.51**	0.20		0.11	0.51**	0.20
Firm size (In)	0.68***	0.73***		0.73***	0.68***	0.73***
No start-up exit discussed	-0.46	-0.30		-0.12	-0.46	-0.30
Internet-based start-up	1.13**	-0.06		0.24	1.13**	-0.06
Low barriers to entry	0.13	-0.18		-0.17	0.13	-0.18
Year 2017 (vs. 2016)	0.14	-0.12		-0.12	0.14	-0.12
Year 2018 (vs. 2016)	0.72	-0.47		-0.47	0.72	-0.47
IMR antecedents of marketing	0.49***	-0.65*		0.44*	0.49***	0.65*
IMR antecedents of financial information	-2.19***	-1.50		-1.15	-2.19***	-1.50
<i>Model Diagnostics</i>						
Number of observations	193					159
R-squared	0.48	0.44		0.48	0.48	0.44
RootMSE	1.65	1.35		1.08	1.65	1.35

*p<.1; **p<.05; ***p<.01

Table 6. Results of When Conducting Systematic Marketing is Associated with Highest and Lowest Valuations (H3)

Value	Early-Stage B2C Firm vs. Rest			Early-Stage B2B Firm vs. Rest		
	VC Method	DCF w/Growth	Revenues	VC Method	DCF w/Growth	Revenues
Type of Valuation Method (Column)	(7)	(8)	(9)	(10)	(11)	(12)
Intercept	16.15***	13.50***	14.13***	15.87***	13.55***	14.03***
<i>Main Effects</i>						
Conduct systematic marketing	-0.23	-0.05	-0.16	-0.63***	-0.42**	-0.44***
Early-StageB2C (vs. all other) firms	0.46	0.84	0.31			
Early-StageB2B (vs. all other) firms				-0.52	-0.83**	-0.55*
<i>Interaction s</i>						
Conduct systematic marketing *						
Early-Stage (vs. all other) B2C firms	-2.07***	-2.47**	- 1.55***			
Conduct systematic marketing *						
Early-Stage (vs. all other) B2B firms	---	---	---	2.05***	0.97**	1 .27**
<i>Controls</i>						
Strategic partners	-0.98**	-0.37	-0.46**	-0.72*	-0.24	-0.30*
Previous managerial experience	0.78***	0.26	0.17	0.74**	0.32*	0.18
Firm size (ln)	0.73***	0.71***	0.73***	0.72***	0.77***	0.74***
No start-up exit discussed	-0.47	-0.34	-0.12	-0.52	-0.38	-0.15
Internet-based start-up	1.10**	-0.09	0.19	1.14**	-0.08	0.21
Low barriers to entry	-0.04	-0.30*	-0.24	-0.01	-0.24	-0.23
Year 2017 (vs. 2016)	0.20	-0.19	-0.10	0.16	-0.15	-0.10
Year 2018 (vs. 2016)	0.67	-0.58	-0.49*	0.61	-0.58	-0.53*
IMR term for antecedents of conducting systematic marketing	0.61*	0.25	0.29	0.20	0.41	0.16
IMR term for antecedents of completing financial information	-3 .06***	-1.40	-1.27*	-2.42***	-1.56**	-1.05**
<i>Model Diagnostics</i>	1	0	0	1	0	1
Number of observations	193	159	201		159	201
R-squared	0.41	0.40	0.45	0.41	0.35	0.43
RootMSE	1.74	1.38	1.10	1.74	1.43	1.11

*p<.1 ; **p<.05; ***p<.01

Appendix. Conducting Systematic Marketing Empirical Characterization

We conducted a survey between March - May 2019 of 377 entrepreneurs selected from a Survey Sampling International (SSI) panel of entrepreneurs. Entrepreneurs were defined as someone who considered his or herself as an entrepreneur and is currently or has previously worked for more than one year at a start-up firm.

We asked respondents about multiple characteristics of how their start-up firm conducted marketing. Related to our focal construct, we asked "to what extent does your firm conduct marketing on a systematic basis" on a 1-7 scale, with 1=not at all and 7=very much. In our analysis, we classified those who answered a 6 or 7 on this scale as "conducting systematic marketing and those who answered 1 or 2 as "not conducting systematic marketing." We next asked questions about the background of top management, the firm's marketing capabilities and what specific marketing activities (such as the 4 P's) their firm was engaged in or outsourced to a marketing consultancy firm (see Appendix Table 1 for measures and literature sources).

As reported in Appendix Table 1, start-up firms that report *not* conducting marketing on a systematic basis *are much less likely to have each component of Moorman and Day's (2016) four "C's" based definition of a marketing organization than firms that do report conducting marketing on a systematic basis*. For example, in terms of the marketing configuration of start-up firms, 32% (vs. 0%) of those firms that do not (vs. do) conduct systematic marketing indicated they did not conduct any marketing at all and 37% (vs. 3%) of such firms indicated they do not consider any of the 4 types of P's as marketing in their firms. In terms of(human) capital, only **11%** (vs. 75%) and 15% (vs. 84%) of start-up firms that do not (vs. do) conduct systematic marketing indicated they have a founder with a marketing background, or an employee dedicated to marketing tasks, respectively. Further, large disparities exist between those firms that do not and do conduct systematic marketing in

terms of their organizational involvement in marketing (3.74 vs. 5.60 on a seven point scale, with seven indicating higher involvement), marketing's influence in the firm (2.95 vs. 5.12 on a seven point scale, with seven indicating greater influence), and marketing's capabilities (3.59 vs. 5.45 on a seven point scale, with seven indicating greater capabilities).

Finally, major cultural differences also exist in regards to the perception of marketing between start-up firms that do and do not report conducting systematic marketing. For example, 66% (vs. 17%) of start-ups who do not (vs. do) conduct systematic marketing do not outsource or rely on any strategic partners to conduct marketing, and such start-up firms are even *less likely* to acknowledge that a variety of limitations constrain their ability to even conduct marketing (3.14 vs. 4.31 on seven point aggregated scale). These results are not solely a function of the stage of the firm. In fact, more start-ups who conduct marketing on a less systematic basis indicated they are at a later stage of development (87% vs. 69%). Thus, firms that do and do not report conducting systematic marketing vary greatly and are easily identified: firms that do not report conducting systematic marketing do not have a configuration suited to conduct much marketing, employ less human capital dedicated to marketing, possess fewer marketing capabilities, and have a culture less encouraging towards marketing.

Appendix Table 1. Differences between Firms that Do and Do Not Report Conducting Systematic Marketing

Question / Construct	Literature Source (if any)	Does Not Conduct Systematic Marketing	Conducts Systematic Marketing	Significant Difference ^a (p<.01)
Configuration				
Does not Conduct Marketing At All?		32%	0%	Yes
Has a Zero Marketing Budget?		40%	3%	Yes
If Conducts None Of the 4P's of Marketing?		37%	3%	Yes
• If Conducts Place Marketing?		15%	44%	Yes
• If Conducts Price Marketing?		20%	38%	Yes
• If Conducts Product Marketing?		35%	57%	Yes
• If Conducts Promotions Marketing?		35%	65%	Yes
If Does No Outsourcing?		66%	17%	Yes
(Human) Capital				
Has Co-Founder with a Marketing Background?		11%	75%	Yes
Has Employee Dedicated to Marketing Tasks?		15%	84%	Yes
Culture				
Organizational Involvement in Marketing Construct (1-7 range)	Noble and Mokwa (1999)	3.74 3.90 3.58	5.60 5.62 5.57	Yes Yes Yes
Marketing's Influence in the Firm Construct (1-7 range)	Verhoef and Leeflang (2009)	2.95 3.10 2.81	5.12 5.18 5.06	Yes Yes Yes
Marketing Resource Limitations (1-7 range)		3.14 3.02 3.59 2.98 2.98	4.31 4.33 4.50 4.29 4.12	Yes Yes Yes Yes Yes
Capabilities				
Marketing Capability Construct (1-7 range)	Morgan, Katsikeas, and Vorhies (2012)	3.59 3.57 3.54 3.55 3.69	5.45 5.31 5.38 5.50 5.60	Yes Yes Yes Yes Yes
If in Late Stage?		87%	69%	

Note: we asked self-declared entrepreneurs working for a start-up firm for at least a year "to what extent does your firm conduct marketing on a systematic basis" on a 1-7 scale, with 1=not at all and 7=very much. In our analysis, we classified those who answered a 6 or 7 on this scale as "conducting systematic marketing and those who answered 1 or 2 as "not conducting systematic marketing." ^a We estimated individual logits with the dependent variable specified as whether the firm conducting systematic marketing (=1) or not (=0) and the independent variable specified as the question noted above.

Web Appendices for "The Effect of Systematic Marketing on Start-up Firm Valuation"

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Web Appendix A. Interview Guide and Insights from Managerial Interviews on Why Start-Up Firms Conduct Systematic Marketing and When Conducting Systematic Marketing is More Beneficial

Interview Guide

Interview Structure

- 1) Introduce ourselves, provide a broad overview of the structure of the interview, and ask for permission to record.
- 2) Ask the questions listed below to each respondent, depending on the interview flow.
- 3) Finally, summarize the research and ask any remaining follow-up questions.

Interview Questions

- 1) To begin, could you tell me a bit about you, personally [background, education, prior jobs] and about your firm/start-up [name, what it does, approximate size, how financed- anything else? B2B/B2C; Early/Late stage]. Probe on success/level of success/how they measure success.
- 2) In our review of the trade and academic literature and in our other interviews, we have heard differing views of the role of marketing in the activities of startups. When I use the term "marketing" what does it mean for you in your firm? [Probe: Marcom, Trade shows, emails, direct sales, inbound/outbound internet activities, what else, customer engagement/visits what else?].
- 3) Given your use of the term marketing, could you please elaborate on the marketing activities your firm has engaged in since its inception?
- 4) How did/would you assess the success or lack of success of these activities? [Ask for specifics-if more than one, ask for one success (how measured?) and one failure (again, how measured?)]
- 5) Do you feel your firm could benefit from doing more marketing? If so, what is preventing it from doing do?
- 6) Many start-ups use firm valuation as a metric for success. Do you use valuation as a success metric? If so, how have your marketing activities affected your firm's valuation? How do you know?
- 7) It is well knowns that most start-ups fail. How do you feel investments in marketing activities affect the survival of start-ups? [Probe on why/specifcics]
- 8) Some business leaders use the term "systematic marketing." Have you used or heard of the use of that term? If so, what does it mean to you in your context?
- 9) Our analysis of start-ups shows that most do not conduct systematic marketing. Why do you think that is?
- 10) In your mind what are the key ingredients needed for success for a start up like yours?
- 11) Please think about one of your most successful start-up competitors. Does that firm invest in systematic marketing? Please elaborate.
- 12) Other thoughts about the costs/benefits of marketing in the context of a start-up like yours?

Web Appendix A continued

Insights from Managerial Interviews on Why Start-Up Firms Conduct Systematic Marketing and When Conducting Systematic Marketing is More Beneficial

Due to the lack of previous research and theory on marketing's role in start-up firms, we took a grounded-theory approach to understand why start-up firms conduct systematic marketing and when conducting such marketing is most beneficial to their financial valuations. According to Fischer and Otnes (2006, pp. 21-22), a grounded theory approach is appropriate when fundamental "questions about the nature of a new construct" exists and when there are "previously unrecognized facilitators or implications of a construct." Hence, we conducted 29 interviews with founders, investors, and consultants in order to develop our conceptual framework.

Four major insights emerged from our grounded-theory approach. The first was a major disparity exists between start-up firms who considered themselves as conducting marketing on an on-going and systematic basis from those who did not or only perceived themselves as conducted marketing on an ad hoc or unplanned or one-off basis. Further, from an investor point of view, we noticed that in start-up pitches, documentation, and initial communications with investors, which are all brief, start-up firms often create their own signal of whether they perceive or have a self-belief that they are conducting such marketing. For example, one start-up investor stated that when considering investing, he examines the firm's marketing related culture because: "I want to know how intimately you [a start-up firm] know your customer." And as noted earlier, we were surprised that many start-up firms do not signal that they conduct marketing. Hence, it appeared that relevant stakeholders such as start-up firms, their potential investors, and consultants involved in working with such firms, could each differentiate whether start-up firms' were conducting systematic marketing or not.

The second insight was that start-up firm founders *perceived marketing's role in start-up firms to be of low importance* and, as a result, marketing was absent in many such firms. For example, when we asked founders "how much of an \$X investment [\$1,000, \$10,000, \$100,000, etc.] would you spend on marketing for your start-up firms?" many respondents stated "None!" One typical consultant response was "start-ups are often clueless on marketing and understanding their customers."

The third insight was that *a signal about the founders' knowledge and understanding of their customers in addition to on-going marketing-mix efforts by their start-up firms were valued* by the investor community. This knowledge and understanding provides a signal of start-up firm legitimacy to investors. A typical response on what investors were looking for in start-up firms that they invested in was a positive answer to the question "does the start-up understand its target customer and how its product or service fits in the market?" A response (again, typical) from one consultant was "of course marketing can help start-up firms, but they could really use a lot of help with it."

The fourth insight was that even though conducting marketing seemed to benefit most start-up firms, according to most the investors and consultants we interviewed, *the conditions for when conducting such marketing would benefit these firms varied*. One investor summarized these conditions as "it depends on what field you are in (B2B/B2C) and what stage (of development) you are in." Others described how the combination of both conditions affected the human, financial, and opportunity costs to the firm to conduct systematic marketing, how involved the founding team was in conducting marketing, and how the type of and extent of that marketing helped such firms (see Table 1). For example, the founder of an early-stage B2B start-up firm reported on how conducting systematic marketing led the founding team to be "all

enthusiastic amateurs (in marketing), so we did it as part of our day jobs ourselves. Hence, we invested a fair amount (of effort) so we are well versed and knowledgeable of our customers, their needs and how our offerings can satisfy those needs." In contrast, a late-stage B2B start-up firm's founder responded that "our customers conduct the marketing by providing us direct referrals," while an investor described a late-stage B2C start-up firm's need to conduct systematic marketing as "a bit more formulaic ... to partner in mass to scale you up." Consequently, the results of our interviews suggest that the interactions between the stage of development and primary type of target customer provide appropriate moderators or conditions for when conducting systematic marketing affects start-up firms' financial valuations.

The next step of a grounded theory approach is to attempt to link such qualitative findings with established constructs and theories. These interviews provided the rationale to link the two moderators with prior research in information transmission in marketing following Spence's (1973) original signaling framework (e.g., Groening, Mittal, and Zhang 2016; Saboo and Grewal 2013). The result was the conceptual framework proposed in Figure 1 and the rationale for our expectations noted in the hypotheses section.

Web Appendix B. Details on Antecedents for Why Firms Conduct Systematic Marketing

To account for the organizational processes that underlie whether start-up firms conduct systematic marketing or not, we control for characteristics of the firm, top management, and industry. Table 3 summarizes the control variables and their expected effects. These controls for the characteristics of the firm, top management, and industry should be of interest in their own right as prior to this research, less has been written about what processes influence whether start-up firms actually conduct systematic marketing or not. However, while the number of controls considered is large, it should not be thought of an exhaustive list, and infeasible in any empirical research.

First, as resources are a finite asset for most firms (Barney 1991), firms must make trade-offs regarding their allocation in order to sustain a competitive advantage in the market (Amit and Schoemaker 1993). For start-up firms, this is even more manifested due to their lack of overall resources, which restricts their ability to properly resource all functions (Wasserman 2012). Resource dependence theory (RDT) takes the perspective that because such resources are scarce, firms actively manage and control the resource flows across the firm (Pfeffer and Salancik 1978). Furthermore, RDT argues that when the firm is more dependent on a certain function because it exhibits value to the firm or the overall strategy of the firm is more reliant on such a function, the firm is more likely to respond to the demands of the function and supply the required resources to the function even if the firm opposes the underlying rationale for the request (e.g., Besharov and Smith 2014). Consequently, based on previously identified characteristics that can influence the perceived value and need of marketing in a firm (Farris and Buzzell 1979; Verhoef and Leeflang 2009), we expect the following firm strategy variables to potentially impact the likelihood of a firm conducting systematic marketing: (1) whether the

start-up firm is an early-stage B2B start-up firm or not; (2) legal entity (defined as whether firm is a legal entity or not); (3) internet-based business model (internet-based or not); (4) maintains strategic partners (yes or no current dependence on strategic partners for key aspects of business); and (5) size (number of employees, log-scaled).

When firms are B2B oriented, they largely focus their marketing resources towards a more limited number of powerful customers versus trying to appeal to a mass audience (Boyd, Chandy, and Cunha 2010). Marketing, in contrast, is typically more useful when it is reaching mass audiences than when it is targeting a smaller amount of potential customers (Farris and Buzzell 1979). Thus, in previous studies, marketing has been found to possess less influence in such firms (Verhoef and Leeflang 2009) and as a result provided less monetary support (Lilien 1979). Further, larger, late-stage start-up firms that are registered as legal entities typically have greater resources to allocate across their firms (Wasserman 2012); and with greater resources, such start-up firms are more likely to be able to conduct systematic marketing. Thus, in contrast to both late-stage start-up firms and early-stage B2C start-up firms, who are typically more resourced and have greater incentives to conduct systematic marketing, we expect early-stage B2B start-up firms to be less likely to conduct systematic marketing.

For start-up firms who operate an internet-based business model, the internet allows for cheaper and more cost-effective marketing and for the use of common analytics tools readily available to better understand their customers (e.g., Lamberton and Stephen 2016). Hence, we expect such firms to be more likely to conduct systematic marketing. Finally, start-up firms with strategic partners have established a dependence on such partners are in less need of developing future relationships with customers (Ambos and Birkinshaw 2010). Consequently, start-up firms are less likely to conduct on-going and systematic marketing on their own.

Second, top managers are typically responsible for designing strategies, setting budgets, and allocating resources across the firm (Lehmann and Reibstein 2006). Further, top managers often possesses the discretion to make decisions that they believe will lead to better performance on topics like resource allocation (Hult 2011). Therefore, upper echelons theory (UET) suggests that firms make such decisions for the firm on the basis of the top management's personalized understanding of the situation (Hambrick and Mason 1984). In the start-up context, this is expected to be even more profound as firm actions and strategies are almost always a function of the smaller amount founders, top management teams, and internal and external advisors (Wasserman 2012). Thus, based on prior research (e.g., Tzabbar and Margolis 2017; Ko and McKelvie 2018), we consider four top management characteristics that we expect can impact whether start-up firms conduct systematic marketing: (1) whether the top management has previous managerial experience (if some/all of the top management team have worked as a top-tier manager or not); (2) whether the top management has successful start-up experience (at least some of the top management team have had a successful start-up exit); (3) whether the firm has a board of directors (whether the firm has at least an informal board of directors); and (4) whether the firm is backed by professional investors (i.e., if investors include banks, incubators, angel capitalists, or VC's).

Start-up firms with at least a founder with managerial experience and previous start-up success are expected to better understand the importance of marketing to the firm. For example, experienced entrepreneurs have identified marketing as the number one skill they wished they had in their founding team (Startup Muster 2017). Further, start-up firms with outside assistance, in the form of a board of directors or professional investors, are also more likely to be more professionalized and have advisors who push the firm to pursue actions such as conduct

systematic marketing that lead such firms to be more successful (Franke et al. 2008). Hence, a number of consultants and head of accelerator programs we interviewed stated that "Of course marketing can help start-up firms, but they could really use a lot of help with it."

Third, we consider and control for institutional characteristics related to the firm's industry environment. Institutional theory suggests that the industry environment's traditions and norms are often mimicked so firms can appear legitimized in the eyes of their employees, customers, and competitors (DiMaggio and Powell 1983), which is particularly relevant to newer firms such as start-ups. Hence, the resultant following of industry norms can create a rue-like status in thought and action across the industry **in** terms of organizational processes (Meyer and Rowan 1977). Therefore, we consider the following three commonly used sources of industry-based institutional pressure (Kuester, Homburg, and Robertson I 999; Mintz and Currim 2013; Porter 1980): (1) market concentration (industry dominated by single or several players vs. not); (2) barriers to entry (very low or low barriers to entry vs. mid or high barriers); and (3) the type of industry.

While previous literature has discussed the importance of controlling for such industry institutional characteristics, it is unclear the expected effect of such variables on conducting systematic marketing. For example, with less market concentration, the industry is more fragmented, so firms try to "break through the clutter" and may need to specialize and spend more on certain functions like marketing in order to break through the clutter (Leonidou, Katsikeas, and Morgan 2013; Mintz and Currim 2013). On the other hand, greater industry concentration can indicate more intense rivalry and competition in an industry, so start-up firms may also be expected to need to continually spend more on marketing in order to match the competition (Farris and Buzzell 1979). Consequently, viewing these competing arguments from

an institutional theory lens, industry norms and processes could suggest either an increase or decrease in functional spending with greater industry concentration. Similar arguments can be made for barriers to entry.

Web Appendix C. Details on Equidam and Data Collection

We employ data from Equidam, a start-up firm valuator, to test our conceptual framework. Equidam itself is a start-up firm, headquartered originally in the Netherlands and now located in Spain. Its business model relies on start-up firms using their services and its services are offered online at equidam.com. The data made available for our study is between July 2016 -April 2018. Subsequent major changes to Equidam's business model and services offered after April 2018 affected the questions they asked and what data was available. Hence, data after April 2018 is not compatible for our analysis. At the time of our study, Equidam promoted the ability to provide start-up firms a ballpark financial valuation based on an initial 10 questions, and then encouraged start-up firms to answer a more in-depth questionnaire to get a more precise ballpark valuation. Pricing was for free during most of our time period with various services offered as add-ons; however, this pricing model changed substantially after.

In terms of users, start-up firms of any quality and level of success can go to Equidam's website, fill in information about their firm, founders, finances, and industry, and obtain a financial valuation of their firm. For example, as of December 2019, Equidam claims that 130,000 start-up firms have used their services from more than 90 countries. However, the amount of information firms are required to fill-in on Equidam's website was quite lengthy, so most start-up firms do not finish their questionnaire. As a method to overcome this problem and try to get more users to finish their questionnaire, Equidam allows start-up firms to continuously update and save their information over a period of time. While we initially hoped for a panel based dataset with start-up firms continuously updating their information over time, in our analysis of Equidam's data, nearly all start-up firms only used their services within a month time-period. Hence, for our empirical analysis, we use data from users last visit to Equidam as

start-up firms were the most likely to filled out the full questionnaire by then (since many did not complete the questionnaire in their initial visits). Further, we only employ data for this study from firms based in the United States who have provided no missing information on any of the variables included in our conceptual model and have an existing product.

Equidam's business model relies on the fact that most start-up firms have general uncertainty about their financial valuations, so they use Equidam's services to get a ballpark financial figure. Equidam is completely agnostic about the size, stage, and success of the start-up firm. Hence, this is why so many start-up firms have used Equidam's services. Consequently, our Equidam data comprises a wide-range of start-ups: successful and unsuccessful, large and small, and across a number of industries from three years of analysis (2016-2018). This wide-range of firms for analysis allows us to overcome the selection bias noted consistently in the entrepreneurship literature , where research mostly examines characteristics and valuations of extremely well performing start-ups that have obtained VC funding or grown well beyond start-up status by doing an IPO (e.g., Korteweg and Sorensen 2010; Wasserman 2017).

Concerns could exist based on user's ability to change their characteristics of their firm from visit to visit. However, when analyzing the data, we observe most changes were because the start-up firms did not complete the questionnaire in earlier visits. For those limited number of start-up firms that did come back and update their characteristics beyond a one-month period, we noticed that such firms rarely changed their answers about their firm, manager, or industry characteristics. We are less concerned about the precision of the valuation based on users making small adjustments to their financials to try to get larger valuations because of two reasons. First, Equidam's valuation offers start-up firms a ballpark financial valuation. This valuation offers a reference point for start-up firms, but not a more meaningful valuation for what their firm would

actually obtain in the market. Based on our interviews, most start-up firms are not looking for investors and would not rely on this valuation for a market interaction even if so. Instead, start-up firms are mostly curious about their own value (see next section for more details). However, for those start-up firms actually seeking investments, a ballpark valuation provides them a starting point to negotiate with investors, who then themselves make multiple ballpark financial valuation assessments prior to entering a rigorous due diligence process. Second, we log-scale our dependent variable so small changes to a firm's valuation would lead to minimal changes in the valuation used in our analysis.

Web Appendix D. Details on Self-Selection and Self-Reporting Concerns

Details on Self-Selection and Self-Reporting Concerns based on Potential Biases of Firms who go to Equidam's Website

Self-selection bias may exist in the data in that only those firms who are interested in obtaining a valuation are filling out the requisite information from Equidam. Further, self-reporting biases may exist because the start-up firms need to report on their financials, firm, and industry. However, as start-up firms operate in uncertain environments, they are often uncertain of their own valuation because of the complex valuation processes that relies on a combination of current and potential cash flows, working capital, and growth and survival rates, and multiple perspectives. Founder, investor, and consultant interviews confirmed this observation, with many founders themselves stating that "they had no idea what their valuation was but were curious to know." Further, a Google search of "startup valuation" yields a rather large number of results (29.3 million as of July 2019). Thus, start-up firms have a strong incentive to provide accurate information to Equidam in order to obtain an accurate valuation, regardless of whether such firms are seeking a current investor or not, as most start-up firms want to know their ballpark financial valuations without undertaking an intense due diligence process. In other words, most start-up firms are curious about their own value, regardless of the possibility of an investment. In fact, most start-up firms do not actively consider investors or ways of selling their firms.

In addition, the questions Equidam asks on the firm, industry, and founders are designed to be simple and easy for the respondent to answer. Finally, our sample, at a minimum, could be thought of as representative of start-up firms who are interested in knowing their own financial valuations in comparison to the general start-up population. Therefore, while the possibility of self-report and self-selection biases should be acknowledged, they do not appear to be a major issue for our study. Further, we collect survey data from start-up firms from an unrelated related

source (Survey Sampling International) and find similar results as with the Equidam sample (see Appendix A and the Robustness section).

Details on Self-Selection Concerns based Firms Input and Do Not Input Financial Information on Equidam's Website

One potential bias in the data is that it might be that the more successful and higher valued firms are more likely to input the financial information in addition to their aforementioned firm and industry characteristics. However, based on discussions with Equidam's staff and our own analysis of the data, attrition between the antecedents and consequences datasets is more likely caused by (1) the length and amount of questions asked by Equidam; and (2) lack of precise financial information on-hand when the start-up firm filled out their information on Equidam's website. A comparison in Table 4 between the sample of 693 B2B and B2C start-up firms in the antecedents dataset and the sub-sample of 202 B2B and B2C start-up firms in the consequences dataset should also limit concerns related to such self-selection sample biases. For example, roughly an equal percentage of start-up firms in both the antecedents and consequences datasets indicate that they conduct systematic marketing (57% in the antecedent dataset vs. 55% in the consequence sub-sample dataset), have a top manager with previous start-up success (35% vs. 36%) and managerial experience (43% vs. 48%), and compete in industries with high market concentration (32% vs. 32%) and low barriers to entry (25% vs. 21%). In addition, roughly an equal percentage of start-up firms in the antecedents and consequences datasets have an informal board of directors (53% vs. 57%), have strategic partners (19% vs. 19%), backed by professional investors (22% vs. 18%), and are of a similar firm size (average of 17.01 employees vs. 18.65 employees). Further, in the consequences dataset, we observe many firms that have a very low financial valuation; i.e., 28 of 159 (18%) of the firms are valued at <\$100,000 when valuing firms by the DCF with growth method. Thus, it

does not appear that significant self-selection biases exist for more successful start-up firms to be more likely to provide their financial information.

Details on Statistically Controlling for Self-Selection Concerns based Firms Input and Do Not Input Financial Information on Equidam's Website

A particular concern about the Equidam dataset is that not all start-up firms inputted their full financial information. One could presume that firms with better financial information may be more likely to complete their information, which could result in potential selection bias and endogeneity in terms of why firms complete their financial information in Equidam's application. To statistically control for this possibility, we need to calculate an Inverse Mills Ratio (IMR) term and include this term in our consequences of conducting systematic marketing equation (Wooldridge 2010).

Thus, first we identify six antecedents in the Equidam dataset that could potentially relate with characteristics of start-up firms who either have better financial information or would be more likely to complete their information:

- (1) firm size (number of employees, log-scaled),
- (2) have an informal board of directors (=1) or not (=0),
- (3) are late-stage start-up firms (=1) or not (=0),
- (4) are legal entities (=1) or not (=0),
- (5) if the firm is backed by professional investors (=1) or not (=0),
- (6) whether the firm has *not* thought of exit strategies (=1) or not (=0).

Then, we estimate a probit model with these six firm characteristics as independent variables and specify the dependent variable as whether the start-up firm inputted their financial information (=1) or not (=0). Web Appendix Table 9 provides the results of this analysis. We find that legal entity ($p < .01$) start-up firms with a board of directors ($p < .05$) and in the early-stage of

development ($p < .05$) are significantly more likely to fill in their financial information on Equidam's application, while the remaining variables are insignificant including whether the firm has or has *not* thought of exit strategies. The next step is to calculate the IMR term per firm based on the ratio of the probability density function to the cumulative density function from this model examining potential antecedents of why firms complete their financial information. Finally, we include the IMR term calculated for each start-up firm in the consequences of systematic marketing equation (Equation 4).

Exclusion restrictions are met between Equation (4) and the probit model described above as several variables in the self-selection equation are not found to significantly impact the consequences equation and vice versa. For example, board of directors is found to significantly impact a firm's likelihood of filling out their financial information, but not impact its financial valuation. In contrast, a firm who discussed an exit strategy is found to significantly impact a start-up firm's financial valuation (see Model section referring to control variables in main manuscript) but not its likelihood of filling out their financial information.

Web Appendix E. Details on Robustness Tests

We summarize here additional analyses testing alternative model specifications and financial valuation metrics, conducted in order to establish the robustness of our results (Web Appendix Tables 5 and 6). For simplicity, we test these additional models by using the DCF with growth method as our start-up firm valuation measure.

Alternative Model Specifications. To test whether the results of our focal models are sensitive to our modeling approach, we made four types of modifications to Equation (4). First, we used effects (vs. dummy) coding for all the categorical variables in the analysis. Second, we included additional control variables such as whether the start-up firm business was internet-based or whether it had founders with previous top manager experience or who were involved in a previously successful start-up exit. Third, we employed three different cut-points when Winsorizing the financial variable (i.e., none, 1%, and 5%). Fourth, we include industry dummy variables. Fifth, we estimated separate regression models split by our three focal independent variables (i.e., only B2B, only B2C, only early-stage, only late-stage, only firms who conduct systematic marketing). In the nine sets of re-estimated models, we find support for the original results in 96% (44 of 46) of the applicable hypotheses tests conducted (see Web Appendix Table 5, rows 1-9). Consequently, our original results appear robust to variations of the model specification.

In addition, we wanted to assess whether the categorization of the four contingencies analyzed in this study (Early/Late, B2B/B2C) was consistent with categorization in our data for start-up firms. To accomplish this assessment, we estimated a series of latent class models based on (i) solely our focal contingencies, (ii) including (i) and all categorical control variables in our consequences of conducting systematic marketing model (Equation 4), and (iii) including (i), (ii),

and all categorical control variables in our conducting systematic marketing antecedents model (Equations 3 and 4). Based on this latent class segmentation analysis, we confirm that classes of start-ups are primarily categorized by our aforementioned contingencies based on the start-up firms' stage of development and type of customers.

Alternative Metrics for Start-up Firm Financial Valuations. Due to the uncertainty in the start-up valuation process, investors typically employ a variety of financial metrics and a variety of parameters underlying their assumptions in their start-up firm valuation process (e.g., Gompers 1995). Therefore, to test whether our hypotheses are sensitive to the financial valuation metric employed, we ran additional analyses with 42 different financial valuation metrics. To minimize the impact of outliers, we winsorized all financial valuations at the 2.5% and 97.5% levels.

First, we computed 16 alternative financial valuations that are alterations to the originally specified DCF with long-term growth valuation terminal value. The alterations include making changes to the terminal value parameters: (i) growth rate (g), (ii) discount rate (d), (iii) number of years in the future for both the growth and discount rate (T), (iv) use of working capital versus an alternative financial metrics, and (v) whether to use start-up self-reported anticipated growth measures versus our more conservative and slower specified growth rate. Based on variations of (i)-(v), we re-estimated our model with 16 alternative valuations of the DCF with long-term growth metric, and find support for the original results in 97% (93 of 96) of the applicable hypotheses tests (see Web Appendix Table 6, rows 1-16); demonstrating the robustness of our results to these differences in financial valuations.

Second, we analyzed whether conducting systematic marketing is associated with start-up firms' financial valuations based solely on finances (i) provided by the start-up on the current

year ($t=1$) and (ii) anticipated by the start-up for two years in the future ($t=3$). We employed five separate metrics, all log-scaled, for (i) and (ii): revenues, EBITDA, EBIT, net profit, and working capital. Results of these ten analyses (including current revenues, which is employed as one of our focal valuations in the manuscript) support H2a-c in each of the 10 models, H3b in 9 of the 10 models, and H2d in 8 of the 10 models (see Web Appendix Table 6, rows 17-26). Thus, these analyses provide additional robustness to our earlier results.

Third, to account for different heuristics investors employ to evaluate start-up firms, we computed financial valuations based on the start-up's EBITDA and EBIT, as well as their expected industry multiples based on their level of EBITDA and EBIT (e.g., McClure 2019). We took information on industry classifications and multiples from Aswath Damodaran's New York University website.¹ We estimated 12 variations of this dependent variable using DCF with long-term growth, DCF based on user input, and single year valuation measures. Across the 12 financial valuation metrics, we find robust support for each of the main results identified earlier, with the exception of H3a (see Web Appendix Table 6, rows 27-38).

Finally, we tested our hypotheses on the financial valuations computed by Equidam's proprietary algorithm. The VC Method employed as one of our focal variables in the main manuscript is one of their valuations. In addition, Equidam computes five additional financial valuation metrics for each start-up firm. The first two metrics (scorecard and checklist methods) are more qualitative and holistic, the next two metrics (DCF with long-term growth and DCF with multiples) are based on the firms' financial information, and the fifth metric is the average financial valuation of the five other metrics (including the VC Method). Results of the two financial-based firm valuations support our hypotheses, as do results of the average of the five

¹ <http://pages.stern.nyu.edu/~adamodar/>

Equidam firm valuations (see Web Appendix Table 6, rows 39-44). However, we find less support of our hypotheses in the two more holistic and qualitative valuations. One reason for this is Equidam's algorithms for these two valuations increase the weighting of founding team characteristics and how the start-up firm's product idea differentiate from competitors, based on quite broad questions, and reduce the weighting of firm strategic actions.

To summarize the results of 42 additional variations (and the VC and the current revenues methods; so 44 in total) of the financial valuation metric (see last rows of Web Appendix Table 6)², we find support for over 90% of the hypotheses tests that examine whether conducting systematic marketing is more beneficial for early-stage B2B firms over (i) early-stage B2C [H2a] and (ii) late-stage B2B start-up firms [H2b], and (iii) in comparison to start-up firms from other stages of development and types of customers [H3b]. Further, we find that conducting systematic marketing is more beneficial for late-stage B2C firms over (i) early-stage B2C [H2c] and (ii) late-stage B2B start-up firms [H2d] in over 90% and 80% of the financial valuations, respectively. Importantly, these results appear robust across a large number of types of financial valuations with different underlying properties, such as the use of multiple underlying financial metrics (working capital, revenues, EBIT, EBITDA, net profit, and free cash flow to equity), employing self-reported and research-generated varying growth and discount rates parameters, using current and future financials that do and do not include growth and discount rates parameters, including industry multiples, and relying on Equidam's proprietary more-financial based start-up valuation algorithms. Hence, the results of the analyses employing alternative financial valuation metrics provide robustness for our conceptual framework and hypotheses.

² 44 valuations are included in Web Appendix Table 6 as the valuations of start-up firms based on their current revenues and VC methods are included in the table for ease of flow.

Web Appendix F. Details on Survey Analysis of Consequences of Conducting Systematic Marketing

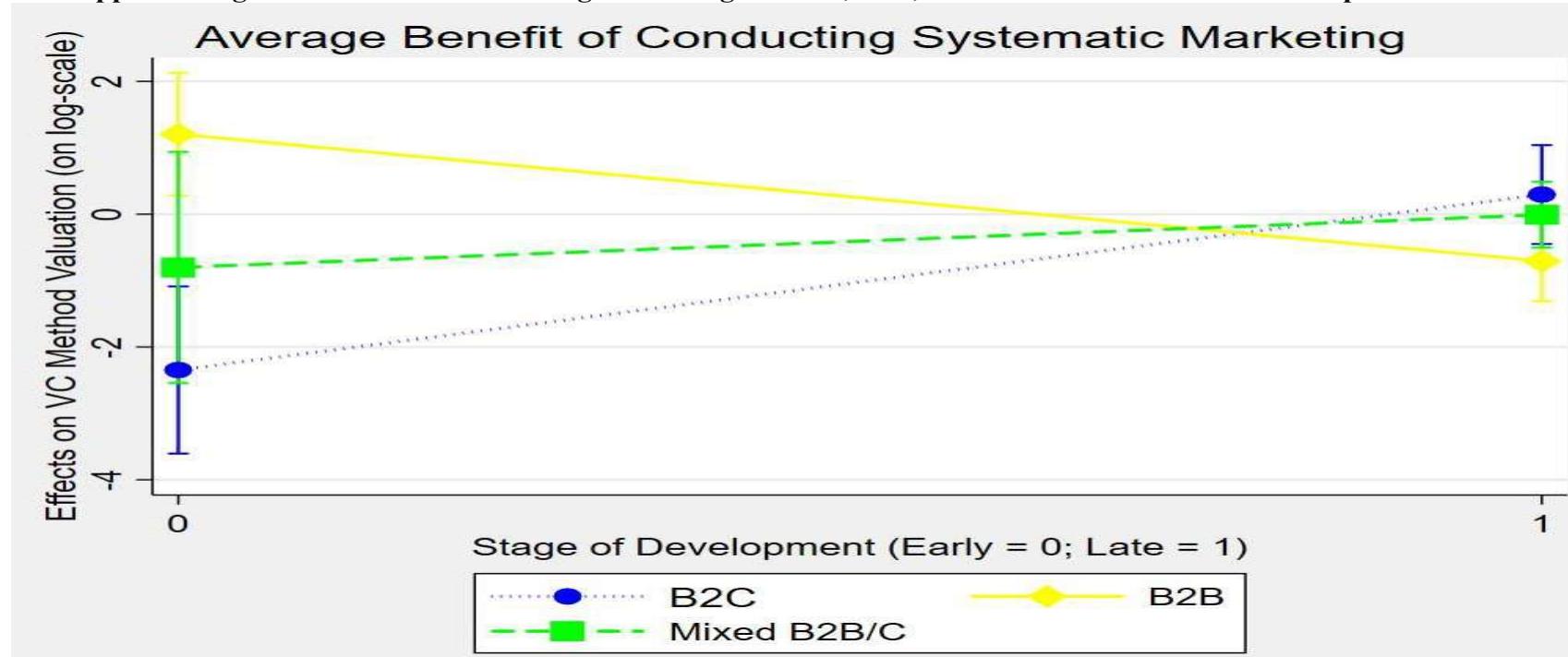
We also conduct additional analysis on the 377 start-up firms to examine when conducting systematic marketing is more beneficial to their financial outcomes. In this survey, we collect data on the extent start-up firms conduct systematic marketing, on a 1-7 scale, to allow for less aggregation for this measure than in the Equidam data. In addition, we collect data on the extent the start-up firms' sales come from B2B or B2C markets (**1-7** scale from Verhoef and Leeflang 2009) and a number of additional controls included in the analysis of the Equidam data. However, because of the survey methodology, sensitive, detailed, and precise information would need to be aggregated or not be able to be asked at all. For example, because of the survey methodology, and an inability to obtain a whole set of financial measures to compute the start-up firms terminal valuation, we needed to obtain alternative firm performance or valuation measures. Thus, we first use the measure of firm performance based on the Jaworski and Kohli (1993) widely employed two-item construct which asks "How was the overall performance of your firm in the last 3 years relative to your stated objectives" and "How was the overall performance of your firm relative to your closest competitors in the last 3 years" on 1-7 scales. Further, we then ask for the respondents about their start-up firm's sales and profitability, and provide them categories to enable a more accurate (although less precise) response.³

We estimate three models, slightly modified from our original analyses, which include main effects and two-way and three-way interactions between our three focal variables (conduct systematic marketing, stage of the start-up firm's development, and its target customer), and

³ In addition, a number of respondents did not know about the backgrounds of the start-up firms' founders and the backing of which types of investors . Finally, due to a survey data collection error, industry information was not collected apart from information on the extent of concentration and barriers to entry in the industry.

controls for the number of employees in the firm. Further, due to lack of sufficient data, we note that we only estimated models on the consequences of conducting systematic marketing. The first model is a robust-standard errors regression similar to Equation (3) reported in the manuscript, with the dependent variable of firm performance based on the Jaworski and Kohli (1993) construct of performance, while the two additional models are ordinal probit models that employ dependent variables based on firm sales and firm profitability category performance measures. In each model, as reported in Web Appendix Table 8, we find results similar to our Equidam results: conducting systematic marketing is significantly more beneficial for early-stage B2B and late-stage B2C start-up firms. In addition, these results are further supported when including additional control variables into the model such as market concentration, barriers to entry, and whether the firm has at least an informal board of directors. Hence, the analysis of 377 additional start-up firms in a different context than the Equidam data, provides robust support of our conceptual model and findings for when conducting systematic marketing is more or less beneficial.

Web Appendix Figure 1. Effect of Conducting Marketing for B2C, B2B, and Mixed B2C and B2B Start-up Firms



The Y-axis displays the predicted financial valuations of a start-up firm on a logarithmic scale. The X-axis shows the predicted financial valuations for when an average B2B (yellow solid line), B2C (blue small dotted lines), and mixed B2B/C (green long dotted lines) start-up firm conducts systematic marketing in either the early-stage (=0, left side of graph) or late-stage (=1, right side of graph).

The main takeaway from this figure is that for mixed B2C and B2B start-up firms, conducting systematic marketing has an effect that is in-between the effects of marketing on primarily B2C and B2B focused early and late-stage start-up firms.

Web Appendix Table 1. Interview Characteristics

Founder, Investor, or Consultant	Description	Location	Date	Type of Interview
Founder	Late-stage B2C Firm	USA	April 2016	In-person*
Founder	Early-stage B2B Firm	USA	April 2016	In-person*
Founder	Early-stage B2B Firm	Israel	October 2017	In-person
Founder	Late-stage B2B Firm	USA	November 2018	In-person
Founder	Early-stage B2B Firm	Australia	March 2019	In-person*
Founder	Early-stage B2C Firm	Australia	April 2019	In-person
Founder	Late-stage B2B Firm	Australia	May 2019	In-person
Founder	Early-stage B2B Firm	Australia	May 2019	In-person*
Founder	Early-stage B2B Firm	Australia	May 2019	In-person*
Founder	Early-stage B2C Firm	Australia	May 2019	In-person*
Founder	Early-stage B2B Firm	Australia	May 2019	In-person*
Founder	Late-stage B2B Firm	France (but American)	June 2019	In-person*
Founder	Early-stage B2B Firm	Israel	June 2019	In-person
Founder	Early-stage B2C Firm	Australia	August 2019	In-person
Investor	Angel Investor / Former Founder	Australia	April 2019	Video Conference
Investor	Angel Investor	Australia	April 2019	In-person
Investor	Angel Investor	Australia	May 2019	In-person*
Investor	Angel Investor	Australia	May 2019	In-person*
Investor	Venture Capitalist	Australia	July 2019	In-person
Consultant	Head of University Incubator	USA	February 2016	In-person
Consultant	Head of University Student Incubator	USA	November 2016	In-person
Consultant	Head of University Incubator / Former Founder	Australia	March 2019	Phone
Consultant	Head of Incubator / Co-Working Space	Australia	May 2019	In-person*
Consultant	Head of Incubator	Australia	May 2019	In-person*
Consultant	Start-up Consultant / Advisor at Incubator	Australia	May 2019	In-person*
Consultant	Head of Accelerator	Israel	July 2019	In-person*
Consultant	Marketing Start-up Consultant	Australia	August 2019	In-person
Consultant	Marketing Start-up Consultant	Australia	August 2019	In-person
Consultant	Manager in Government Agency Encouraging Start-up Development / Former Founder	Australia	September 2019	In-person*

* indicates interview questions asked as part of an informal discussion

Web Appendix Table 2. Results of Two-Way and Three-Way Interaction Consequences Model

Variable	Coefficient
Intercept	14.85***
<i>Main Effects</i>	
Conduct systematic marketing	1.70***
Late (vs. early) stage of development	1.14*
B2C (vs. B2B) target customer	1.03
<i>Two-Way Interactions</i>	
Conduct systematic marketing * Late stage of development	-2.38***
Conduct systematic marketing* B2C target customer	-3.89***
Late stage of development * B2C target customer	-2.87***
<i>Three-Way Interaction</i>	
Conduct systematic marketing * Late stage of development * B2C target customer	5.14***
<i>Controls</i>	
Strategic partners	-0.48
Previous managerial experience	0.51**
Firm size (ln)	0.68***
No exit strategy	-0.46
Internet-based start-up	1.13***
Low barriers to entry	0.13
Year2017 (vs. 2016)	0.14
Year 2018 (vs. 2016)	0.72
IMR antecedents of marketing	0.49
IMR antecedents of financial information	-2.19***
<i>Model Diagnostics</i>	
Number of Observations	193
R-squared	.48
Root Mean Squared Error	1.65

*p<.1; **p<.05; ***p<.01;

Dependent Variable = ln (VC Method).

Results of the two-way and three-way interactions show that conducting systematic marketing has significantly greater benefits for early-stage B2B and late-stage B2C start-up firms than for late-stage B2B and early-stage B2C start-up firms.

Web Appendix Table 3. Correlations

Panel A. Antecedents of Conducting Systematic Marketing (n=693)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Conduct systematic marketing	1	1														
B2CFirm	2	.06	1													
Late Stage	3	.08	.07	1												
Legal entity	4	.04	-.07	.02	1											
Internet-based start-up	5	.06	-.20	-.19	.04	1										
Strategic partners	6	.11	-.24	.00	.06	.09	1									
Firm size (ln)	7	.14	.00	.22	-.01	-.12	.09	1								
Previous managerial experience	8	.05	-.27	-.12	.05	.12	.24	.06	1							
Previous managerial start-up success	9	.14	-.06	-.05	-.04	.10	.16	.08	.25							
Board of directors	10	.10	-.20	-.08	.05	.20	.23	.07	.24	.18	1					
Professional investors backing	11	.09	-.12	.00	.08	.04	.13	.14	.12	.06	.20	1				
High market concentration	12	-.03	-.01	-.03	.02	-.05	.01	.00	-.03	.01	-.01	-.03				
Low barriers to entry	13	-.03	.08	-.04	-.07	.00	-.10	-.11	-.07	-.05	-.13	-.05	-.12	1		
Year 2016	14	.05	-.04	.08	.08	-.04	-.02	.08	.00	.00	-.03	.00	-.02	-.01		
Year 2017	15	-.02	.08	.04	-.08	-.08	.01	-.02	-.12	-.06	-.05	-.06	.06	-.01	-.57	
Year 2018	16	-.01	-.07	-.12	.02	.13	.01	-.05	.14	.07	.08	.07	-.06	.02	-.16	-.72

Panel B. Consequences of Conducting Systematic Marketing (n=152)

<i>Variable</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
VCMethod	1																
DCF w/Growth Method	2	.47	1														
Revenues Method	3	.55	.88														
Conduct systematic marketing	4	.02	.04	.02													
B2CFirm	5	-.40	-.30	-.30	.17	1											
Late Stage	6	-.08	.17	.19	.00	-.06											
Strategic partners	7	-.23	-.10	-.12	-.07	.19	.07										
Previous managerial experience	8	.28	.11	.11	.06	-.30	-.22	-.15	1								
Firm size (ln)	9	.27	.51	.60	.17	-.06	.23	-.02	-.02								
No exit strategy	10	-.37	-.17	-.18	-.11	.16	.06	.11	-.31	-.04	1						
Internet-based start-up	11	.33	-.08	-.07	.06	-.12	-.18	-.12	.08	-.18	-.26	1					
Low barriers to entry	12	-.04	-.13	-.15	-.01	.16	-.05	.07	-.10	-.09	.04	.08	1				
Year 2016	13	-.03	.13	.14	.06	-.04	.17	.09	.04	.11	.09	-.12	.00				
Year 2017	14	-.12	.00	.02	.00	.06	-.05	-.03	-.14	-.01	.07	-.10	-.01	-.53	1		
Year 2018	15	.16	-.10	-.14	-.05	-.04	-.09	-.05	.13	-.09	-.16	.22	.01	-.25	-.68		
IMRMktg	16	-.37	-.34	-.41	-.13	.18	-.17	.29	-.03	-.49	.30	-.26	.03	-.15	.15	-.05	
IMR Fin Data	17	-.30	-.04	-.03	.02	.25	.41	.11	-.12	.25	.33	-.37	-.05	-.03	.15	-.14	.34

Number of observations is restricted to those firms with positive VC, DCF with long term growth, and current revenues methods, to enable correlations between such variables.

Web Appendix Table 4. Results of Analysis of Antecedents of Conducting Systematic Marketing

Variable	Coefficient
Intercept	-.51***
<i>Firm Strategy Resource Antecedents (RDT)</i>	
Early-stage B2B firms (vs. other firms)	-.34**
Legal entity	.11
Internet-based start-up	.17**
Strategic partners	.21
Firm size (ln)	.13***
<i>Top Management Antecedents (UET)</i>	
Previous managerial experience	-.04
Previous managerial start-up success	.31***
Board of directors	.12
Professional investors backing	.17**
<i>Industry Institutional Antecedents (Inst. Theory)</i>	
High market concentration	-.08
Low barriers to entry	.02
Year2017 (vs. 2016)	-.11
Year 2018 (vs. 2016)	-.18*
<i>Model Diagnostics</i>	
Number of observations	693
Log pseudo-likelihood	-457.19
Pseudo R-squared	.04

*p<.1; **p<.05; ***p<.01

Note: The results show that the resource dependent-based firm strategy variables have the greatest impact on whether firms conduct systematic marketing, upper echelon-based top management characteristics have a lesser impact, and the institutional-based industry environment have the least impact.

Web Appendix Table 5. Results of Robustness Tests of Additional Models

Row	Variable <i>I</i> Hypothesis	n	Ht	H2a	H2b	H2c	H2d	H3a	H3b
			Main En t f M t . g. 1s Bene- ficial	Early B2B > Early BZC	Early B2B > Late BZC	Late B2C > Early B2C	Late B2C > Late B2B	Early B2C Least Effect	Early B2B Largest Effect
	fa in Results								
	Effects Coding	159							
2	Including Additional Control Variables (prev. top manager experience, internet-based, prev. successful start-up exit)	159							
3	Financial Value: No winsorized values	159							
4	Financial Value: Winsorized at 1% & 99%	159							
5	Financial Value: Winsorized at 5% & 95%	159							
6	Include Industry Dummy Variables	159							
7	Split Regressions by B2B & B2C	159		NIA			NIA	NIA	NIA
8	Split Regressions by Early- & Late-Stage	159			NIA	NIA		NIA	NIA
9	Only Firms that Conduct Systematic Marketing	85	NIA						
Percent Supported in Additional Models			0%	100%	100%	100%	88%	100%	86%

= expectation supported (p<.1); - = expectation not supported (p>=.1); NIA = not applicable;

Dependent variable= DCF with growth method

Web Appendix Table 6. Results of Robustness Tests of Alternative Financial Valuations

Row	Variable / Hypothesis	n	H1	H2a	H2b	H2c	H2d	H3a	H3b		
			Main Effect of Mktg. is Beneficial	Early B2B> Early B2C	Early B2B> Late B2B	Late B2C> Early B2C	Late B2C> Late B2B	Early B2C Least Effect	Early B2B Largest Effect		
<i>!Focal variable</i>											
Iterations to DCF with Long-Term growth Valuation											
	Working capital as financial metric; Researcher specified growth rates for discount rate (d), growth rate (r), and number of years in future (T)										
1	d=15%, g=1.5%, T=3	159									
2	d=1.5%, g=1.5%, T=10	159									
3	d=5%, g=10%, T=5	159									
4	d=20%, g=1.5%, T=5	159									
5	d=50%, g=50%, T=5	159									
6	d=75%, g=10%, T=10	159									
7	d=50%, g=10%, T=10	159									
8	d=20%, g=0.1%, T=10	159									
	<i>Percent Supported</i>		0%	100%	100%	100%	100%	100%	100%		
	Revenue as financial metric; Researcher specified growth rates for discount rate (d), growth rate (r), and number of years in future (N)										
9	Revenue-based, d=15%, g=1.5%, T=3	159									
10	Revenue-based, d=15%, g=1.5%, T=5	159									
11	Revenue-based, d=15%, g=1.5%, T=10	159									
	<i>Percent Supported</i>		0%	100 %	100%	100%	0%	100%	100%		
	Working capital as financial metric; Using self-anticipated growth for 3 years; Researcher specified discount rate (d=15%) and number of years in future (T=3)										
12	Working capital	159									
13	Revenue	126									
14	Free cash flow to equity ¹	126									
	<i>Percent Supported</i>		0%	100%	100%	100%	100%	100 %	100%		
	Valuation based on solely on anticipated finances in future (no other years included)										
15	Working capital (d=15%, t=3)	159									
16	Free cash flow to equity ¹ (d=15%, t=3)	148									
	<i>Percent Supported</i>		0%	100%	100%	100%	100%	100 %	100%		
	<i>Percent Supported in Alterations to DCF with Long-Term Growth Valuation</i>		0%	100%	100%	100%	8J%	100%	100%		

Web Appendix Table 6 continued

Row	Variable / Hypothesis	n	H1	H2a	H2b	H2c	H2d	H3a	H3b		
			Main Effect of Mktg. is Beneficial	Early B2B> Early B2C	Early B2C> Late B2B	Late B2C> Early B2C	Late B2C> Late B2B	Early B2C Least Effect	Early B2B Largest Effect		
<i>focal variable</i>											
Financial Valuations based only on early Finances											
	Current Year Finances (all natural log-scaled); note reduced sample sizes for each metric										
17	Working capital	159									
18	Revenues <i>This is Current Revenues Method employed in main manuscript but with sample affirms limited to those with > DCF with long term growth</i>	159									
19	EBITDA	127									
20	EBIT	117									
21	Net profit	115									
	<i>Percent Supported</i>		0%	100%	100%	100%	80%	40%	100%		
	nticipated Finances 2 years in Future (natural log-scaled)										
22	Working capital	159									
23	Revenues	159									
24	EBITDA	153									
25	EBIT	145									
26	Net profit	143									
	<i>Percent Supported</i>		0%	100%	100%	100%	80%	60%	80%		
	<i>Percent Supported based on Financial Valuations from only on Yearly Finances</i>		0%	100%	100%	100%	80%	50%	90%		
Financial Valuations including Industry Multiples											
	Venture capital method valuation ² based solely on single year (no other years included); Researcher specified discount rate (d=15%) and number of years in future (varies)										
27	IEBITDA VC Method (d=15%, t=1)	127									
28	IEBIT VC Method (d=15%, t=1)	116									
29	IEBITDA VC Method (d=15%, t=3)	153									
30	IEBIT VC Method (d=15%, t=3)	144									
	<i>!Percent Supported</i>		0%	100%	100%	100%	100%	0%	100%		
	Venture capital method valuation ² by using a DCF but with EBITDA & EBIT; Using self-anticipated growth for 3 years; Researcher specified discount rate (d=15%) and number of years in future (T=3); each year required positive values										
BITDA											
	BIT	4									
	<i>ercent Supported</i>		0%	100%	100%	100%	100%	0%	100%		

Web Appendix Table 6 continued

Row	Variable / Hypothesis	n	H1	H2a	H2b	H2c	H2d	H3a	H3b ¹
			Main Effect of Mktg. is Beneficial	Early B2B ^{>} Early B2C	Early B2B ^{>} Late B2B	Late B2C ^{>} Early B2C	Late B2C ^{>} Late B2B	Early B2C Least Effect	Early B2B Largest Effect
Focal variable									
	DCF with EBITDA or EBIT as financial metric; Industry multiples included; Researcher specified growth rates for discount rate (d), growth rate (r), and number of years in future (T); each year required positive values								
33	iEBITDA, d=1.5%, g=1.5%, T=3	127							
34	jEBIT, d=15%, g=1.5%, T=3	116							
35	jEBITDA, d=1.5%, g=1.5%, T=S	127							
36	jEBIT, d=1.5%, g=1.5%, T=S	116							
37	jEBITDA, d=15%, g=1.5%, T=10	127							
38	jEBIT, d=15%, g=1.5%, T=10	116							
	Percent Supported		0%	100%	100%	100%	100%	0%	100%
	Percent Supported in Financial Valuations including Industry Multiples		0%	100%	100%	100%	100%	0%	100%
	jEquidam-based Financial Valuations³								
39	Scorecard Method (more holistic and qualitative based on founder and product idea characteristics)	159							
40	Checklist Method (more holistic, based on founder and product idea characteristics)	159							
41	DCF with long-term growth Method (based on working capital and expected growth)	154							
42	DCF with multiples Method (based on working capital and industry multiples)	152							
43	Venture Capital Method (based on industry multiples and stage of firm) <i>This is VC Method employed in main manuscript but with sample affirms limited to those with >DCF with long term growth</i>	153							
44	Average of 5 measures	152							
	Percent Supported in Equidam-based Winancial Valuations		0%	100%	83%	66%	83%	50%	83%
	Overall Support for Hypotheses								
	Percent Supported in Additional Models		0%	100%	100%	100%	88%	100%	86%
	Percent Supported in Alternative Financial Valuations		0%	100%	98%	95%	86%	55%	93%
	Percent Supported Overall		0%	100%	98%	96%	87%	61%	92%

Number of observations (n's) may differ per financial metric due to log-scaling, as negative financial metrics are eliminated and dropped from our analysis in such computations.

= expectation supported ($p<.1$); - = expectation not supported ($p>.1$);

¹ Free cash flow to equity = cash left over after taxes, reinvestment needs and debt cash flows have been met.

² Venture Capital (VC) Method = $(EBITDAr \text{ or } EBITr \times \text{Industry Multiple}) / (1+d)$ "

³ see https://www.equidam.com/wp-content/uploads/2017/08/Understanding_Equidam_Business_Valuation.pdf for more details (although the algorithms for valuations listed in the document get changed by Equidam over time).

Web Appendix Table 7. Results of Analysis of Antecedents of Conducting Systematic Marketing when Including Mixed B2C and B2B Start-up Firms

Variable	Coefficient
Intercept	-.63***
<i>Firm Strategy Resource Antecedents (RDT)</i>	
Early-stage B2B firms (vs. other firms)	-.37***
Legal entity	.16
Internet-based start-up	.25***
Strategic partners	.11
Firm size (ln)	.14***
<i>Top Management Antecedents (UET)</i>	
Previous managerial experience	-.02
Previous managerial start-up success	.20***
Board of directors	.08
Professional investors backing	.17***
<i>Industry Institutional Antecedents (Inst. Theory)</i>	
High market concentration	-.05
Low barriers to entry	.05
Year 2017 (vs. 2016)	.05
Year 2018 (vs. 2016)	.09
<i>Model Diagnostics</i>	
Number of observations	1,178
Log pseudo-likelihood	-777.84
Pseudo R-squared	.04

*p<.1 ; **p<.05; ***p<.01

Web Appendix Table 8. Results of Survey Analysis of Consequences of Conducting Systematic Marketing

Variable/ Model	Overall Firm Performance Construct	Firm Sales (Categorical)	Firm Profitability (Categorical)
Regression Type	OLS with Robust SE	Ordered Probit with Robust SE	Ordered Probit with Robust SE
(Column)	(1)	(2)	(3)
Intercept	.44	(see cut points below)	(see cut points below)
<i>Main Effects</i>			
Conduct systematic marketing	.83***	.56**	.39
Late (vs. early) stage of development	3.32***	3.11**	2.97**
B2C (vs. B2B) target customer	.57***	.41*	.47*
<i>Two-Way Interactions</i>			
Conduct systematic marketing * Late stage of development	-.69***	-.49*	-.38
Conduct systematic marketing * B2C target customer	-.11***	-.09**	-.08*
Late stage of development * B2C target customer	-.54***	-.45*	-.50**
<i>Three-Way Interaction</i>			
Conduct systematic marketing * Late stage of development * B2C target customer	.12***	.09*	.08*
<i>Controls</i>			
Firm size (ln)	.16***	.46***	.44***
<i>Cut Points Based on Category for Ordinal Probit Models</i>			
1 (95% CI)		3.34 (.37, 6.32)	2.78 (-.06, 5.63)
2 (95% CI)		4.05 (1.08, 7.02)	2.93 (.09, 5.77)
3 (95% CI)		4.43 (1.45, 7.42)	3.00 (.16, 5.85)
4 (95% CI)		4.86 (1.89, 7.84)	3.06 (.22, 5.91)
5 (95% CI)			3.11 (.27, 5.95)
6 (95% CI)			3.85 (1.00, 6.71)
7 (95% CI)			4.31 (1.46, 7.15)
8 (95% CI)			4.86 (2.01, 7.71)
<i>Model Diagnostics</i>			
R-squared (OLS) / Psuedo R-Squared (Ordered Probit)	.21	.10	.07
Root MSE (OLS) / Log pseudolikelihood (Ordered Probit)	1.06	-510.67	-653.03

Results of the three-way and two-way interactions in each of the three models show that conducting systematic marketing is most beneficial for late-stage B2C and early-stage B2B start-up firms.

Overall firm performance is based on the Jaworski and Kohli (1993) measure asking firms how was the overall performance of their firm in the last three years (i) relative to their stated objectives and (ii) relative to their closest competitors, with 1=much worse and 7=much better. Firm sales had five categories (Below \$100,000, \$100,000-\$249,999, \$250,000-\$499,999, \$500,000-\$999,999, and Above \$1,000,000) and firm profitability had nine categories (Below -\$500,000, -\$499,999 - -\$250,000, -\$249,999 - -\$100,000, -\$99,999 - -\$1, \$0, \$1-\$99,999, \$100,000-\$249,999, and Above \$500,000).

Web Appendix Table 9. Results of Analysis of Antecedents of Why Start-up Firms Input Financial Information in Equidam's Application

Variable	Coefficient
Intercept	-.72***
Firm size (ln)	-.04
Board of directors	.22**
Late (vs. early) stage of development	-.22**
Legal entity	.51***
Professional investors backing	-.09
No exit strategy	-.09
<i>Model Diagnostics</i>	
Number of Observations	1164
Pseudo-r ²	.03
Log likelihood	-706

*p<.1; **p<.05; ***p<.01

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