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The Strategic Management of High-Growth Firms: A Review and Theoretical Conceptualization

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Abstract: Scholars' knowledge of the factors behind high-growth firms remains fragmented. This paper provides a systematic review of the empirical literature concerning high-growth firms with a focus on the strategic aspects contributing to growth. Based on our review of 39 articles, we identify five drivers of high growth: human capital, strategy, human resource management, innovation, and capabilities. These drivers are combined to develop a conceptual model of high-growth firms that includes potential contingency factors among the five drivers. We also propose a research agenda to deepen the study of high-growth firms in strategic management.

Keywords: High-Growth Firms, Strategy, Innovation, Human Capital, HRM, Capabilities, Literature Review

JEL Codes: L25, L26, M13

1. Introduction

Explaining firm growth has long been a prevalent topic for research on the strategic management of firms (Eisenhardt and Schoonhoven, 1990; Penrose, 1959). High-growth firms (HGFs) offer a unique context to understand firm growth, with the particularities of rapid growth illustrating management challenges that are not seen with other growing firms (Delmar, Davidsson, and Gartner, 2003). Further, the potential of generating long-term economic returns to shareholders and stakeholders highlights the importance of these firms (Coad et al., 2014b; Senderovitz, Klyver, and Steffens, 2016). However, studying HGFs is fraught with challenges as they are difficult to sample and follow (Daunfeldt, Elert, and Johansson, 2014) and have rapidly evolving organizational structures (Nicholls-Nixon, 2005; Powell and Sandholtz, 2012) that make them difficult to study.

While research has established the importance of HGFs, research on the strategic management of such firms—including, for example, what factors lead to the development of HGFs and their continued growth—remains fragmented and without any systematic assessment (Coad et al., 2014a). We see three main reasons for the fragmented nature of HGF research stemming from inconsistent definitions, sampling challenges, and organizational complexity. First, there are inconsistent uses and measures for “high growth.” By and large, scholars agree that HGFs can be defined as “firms growing at or above a particular pace, measured either in terms of growth between a start and end year, or as annualized growth over a specific number of years” (Coad et al., 2014a: 95). The source of disagreements tends to relate to the specifics regarding the pace of growth, the nature of how growth is measured, and the number of years in which growth occurs (McKelvie and Wiklund, 2010). Second, the nature of high growth is often fleeting, making HGFs difficult to empirically sample and track (Daunfeldt et al., 2014). This challenge is exacerbated by the fact that many HGFs are acquired following their growth or shut down based on the major risks involved in such rapid

expansion (Delmar, McKelvie, and Wennberg, 2013). Third, HGFs face significant challenges in determining what kinds of strategies are needed for rapid growth since that level and pace of growth entails substantially greater organizational complexity than average-growth firms (Covin and Slevin, 1990; Delmar et al., 2003; Powell and Sandholtz, 2012). Combined, these three challenges have resulted in the research on the strategic management of HGFs to be fragmented with limited cumulative knowledge building. Consequently, we lack a solid foundation for new knowledge generation that builds upon robust and consistent approaches to the concepts, definitions, and methods employed, thereby constraining the findings of extant research to relatively isolated streams of research. Setting the tone for future research on HGFs requires a synthesis of extant findings and concepts from the disjointed literature.

To address this important oversight in the literature, we provide a systematic review of the literature on the strategic management of HGFs. This review allows us to outline current findings and synthesize them into a conceptual framework that illustrates what distinguishes the management of HGFs from other types of firms. Our review is based on the literature of the last 30 years of scholarly work on HGFs with a focus on empirical research on the strategic management of HGFs. We identify past accomplishments, unresolved issues, and unanswered questions in the literature. We also highlight progress as well as methodological limitations. Summarizing empirical studies on the drivers of high growth, our review shows that the strategic management of HGFs is based on five drivers: the ways founders and employees leverage 1) human capital, 2) firm human resource management (HRM) practices, 3) firm strategy, 4) firm innovation, and 5) firm capabilities for growth. Our coding of the empirical studies included in our review reveals associations between these factors and a firm's likelihood of experiencing high growth as well as a number of potential contingency associations. Based on these direct and contingency factors, we develop a conceptual framework to help guide future studies on the strategic management of HGFs in

which we suggest an outline of future opportunities for integrating related strategic management theory in research on HGFs.

2. Defining and conceptualizing high-growth firms

The history of strategic management research on HGFs can be traced to Hambrick and Crozier's (1985) distinction between "stumblers" and "stars" and Birch and Medoff's (1994) "mice" and "gazelles," both of which describe different growth patterns in firms. As briefly mentioned, the definition of HGFs has been subject to significant variations, including the type of firms studied, the measures of growth used, and the mode of growth. As to the type of firms studied, research has shown that HGFs exist in all industries and include all firm sizes, but there is an over-representation of small and young firms (Daunfeldt, Elert, and Johansson, 2016; Delmar et al., 2003). Regarding measures of high growth, there is less agreement in the literature. A number of studies have used *relative annual growth*, or a firm's growth rate relative to the overall population of firms in an industry, region, or country, as criteria for high growth. Others have used absolute growth measures, such as increase in sales, employees, or productivity from one point in time to another (Havnes and Senneseth, 2001). The chosen measure has implications for research design as studies focusing on *relative growth* tend to over-sample smaller firms, and studies focusing on *absolute growth* tend to over-sample larger firms (Delmar, 1997). A remedy for using absolute growth is to estimate statistical models that control for business size, which decreases the inferential problems of samples dominated by small firms. However, this approach does not control for the sample-selection problem of including primarily small firms in the sample in the first place. One way to strike a balance between these approaches is to use a combination of relative and absolute growth rates or to use measures for defining minimum size criteria for inclusion in a study (Daunfeldt et al., 2014).

An increasingly accepted procedure for combining relative and absolute growth rates is to use the Organisation for Economic Co-Operation and Development's definition of HGFs, which excludes the prevalent over-representation of small firms (fewer than 10 employees) in most economies. However, the literature has increasingly moved from measures of absolute growth to relative measures in order to facilitate comparisons over time and across countries (Coad et al., 2014a).

Regarding the type of growth, the HGF literature examines three diverse types of growth: 1) *growth in sales* (interchangeably called turnover or revenue), 2) *growth in number of employees* (Delmar, 1997; Shepherd and Wiklund, 2009), and 3) *growth in productivity* (Du and Temouri, 2015). The challenges inconsistent measures pose to understanding HGFs have led scholars to be "skeptical about the emergence of a single definition of HGFs, as different research questions require different definitions of firm growth" (Coad et al., 2014a: 105). Others suggest the need for "more diverse performance measures" (Markman and Gartner, 2002: 72) for adequately sampling HGFs. Hence, we take these challenges of defining and sampling HGFs as a motivation for our literature review of firm-level studies of HGFs.

3. Literature review on managing HGFs

Our systematic review of research concerning the strategic management of HGFs follows the guidelines and best practice laid out in Macpherson and Holt (2007) and Wan et al. (2011).

We adapted the process to focus specifically on research on HGFs within the realm of strategic management, thereby exclusively focusing on firm-level studies. This meant ignoring much of the work done in economics on the importance of HGFs to an economy (Moreno and Coad, 2015). First, we searched for the key terms "high-growth firm," "high growth," "gazelles," and "rapid growth" in the keywords and abstracts across the ISI Web of Knowledge and Google Scholar. We delimited our focus in the ISI Web of Knowledge to the

fields of business, management, and operations management. This presented a broad set of articles and journals.

Second, following the process presented in recent review articles on the topic of firm growth, we also conducted a focused examination of select journals. These 18 core journals were highlighted as the leading journals in management, entrepreneurship, and innovation (Gilbert, McDougall, and Audretsch, 2006; Macpherson and Holt, 2007).¹ While the results from this more focused search overlapped with those from our broader search, it also allowed us to ensure that “in press” and other recent articles were included. Combined, our searches resulted in a total of 231 unique papers.

From this relatively long list of publications, we manually reviewed articles for potential fit with the purposes of our review of empirical research findings. This meant eliminating a large number of articles that were published in business magazines (e.g., *Forbes*) or non-English scholarly journals. This weeding-out process reduced the total to 109 articles. We then examined each article in greater depth and excluded papers that did not contain original empirical research. Examples of reasons for elimination at this stage included articles that were conceptual and/or literature review papers, book reviews, and teaching cases. Finally, we excluded papers that did not specifically address firm- or managerial-level aspects of high growth given our focus on strategic management. This narrowed down our final sample to 39 papers published during the past 30 years (1985–2015).

Out of this sample, 33 papers were published in 13 out of the 18 journals selected as core to our review. In addition to these 13 journals, six papers were published in *Academy of Management Executive*, *Applied Economics*, *British Journal of Management*, *International*

¹ The literature search was based on a set of (1) general management journals (*Administrative Science Quarterly*, *Academy of Management Journal*, *Journal of Management*, *Journal of Management Studies*, *Long Range Planning*, *Management Science*, *Organization Science*, and *Strategic Management Journal*), (2) entrepreneurship journals (*Journal of Business Venturing*, *Strategic Entrepreneurship Journal*, *Entrepreneurship Theory & Practice*, *Small Business Economics*, *International Small Business Journal*, *Entrepreneurship & Regional Development*, *Journal of Small Business Management*), and (3) innovation journals (*Industrial and Corporate Change*, *Research Policy*, and *Technovation*).

Journal of Sociology, Journal of Business Research, and Management Decision. Hence, we did not find any relevant papers matching our search criteria in the following core journals: *Administrative Science Quarterly, Entrepreneurship & Regional Development, Journal of Management, Journal of Management Studies, and Management Science.*

Table 1 provides a summary of the papers coded in our review. Our coding comprised two steps: one descriptive and one analytical. The descriptive coding included the identification of the *sample of firms* used in each study, the *definition* of HGF used, the *type of analysis* employed, the *independent* and *dependent* variable(s) used, and the *main findings* presented. The descriptive coding was performed by a research assistant and two of the authors. Each paper was then compared across the coders, and inconsistencies were discussed and resolved. This resulted in brief descriptions of each of the coded aspects as presented in Table 1.

In the second step, the first author conducted analytical coding (Saldaña, 2009) aimed at finding thematic commonalities across the reviewed papers by identifying theoretically informed *drivers* of high growth. This coding process began by locating the independent variable(s) and relating them to an established theoretical field within the strategic management literature. This process rendered five fields, each with a distinctive theoretical domain: human capital (Coff, 2002), strategy (Andrews, 1971), HRM (Huselid, 1995), innovation (Schumpeter, 1947), and capabilities (Leonard-Barton, 1992; Penrose, 1959). After this initial analytical coding process, the second author independently recoded the papers, and the differences were discussed until agreed upon by the authors. This analytical procedure was an important step as it helped reveal limitations and recognize possibilities for taking research on HGFs even further by helping formulate and justify a framework for the strategic management of HGFs.

The papers in Table 1 are presented in chronological order (first column) beginning with Hambrick and Crozier (1985). In line with our coding process described above, we present the different studies in terms of a few important characteristics represented in different columns. The second column of Table 1 describes the sample utilized, and the third column provides the definition of high growth employed by the authors. The fourth column summarizes the type of analysis (i.e., case study, correlational study, or regression analysis with model specification). The fifth column summarizes the independent variable(s) or key factors (in qualitative studies) investigated, and the sixth column describes the dependent variable(s). The seventh column summarizes the study's key results based on the independent variable(s) and the findings reached. The final column identifies the driver(s) of high growth identified by each study, which we use to build an organizing framework. In the following sections, we summarize all of the studies in our review with a focus on these core areas of high growth and the interactions affecting these factors, which are later summarized in a figure.

Table 1: Prior studies of the strategic management of high-growth firms (chronological order)

Author(s) and (Year)	Sample	HGF definition	Analysis	Independent variable(s)	Dependent variable(s)	Findings	Driver(s) of high growth
Hambrick & Crozier (1985)	30 US HGFs identified in <i>Inc.</i> 's list of the fastest-growing firms	Growth calculated over a four-year period with sales the starting year between \$100,000 and \$25 million Mean annual growth of the HGFs was 62.5%	Causal analysis of descriptive data, news archives, and "discussions with executives"	Instant size, a sense of infallibility, internal turmoil extraordinary resource needs	Suggested solutions for the challenges facing HGFs	The authors suggest several challenges for HGFs and argue for managerial qualities needed to overcome such challenges: (1) CEO growing into the role as a manager of a larger firm, (2) competence hired into the team, (3) joint vision communicated, and (4) hierarchical structure introduced during growth	Human capital, HRM practices, strategy
Shuman, Shaw, & Sussman (1985)	220 US HGFs identified in <i>Inc.</i> 's list of the fastest-growing firms	770% growth in sales for 1978–1982 and 523% growth in employees	Bivariate analysis using cross-tabs and chi-square statistics	Strategic planning, management's planning philosophy, the planning process, planning areas, and the planning organization	Sales growth and profitability	The majority of HGF executives have prior experience in starting three or more ventures	Strategy
Feeser & Willard (1989)	39 US HGFs identified in <i>Inc.</i> 's list of the fastest-growing independent and publicly traded firms and a similar set of 39 low-growth firms in SIC 3573 (electronic computing)	Growth calculated over a four-year period with sales the starting year between \$100,000 and \$25 million. Mean annual growth was 62.5%	Bivariate analysis using cross-tabs and chi-square statistics	Founding team relatedness; contingency variables: size, location, and type of firm background	Mean compound growth in sales revenues	HGFs are more often spinoffs from large corporations and compete in markets and/or with technologies closely related to those of the parent firm	Human capital
Fombrun & Wally (1989)	95 US firms surveyed from a list of HGFs from the 1984–1985 <i>Forbes</i> and <i>Inc.</i> magazines	Growth between 1980 and 1985 amounting to a mean annual growth of 159% with 25+ employees in the starting year	Multivariate analysis of variance (MANOVA) and ordinary least squares (OLS) regression of various industry and firm characteristics on	Firm characteristics (sector size status) and strategies (diversity, cost, quality, technology)	Seven HR elements (internal vs. external hiring, HR planning, HR appraisal, subjective appraisal,	HGFs often implement HRM and cost control systems that vary depending on the firm's strategic orientation and product diversity; large HGFs have extensive internal job markets; smaller HGFs hire mainly externally	HRM practices, strategy

			HGFs' strategic orientation and HRM practices		Incentive bonus, equity sharing)		
Feeser & Willard (1990)	39 US HGFs identified in <i>Inc.</i> 's list of the fastest-growing independent and publicly traded firms and a similar set of 39 low-growth firms in SIC 3573 (electronic computing)	Growth calculated over a four-year period with sales the starting year between \$100,000 and \$25 million Mean annual growth was 62.5%	Bivariate analysis using cross-tabs and chi-square statistics	Founding team relatedness, founding team size, stability in focus, timing of entry, geographic focus	Compound rate of growth of sales revenues	HGFs are more likely than the comparison group to have larger team sizes, maintain initial product/focus, and be exporters	Human capital, strategy
Willard, Krueger, & Feeser (1992)	155 manufacturing HGFs identified in <i>Inc.</i> 's list of the fastest-growing independent and publicly traded firms; 110 were founded by the CEO	Growth calculated over a four-year period with sales the starting year between \$100,000 and \$25 million Mean annual growth of the HGFs was 151%	Bivariate statistical analysis using t-tests	Founder-managed firms, professionally managed firms	Compound annual rate of growth in sales revenue	No difference between HGFs managed by a founder or a non-founder for a number of measures (i.e., firm sales growth, sales, net income, return on equity, return on sales, or sales per employee)	Capabilities
Siegel, Siegel, & MacMillan (1993)	1,600 small firms in Pennsylvania (mean sales \$1.35 million, min: \$100,000, max: \$15 million) matched with 105 private firms located throughout the United States and audited by Price Waterhouse (mean sales \$10 million, min: \$200,000, max: \$48 million)	Annual sales of 25% over a three-year period	Discriminant analysis of the likelihood of belonging to the sample of HGFs	Nature of product or service, nature of financing, management focus, planning orientation, sales/cost history, start-up team background	Absolute, compound annual sales growth	HGF managers have longer industry experience in the same sector, technology-focused products, and functionally balanced leadership teams	Human capital, strategy
Todd & Taylor (1993)	46 UK firms that grew from 1980 to 1990 drawn from samples of the London Stock Exchange, the Unlisted Securities Market, and data on unlisted firms	Firms with growth rates of more than 20% per year over the period 1980–1990 (52 per cent of sample)	Descriptive analyses	Changes in external environment as well as descriptions of competitive strategy	Growth rate in sales	UK HGFs benefited from freer credit markets in the 1980s, shifting from internal to external (e.g. bank-based) sources of funds; successful HGFs often focus on a market niche by building close relationships with customers	Strategy

Fischer et al (1997)	Interviews with top managers in eight organizations that had either recently achieved several years of high growth or were relatively young and attempting to grow	Five firms growing at more than 20% a year and three comparison firms growing at or below the average for their industry	Comparative case study of eight firms that either had recently had several years of rapid growth or were relatively young and attempting to grow rapidly	Simultaneity, selectivity, and shaping of time and events	Enactment of time to facilitate rapid growth	Simultaneity (i.e., focus on events in the present and future outcomes desired), selectivity (i.e., search for customers and staff who share a pace in congruence with the firm's goals), and shaping (i.e., adopt/develop systems and procedures that allow managers to shape a collective view of time in their firm) are important for HGFs.	HRM practices, strategy, innovation
Brüderl & Preisendörfer (2000)	56 HGFs among 1,291 start-ups from the Munich Founder Study, a stratified random sample of 6,000 firms registered by the chamber of commerce in 1985–1986 in Munich and Upper Bavaria, Germany	Growth rates of 100% or more over four years	Logit models on the likelihood of becoming an HGF	Four categories of variables: founder characteristics, business strategies, firm characteristics, and environmental conditions	Rapid growth (relative sales, employees, and four-year survival)	HGFs have larger team sizes and founders with management experience and pursue an “innovative strategy” more often than other new ventures.	Human capital, innovation
Gundry & Welsch (2001)	240 HGFs and 263 non-HGFs run by women in a survey of firms randomly sampled by industrial sector in the United States from Dun's marketing database	HGFs defined as those firms whose sales exceeded the industry average (23% or higher over a two-year period)	Statistical analysis using t-tests, factor analysis, and MANOVA	Financing sources	Perceived importance of various Success factors	HGFs tend to (1) emphasize market growth and technological change, (2) show willingness to sacrifice on behalf of the business, (3) plan for business growth, (4) use team-based firm designs, and (5) focus on leadership questions	Strategy
Almus (2002)	Stratified sample of 1,949 German start-ups between 1990 and 1993 drawn from the ZEW Entrepreneurship Study	Top 10% growing firms in the sample	Probit models on the likelihood of becoming an HGF	Start-up year, industry sector, founder size, founder human capital, region population density	High growth	HGFs more often have PhDs on their founding teams but not larger teams	Human capital
Markman & Gartner (2002)	Three cohorts of <i>Inc.</i> 's 500 firms followed for three years (1992–1996, 1993–1997, and 1994–1998)	Growth rates of 500% to 31,000% over five years in terms of sales or number of employees	OLS regression of employment and sales growth on an ordinal scale of profit level	Firm age, sales growth, employee growth	Profit growth	High growth in sales or number of employees is not related to firm profitability, while younger firms experience slightly higher profitability	Strategy

Fischer & Reuber (2003)	Focus group interviews with six founder-managers of HGFs, three policy experts, four venture capitalists, four bankers, six consultants, three academics, and a journalist	152% increase in employment over a seven-year period	Focus group interviews on owners', advisors', and policymakers' view on how HGFs should be supported	Roles of management, resource providers, and government for HGFs	Contrasting perspectives of founder-managers, advisors, and policymakers	Founder-managers are self-sufficient as managers compared to advisors and policymakers and prefer "controlled growth"; advisors see no role for policy, but founder-managers do	Human capital, HRM practices
Florin, Lubatkin, & Schulze (2003)	275 independent US firms that went public in 1996 with fewer than 800 employees and less than \$500 million in assets	No clear definition. Some firms going public "shortly after founding," some 30+ years after. Mean age at IPO was 7.22 years, and mean sales at IPO were \$475 million, indicating most are HGFs	OLS regression of human resources and social resources on sales growth	Human resources (industry + start-up experience + venture capital directors), social resources (firm and top management team networks and underwriters)	Sales growth	Human resources are positively associated with sales growth only when they interact with social resources, suggesting that HGFs are more profitable when social resources are high	Human capital, capabilities
Littunen & Tohmo (2003)	44 HGFs and a control group of 45 non-HGFs in the Finnish metal-based manufacturing and business service industries surveyed biannually 1990–1997	152% increase in employment over a seven-year period	Cluster analysis and logistic regression	34 variables related to strategy, co-operation with other firms, decision making, management style, characteristics, and entrepreneurs' qualifications	High growth	HGFs exhibit reliance on management with a "group management style" and more often use external expert help during start-up; HGFs also adapt in production and marketing and expand their network more often than non-HGFs	Human capital, strategy
Barringer, Jones, & Neubaum (2005)	Randomly selected a set of narrative case studies consisting of US regional or national winners of the Ernst & Young LLP Entrepreneur of the Year award; 50 of them classified as HGFs and 50 as non-HGFs (i.e., slow growers)	Three-year compound annual growth rate of 80% or higher	Content analysis of narratives with subsequent t-tests of narratives across HGFs and non-HGFs	Several variables within four categories: founder characteristics, firm attributes, business practices, HRM practices	High growth	HGFs are distinct from non-HGFs in three founder attributes (industry experience, education, "an entrepreneurial story"), three firm attributes (commitment to growth, mission statement, inter-organizational relationships), two business practices (unique value creation and customer knowledge), and four HRM practices (training, employee development, financial incentives, stock options)	Human capital, HRM practices, strategy

Nicholls-Nixon (2005)	15 founder/CEOs of high-growth SMEs in Canada interviewed on “how to manage rapid growth”	Firms 4–13 years of age with 30–2,500 employees and annual sales of \$10–\$390 million having experienced mean annual sales growth over the past three years between 35% and 266%	Interpretation of interview transcripts	Management and leadership style	Profitable growth	The management of HGFs involves capturing and sharing information, building relationships, managing politics, and having a leadership style focusing on facilitating rather than directing or controlling	Human capital, strategy
Chan, Bhargava, & Street (2006)	91 firms surveyed from the “best-managed” Canadian firms with sales between C\$10 million and C\$1 billion that were Canadian-majority owned; firms were selected by a committee of five judges from academia and private practice	Firms with sales C\$10 million and C\$1 billion and three or more years of consecutive sales growth	Bivariate analysis using cross-tabs and chi-square statistics for a survey about the “top three business challenges/opportunities”	Firms below C\$ million in sales more often report external challenges; otherwise, challenges are uniform across different group sizes and industries	Growth challenges in customers and marketing, managing growth, finances, leadership, human resources, environment	Regardless of size, all HGFs expressed identical frequency of challenges regarding “customer management,” “managing business growth,” “financial management,” “leadership,” and “human resource management”	Capabilities, HRM practices
O’Regan, Ghobadia & Gallear (2006)	207 HGFs randomly sampled from a database of 15,000 electronic/engineering small firms in the United Kingdom	Sales growth rate of at least 30% per year for three or more consecutive years	Tabulations without univariate or bivariate tests	Innovation; ownership; capabilities; strategic orientation; environment; e-commerce	Sales growth	HGFs are not more likely to invest in R&D or launch new products but are more likely to have a “prospective” strategy for identifying growth opportunities, as compared to other firms	Strategy
Sims & O’Regan (2006)	207 HGFs randomly sampled from a database of 15,000 electronic/engineering small firms in the United Kingdom	Index of (1) employee growth, (2) sales growth, (3) profit growth, and (4) profit margin growth	Univariate ranking of the four growth measures supplemented with CEO interviews	Customer service, identification of new markets, networks and relationships, strategic planning, HRM practices, agility	Increased employees, increased sales, increased profits, increased profit margin	HGFs are often managed by CEOs under 40 years old; interviewees stressed “networks and relationships” as important for growth	Human capital, HRM practices, strategy
Ensley, Pearson, & Sardeshmukh (2007)	Longitudinal study of family and non-family HGFs drawn from <i>Inc.</i> ’s 500 list surveyed biannually	Mean three-year growth rate between 1,591% and 2,084%, yearly mean employees ranging from 53 to 95, and yearly mean sales ranging from \$6.5 million to \$14.5 million	Structural equation model (SEM) with stock option dispersion and pay dispersion fitted to perceptual measures of conflict and	Long-term stock options dispersion and short-term pay dispersion (contingency variables: cohesion,	Revenue growth, employment growth	Group dynamics, such as cognitive conflict, team potency, and group cohesion, positively relate to growth, while affective conflict negatively relates to growth	HRM practices

			eventually to firm growth	conflict, potency, pay dispersion)			
Moreno & Casillas (2007)	6,692 SMEs selected from a homogeneous database of firms in Spanish Andalusia	Percentage of three-year growth (1998–2001) more than 100% higher than median growth in the same industry sector	Discriminant analysis	Firm size; firm age; availability of financial resources; existence of slack (non-financial) resources	Relative sales growth	HGFs foster growth through the use of idle firm-specific resources that are non-transferable to other firms	Capabilities
Coad & Rao (2008)	2,113 US firm in SIC sectors 35–38 from the Compustat database matched with the NBER patent database	Firms at the top 10% growth distribution	Fixed-effects panel models and quantile regression of how innovativeness (i.e., patent applications + R&D) affects sales growth	Patent applications, R&D	Sales growth	In all four sectors investigated, innovativeness is of crucial importance for sales growth among HGFs but not among moderately growing firms	Innovation
Hölzl (2009)	21,232 manufacturing firms from the Community Innovation Survey in 16 European countries over the period 1998–2000; HGFs and non-HGFs matched using propensity score matching	Firms in the top 10% and 5% growth distribution with a firm size of less than or equal to 250 employees in 1998	Quantile regression of how six indicators of formal and informal R&D affect the growth of HGFs and non-HGFs	Firm size, export ratio, share of staff with college education, industry R&D intensity; industry product turnover	Employment growth	HGFs are only more innovative than non-HGFs in countries close to the technological frontier	Human capital, innovation
Stam & Wennberg (2009)	647 Dutch firms followed from 1994 to 2000 in the “Start-Up Panel: Cohort 1994” drawn from a random sample of all Dutch firms registered as independent start-ups in 1994	10% fastest-growing firms in terms of employment	OLS regression on determinants of firm growth and the likelihood of high growth	R&D, founding team size, alliances, managers’ leadership and industry experience	Likelihood of high growth	R&D, founding team size, and managers’ leadership and industry experience are positively associated with the likelihood of high growth	Human capital, innovation
Baum and Bird (2010)	312 founder-managers in firms belonging to the largest print and graphics trade association in the United States	Founder-managers’ intentions to grow their firms to +100 employees in 10 years	SEM model (LISREL) with moderation effects	Emotional intelligence; social intelligence; successful intelligence; entrepreneurial self-	Growth: Index of compound annual sales growth + compounded annual	The constructs successful intelligence and entrepreneurial self-efficacy are fully mediated by swift action and multiple improvement actions in	Human capital

				efficacy; swift action; improvement actions	employment growth (2001–2005)	predicting with new venture growth	
Goedhuys & Sleuwaegen (2010)	947 firms from the World Bank's 2006 Investment Climate Survey in Angola, Burundi, Rwanda, Congo, Guinea Bissau, Guinea, Tanzania, Gambia, Swaziland, Botswana, and Namibia	At least 10% annual employment growth in 2002–2005 for owner-manager firms in manufacturing industries with more than five employees in 2002	OLS and quantile regression	Producing product innovations, owning means of transportation, and having access to internet	Employment growth	Product innovation is positively associated with becoming an HGF, but process innovation is negatively associated	Innovation
Parker, Storey, & Van Witteloostuijn (2010)	121 HGFs sampled in 1995 from the British ICC/One Source database interviewed in November 1996 and followed until 2001	Independent firms with sales between £5 million and £100 million and annual sales growth exceeding 30%	Multinomial logit of “marginal,” “high-growth,” and “acquired” firms	Strategy; environment; structural variables (e.g., geographical location and firm age)	Sales turnover growth	Product development is negatively associated with becoming an HGF, but active use of the marketing department is positively associated	HRM practices, strategy
Barbero, Casillas & Feldman (2011)	Interviews with 100 CEOs of firms sampled from the SABI database (2001–2005)	Firms below 500 employees with 10+ annual sales growth 2001-2005	Logistic regression on type of growth	Firm's capabilities in: Organization, HR, Marketing, Finance	Growth by market expansion, product innovation	Marketing and financial capabilities are positively related to both growth by market expansion and growth by product innovation	Capabilities, innovation, HRM practices
Keen & Etemad (2012)	1,140 Canadian HGFs from <i>Canadian Business</i> ' annual list; firms categorized in employment size classes: micro (1–9), small (10–99), medium, (100–499), and large (500 or more)	Five+ years of annual sales growth, 179%+ five-year sales growth, \$100,000+ in base year sales, \$1 million + in Year 5 sales	Bivariate statistics with t-tests of differences across size classes among HGFs	Firm size, age, and international activities	Sales growth	Growth patterns among HGFs are similar across the four class sizes as well as across regions; firms with international operations exhibit higher growth	Human capital, strategy
Lopez-Garcia & Puente (2012)	5,089 firms from the Spanish National Statistics Institute's Central Directory of Firms dataset with a sample bias toward medium- and large-sized firms and a slight over-representation of the manufacturing sector	10% fastest-growing firms with the highest “Birch-Schreyer indicator” value (i.e., a mix between absolute and relative growth rates)	Probit model with fixed-firm effects	Capital structure (total debt/total liabilities), human capital, newness (dummy of HGF age)	Employment growth (Birch-Schreyer indicator)	HR practices, such as employing qualified personnel or having a mix of contracts offered, are positively associated with high growth, but firm age and access to credit are not	Human capital

Muurlink, Wilkinson, Peetz, and Townsend (2012)	Case studies of five Australian gazelles in greater Brisbane, Queensland, sampled from Dun and Bradstreet's Who's Who in Business Australian database	20+ employees within five years of establishment	Comparative case studies	Rigidity plays a role as an independent variable as well as a consequence of a crisis regardless of whether crisis is triggered by internal or external threats	Managerial rigidity in HGFs	Gazelle firms often experience internal stress—positive stress or eustress—parallel to external shocks; managers' experience is not necessarily helpful in dealing with such stress	Human capital
Rindova, Yeow, Martins and Faraj (2012)	Comparative case study of Yahoo and Google, 1995–2007; data includes books and cases, company press releases, and historical websites; 351 (240) relationships with 277 (240) partners were identified for Yahoo (Google)	93(88) product introductions were identified for Yahoo (Google), representing entries into 29 (14) markets	Chronological case histories analyzing partnering portfolios and resource use and finally analyzing growth patterns	Partnering strategy; product innovation strategy among the two cases in the period from 1995 to 2007	Growth in new products and sales	The cases adapted partnering portfolios, with Yahoo scaling back its portfolio in response to declining demand for online advertising and Google ramping up its portfolio to support expanding applications for search	Strategy, innovation
Koski & Pajarinen (2013)	Financial data for 403,058 Finnish companies between 2003 and 2008	10% highest-growing firms in the sample	Propensity score matching (PSM), difference-in-differences models, and instrumental variable regression	R&D subsidy, employment subsidy, other subsidy	Employment growth	On average, employment subsidies are positive for employment growth among both start-ups and incumbents, but R&D subsidies are not; HGFs are affected less by subsidies than other start-ups or incumbents	Innovation
Lee (2014)	4,858 UK SMEs drawn from surveys conducted by the UK Department for Business, Innovation and Skills based on Dun and Bradstreet data	"Actual HGFs" identified by past and expected employment growth (zero to two years); "Potential HGFs" are then identified using PSM according to their similarity to HGFs	PSM on difference between actual and potential HGFs + probit models on perceptions of problems among these	Introduction of product innovation, process innovation, change of ownership, multiple directors, advice taken from elsewhere	Status as HGF (compared to potential HGF or non-HGF), and perception of problems	HGFs perceive problems in recruitment, skill shortages, obtaining finance, cash flow, management skills, finding premises Potential HGFs perceive problem in demand, financing, cash flow and management skills, but seldom perceive regulation problems	Human capital
Coad, Daunfeldt, Johansson, & Wennberg (2014)	50,000+ firms and 500,000+ individuals employed in the total population of HGFs during 1999–2002 in Swedish knowledge-intensive sectors	1% fastest-growing in employees; 5% fastest-growing in employees; 1% fastest-growing in sales; 5% fastest-growing in sales	Probit models on the likelihood that an individual is employed in an HGF and becomes hired by an HGF	Employee age, education, nationality, unemployment history	Being hired in an HGF	HGFs are more likely to employ young people, poorly educated workers, immigrants, and individuals who experience longer periods of unemployment	HRM practices

Ryzhkova (2014)	Managers of 102 Swedish gazelles sampled in 2010 from a database of 1,078 firms created by the daily business press outlet Dagens Industri	Sales over 10 million Swedish Krona, 10+ employees, continuous early growth in sales and positive results, and doubled sales during the past three years based on organic growth (not mergers and acquisitions)	Logit models	Cooperation with customers; co-operation supported by ICT; offline collaboration; all measured as 1–5 Likert questions from the Community Innovation Survey	The introduction of service innovation, process innovation, radical innovation, incremental innovation	Interacting with customers using online methods is positively associated with gazelles' likelihood of service innovations but not with their likelihood of process innovations; overall cooperation with customers is positively associated with gazelles' likelihood of radical innovations	Strategy, innovation
Senderovitz, Klyver, Steffens (2016)	964 surveyed HGFs corrected for firms that terminated between 2008 and 2010 (N = 251)	Firms grew at least 100% in gross profit in a four-year period (2004–2007) and had gross profit above 0.5 million Danish Kroner	Probit model to adjust the estimation of OLS regressions	Employee growth moderated by strategic orientation	Profitability—return on equity (ROE)	HGFs' strategic orientation moderates the link between firm performance (ROE) and growth	Human capital, strategy

3.1. Summary of research on the strategic management of HGFs

Our focus in the review is on the empirical and thematic patterns found in the 39 articles on HGFs. As we can see in Table 1, particularly in the columns addressing the samples, definitions, and methodologies employed, the focus of study and methodological approaches used in prior research remain limited in scope. Among the 39 studies included in the review, 34 (87%) are quantitatively oriented, with only five (13%) papers being qualitative in nature. This small number of qualitative studies may have implications for rich theory-building or “discovery” research that is groundbreaking in nature, such as grounded theory, which is often influential in developing in-depth knowledge on an empirical phenomenon. Among the 34 quantitative studies, 12 (35%) studies are based on descriptive or bivariate statistics instead of multivariate statistics. This limits the ability to draw inferences about causality or strong relationships among explanatory variables. It also represents a significant shortcoming of existing research given the importance of HGFs to the economy, as we have limited knowledge of the temporal nature or causality of growth factors in these firms. However, this lack of inferential or causal studies does offer an opportunity for future research.

The choice of dependent variables studied in prior research (see Column 5 in Table 1) is still limited to two outcomes: 1) the likelihood of or 2) the magnitude of organic growth. In our review, 22 studies (56%) used a sales growth measure as the dependent variable—measured either as absolute or relative sales growth over one or several consecutive years or as the likelihood that a firm will grow in sales more rapidly than 90% of all other firms in a sample. Eight studies (20%) also looked at employment growth as a dependent variable—measured by either the absolute or relative sales growth over consecutive years. The remaining studies focused on a variety of alternative outcomes. Five studies (13%) looked at the specific challenges facing HGFs, using either causal analysis of descriptive data (Hambrick and Crozier, 1985) or perception-based data from managers (Chan, Bhargava, and

Street, 2006; Gundry and Welsch, 2001; Lee, 2014) or by contrasting the perspectives of managers, advisors, and policymakers (Fischer and Reuber, 2003). Three studies (7%) individually looked at profitability or some type of innovation as the dependent variable, all using quantitative analyses. Two studies each looked at specific HRM practices in HGFs (Barringer, Jones, and Neubaum, 2005; Fombrun and Wally, 1989) or the ways HGF managers' and employees' enactment of "time" and "pace" affects their ability to grow and overcome periods of economic distress (Fischer et al., 1997; Muurlink et al., 2012). One study took employees' perspective and looked at the likelihood of workers with differential characteristics to be hired by an HGF (Coad et al., 2014b).

The rightmost column in Table 1 illustrates the drivers of high growth in studies to date. Approximately half of the studies (18) addressed only one driver of high growth, with 16 studies addressing two drivers, and only five studies focusing on three drivers. Our coding of the reviewed studies shows that factors related to human capital and strategy were the two most frequent drivers with 20 (51%) and 19 (49%) papers, respectively, dealing with these issues. Eleven (28%) of the papers dealt with the effects of HRM practices on high growth, and 10 (26%) papers dealt with innovation. Lastly, five studies (13%) dealt with the capabilities of HGFs or their founders or managers and their effects on high growth. We address elements of each identified factor driving high growth throughout the next several sections.

3.2. Human capital in HGFs

Human capital is the most prevalent theme in the literature on the strategic management of HGFs, with no less than 20 (51%) studies of the 39 reviewed addressing this topic. Our review reveals a number of important factors related to the human capital of the HGF and its founders or managers. In carrying out our review, we were guided by Coff's (2002: 108) definition of human capital as "knowledge that is embodied in people." The literature on

HGFs addresses various forms of human capital, including the educational level and skills of founders-managers, management experience, cognitive abilities, and domain expertise (e.g., industry, market, and technology experience). We discuss each of these elements below in relation to high growth.

3.2.1. Education and skills

A fundamental element of human capital consists of education and skills. Several studies in our review highlighted the importance of founders' educational level for high growth (Almus, 2002; Barringer et al., 2005; Hölzl, 2009; Senderovitz et al., 2016). These studies, however, used different proxies for education. For instance, skills and salary levels were used interchangeably as measures for education. Hölzl (2009) measured the "skill intensity" of HGF staff based on the proportion of staff with tertiary education. Lee (2014) used survey-based self-perceived questions to assess the role of general and managerial skills for high growth. Lopez-Garcia and Puente (2012) measured the skill level of Spanish HGFs in terms of the wage premium paid regressed by the length of employment contracts (in order to exclude low-wage temporary contracts). Further, direct measures of education among studies in our review ranged from "unskilled worker" to "professor" (Almus, 2002), "college education" to "higher education" (Barringer et al., 2005), and "primary school" to "long higher education" (Senderovitz et al., 2016), to highlight a few.

Our review, however, reveals significant differences of the importance of founder-managers' and employees' education and skills for high growth. Early empirical studies identified positive relationships between HGF founders' education level (i.e., high level of schooling) and high growth (Brüderl and Preisendörfer, 2000). Almus (2002) found that the educational level of both the founder-managers and all team members (founders or managers) are important, concluding that "firms of entrepreneurs with a high human capital endowment [PhD or professor level] are more likely to experience fast growth" (Almus, 2002: 1506).

Similarly, Barringer et al. (2005) found a positive relationship between college education and high growth among founders of HGFs. Other studies have concluded that the skill level of employees is an important predictor of high growth (Lopez-Garcia and Puente, 2012) and that the lack thereof among managers is a significant impediment to high growth (Lee, 2014).

Surprisingly, our review reveals that the effects of employees' education and skills for high growth seem to differ from the effects of founder-managers' education and skills. For example, Hölzl (2009) found that higher educational levels (i.e., skill intensity) among employees were positively correlated with rapid growth but only among HGFs in southern and continental European Union member states. Further, they found that the relationship was negative for HGFs in new member states of the European Union (i.e., Slovenia, Slovakia, Estonia, Hungary, Czech Republic, Lithuania, and Latvia). Coad et al. (2014b) found that HGFs in Sweden tend to employ young poorly educated workers, immigrants, and individuals who have experienced longer unemployment periods.

In summary, the studies on education among founder-managers and employees for high growth reveal two patterns. First, they highlight the differential role of education among founder-managers versus employees in HGFs. Second, they show that the education of founder-managers, despite being measured in different ways, is an important driver of growth.

3.2.2. Management experience

Another key element of human capital in HGFs consists of management experience as a form of specific human capital. While this particular aspect received limited attention among the studies in our review, the results are quite consistent in that there is a positive correlation between previous management experience and high growth (Brüderl and Preisendörfer, 2000). One reason for the positive effect of management experience on high growth is that previous knowhow, connections, and understanding of the "rules of the game" create the fertile ground and confidence through which founder-managers enter the market with larger

initial size and employ growth-oriented market strategies (Brüderl and Preisendörfer, 2000). Similarly, Stam and Wennberg (2009) showed that previous management experience increased the growth rate of Dutch HGFs. Baum and Bird (2010) also found a positive correlation between management experience and the size and age of the HGF in a study of US firms. The authors suggested that larger and older HGFs have chief executive officers (CEOs) who have previously acquired relevant managerial experience from being founders and having faced similar challenges previously.

Our review further reveals that management experience is made up of a number of critical practices for realizing high growth. As implied by Baum and Bird (2010) and as illustrated by Nicholls-Nixon (2005), successfully managing an HGF is dependent on management practices for creating a viable vision, employing the right people, and instilling a sense of self-organization (e.g., supporting collaboration, empowering individual decision-making, maintaining real-time responsiveness) among employees. Such management practices are noteworthy as HGFs are particularly prone to being exposed to organizational complexity and volatility stemming from the nature of their growth (Nicholls-Nixon, 2005). Hence, the lack of such management experience can hinder high growth (Lee, 2014).

While our review shows that management experience is an important component of HGF founder-managers' human capital, we also find that studies that pay attention to the importance of education and skills tends to neglect the role of management experience and vice versa. We later return to discuss the potential need for future research to provide more integrative measures of human capital as a multidimensional construct as is often done in the strategic management literature (Coff, 2002).

3.2.3. Cognitive ability

Although founder-managers' cognitive ability is a rarely used dimension of human capital, two studies of HGFs pointed to the importance of this ability as a driver of high growth.

Baum and Bird (2010) studied the extent to which CEOs' practical, analytical, and creative intelligence support both swift action and multiple improvement actions in order to reach high growth. Their results show that all factors, both individually and more so in combination, predict new venture growth. They further noted that one important aspect—successful intelligence—“is responsive to training and practice” (Baum and Bird, 2010: 407), suggesting the need for the refinement of managerial practice the longer HGF founders and managers operate the firm.

Further, managers' cognitive abilities do not necessarily go hand in hand with higher education. Muurlink et al. (2012) found that highly educated HGF managers are at risk of being cognitively stymied when responding to crises. While Muurlink et al.'s (2012) findings suggest *initial* negative effects of education on managers' cognitive ability to respond to high growth, Baum and Bird's (2010) results point to a cognitive advantage of further training and development *after* some relevant practical knowledge of managing HGFs has been accumulated. Together, these findings suggest that further education and training may help managers of HGFs respond innovatively to the challenges of high growth, but only to the extent that the initial formal education of managers has been revised with the practical wisdom received from exposure to high-growth challenges.

In sum, our review reveals that founder-managers' cognitive ability is both directly linked to high growth and moderated by higher education (negatively) and practical knowledge (positively). Although these studies are important first steps in addressing cognitive ability as part of the human capital construct, the scarcity of studies reveals an important gap in the literature as to what role cognitive ability plays for high growth, its relation to other elements of human capital, and the circumstances under which it favors or stymies high growth.

3.2.4. *Domain expertise*

Finally, our review uncovers domain expertise as an important element of human capital in relation to high growth. In fact, the reviewed studies identified select areas of expertise that are important for high growth. For parsimony, we address these different types of expertise collectively under the umbrella “domain expertise” but present them using their original terms below.

The foremost domain expertise in the studies reviewed is *industry experience*. Several studies showed that owner-managers’ industry experience is a strong predictor for high growth (Barringer et al., 2005; Florin, Lubatkin, and Schulze, 2003; Siegel, Siegel, and Macmillan, 1993). Industry experience is often measured as a simple indicator (Brüderl and Preisendörfer, 2000; Stam and Wennberg, 2009) based on the number of prior assignments within the focal industry (Florin et al., 2003) or on length of prior assignments as determined by the number of years an individual has been in his or her current industry (Barringer et al., 2005; Siegel et al., 1993). For example, Barringer et al. (2005) found that HGF founder-managers more often than not have greater prior industry experience compared to founders of slow-growth firms. Prior related experience is argued to provide founder-managers with critical domain-specific knowledge of specific technologies, customers, and distributors, including access to a network of business partners relevant for achieving growth in the industry (Florin et al., 2003).

Several studies also highlighted the importance of founder-managers’ *entrepreneurial experience* for high growth (Florin et al., 2003; Shuman, Shaw, and Sussman, 1985; Stam and Wennberg, 2009). The argument for entrepreneurial experience as a driver of high growth is that such experience is important in transposing knowhow from previous entrepreneurial endeavors to the new venture, thereby impacting its survival and growth (Florin et al., 2003). The importance of prior entrepreneurial experience, however, has been

argued to be contingent on other factors. As an example, Brüderl and Preisendörfer (2000) showed that the positive effects of prior entrepreneurial experience on high growth diminishes if founders have more education, management, and industry experience. Feeser and Willard also showed that HGF founder-managers' prior experience is important for "thinking big" strategies (Feeser and Willard, 1989). Siegel et al. (1993) also found that the importance of entrepreneurial experience diminishes if HGF founders have greater industry experience.

Consequently, it seems that entrepreneurial experience can be substituted by other forms of experience in founders' domain expertise. Our review indicates that domain expertise is an important component of human capital and possibly contingent on other elements of the human capital construct, such as education and management experience. This finding highlights the significance of human capital as a whole and its various elements for better predicting high growth. Notably, our review showcases the importance of adequately theorizing the human capital construct in order to more effectively capture the arguments for why it may lead to high growth.

Our review reveals that the effects of human capital on high growth is the most focused area to date in the HGF literature but with differential focus across studies on the roles of education, management experience, cognitive ability, and domain expertise. We return to these issues later as part of our discussion.

3.3. Strategy in HGFs

Our review shows that the role of strategy and various strategy practices has been of long-standing interest among HGF scholars. We identify 19 studies published from 1985 to 2015 focusing on the implications of strategy on high growth. In identifying the role of strategy for HGF, our review was guided by Andrews' (1971) definition of strategy as a pattern of decisions in a company that determines its objectives, purposes, or policies and produces the firm's plans for achieving its goals. Following this definition of strategy, we identify two

overarching strategy practices that have a pertinent relationship with high growth: 1) strategic planning and 2) differentiation.

3.3.1. Strategic planning

Early studies of HGFs were informed by the planning and positioning schools of strategy, implicitly assuming that firm growth was contingent upon “thinking big” with a deliberate focus on product/market contingencies (Fombrun and Wally, 1989). These studies found that HGFs incrementally move from reliance on experience and intuition at the entrepreneurial stage to a more formalized, short-term-oriented, and inclusive but less sophisticated strategic-planning process as the firm ages. For example, Shuman, Shaw, and Sussman’s (1985) analysis of the 500 fastest-growing privately held companies across five different industries in the United States showed that their exceptional growth rate directly correlated with formalized strategic-planning practices. Notably, those firms that grew at a higher rate in their sample had well-developed procedures for formulating business plans, including assumption testing, competitive analysis, resource-allocation planning, and routines for control and coordination. In addition to formalized, complex, and technology-based systems and processes, research has also highlighted managers’ ability to set cohesive structures by shaping a collective view of time, deadlines, and production pace in HGFs (Fischer et al., 1997). For example, Littunen and Tohmo (2003) showed that HGFs in the Finnish metal-based manufacturing and business service industries were better prepared through plans for adapting their operations in production and marketing more often than a control group.

In contrast, Barringer et al.’s (2005) study of US firms did not find any significant differences between slow- and rapid-growth firms in terms of their emphasis on strategic planning or goal setting. They did, however, find statistically significant differences in terms of firms’ vision and growth orientation (Barringer et al., 2005). However, Siegel et al. (1993) found statistically significant differences between HGFs and average firms in respect to using

formal business plans, regularly updating plans, and setting goals and priorities. They cautioned that “strategic planning in itself is not enough to predict high-growth” (Siegel et al., 1993: 175). Other qualitative studies found that that strategic planning serves an important means for making the necessary changes for achieving future growth (Sims and O’Regan, 2006).

3.3.2. Differentiation strategy

HGF research has also had a persistent interest in differentiation strategy with respect to product/market choices and their effects on high growth. Siegel et al. (1993) found that small low-growth firms tend to opt for a single-product strategy, whereas larger HGFs have a more substantial portfolio of products sold in several markets. This helps shield the firm from the inherent vulnerability of a single-product strategy. Further, Todd and Taylor (1993) showed that HGFs using new technology in existing markets are able to “carve out” new market segments and hence grow rapidly. Littunen and Tohmo (2003) found that Finnish HGFs tend to exploit their established product base and market position to expand into new markets with existing products, whereas other firms do not take this opportunity. Similarly, a study conducted in the United Kingdom by O’Regan et al. (2006) found that HGFs invest less in research and development (R&D) and introduce fewer new products to the market, focusing rather on continually looking for new market opportunities. An additional study also found that Danish HGFs that pursue a differentiation strategy tend to exhibit higher profitability (Senderovitz et al., 2016). Overall, the HGF literature emphasizes a product-refinement and specialization strategy over a product-diversification strategy.

The longitudinal case study of Google and Yahoo by Rindova et al. (2012) suggests that if HGFs successfully pursue a differentiation strategy, this would likely be closely connected to following the adapting needs of technology partners and customers. Such a core focus on customers and partners enables firms to understand market needs and hence be able

to exploit market opportunities (Littunen and Tohmo, 2003; O'Regan et al., 2006; Ryzhkova, 2015).

The relationship between strategy and high growth points to a general understanding that differentiation is a strong predictor of high growth (Todd and Taylor, 1993). The HGF differentiation literature emphasizes that high growth is more often reached by way of a single product strategy offered to one market in the entrepreneurial stage and successively emulated in new markets where opportunities are found (Littunen and Tohmo, 2003; O'Regan et al., 2006; Todd and Taylor, 1993).

3.4. HRM in HGFs

The third driver of high growth identified in our review is HRM. Our reviewed sample contains 11 studies that focus on the relationship between HRM and high growth. These studies are rather evenly distributed across the 30 years that our review covers. Our view of HRM is guided by Huselid's (1995: 640) perspective that several related HRM practices have the potential to enhance firm performance—"extensive recruitment, selection, and training procedures; formal information sharing, attitude assessment, job design, grievance procedures, and labor-management participation programs; and performance appraisal, promotion, and incentive compensation systems that recognize and reward employee merit." Hence, in reviewing these practices, HRM was treated as a bundle of practices structured as a system or a "pattern of planned human resource deployments and activities intended to enable an organization to achieve its goals" (Wright and McMahan, 1992: 298). Our review thus focuses on studies that have directly or indirectly adopted such a definition of HRM.

A distinguishing feature of HGFs is the abnormal need to recruit new employees in a short time frame. While this offers the ability to actually grow, it also poses serious challenges for HGFs (Hambrick and Crozier, 1985). Chan, Bhargava, and Street (2006) conducted a systematic comparison of perceived challenges among small- and medium-sized HGFs and

found that HRM practices were equally challenging across all sectors and industries in their sample of firms. This finding further indicates the broad importance of HRM practices for successfully managing high growth. Similar to these findings, our review raises several key questions regarding HRM practices in general, specifically HRM practices related to employee selection, training, and incentive compensation and their relationship with high growth.

3.4.1. Employee selection

Hambrick and Crozier (1985) were among the first to identify the importance of effective HRM practices for high growth. They found that successful HGFs put significant effort into staffing their HR department with “high-grade professionals in advance of recruiting pressures” (Hambrick and Crozier, 1985: 40). The members of the HR department, in turn, employ elaborate search and selection practices, process far more applications than average firms, and spend significant time on job and corporate orientation and on onboarding for new recruits. This results in the engagement of good talent and secures the transfer of the firm’s culture or ideology to new recruits. Fombrun and Wally (1989) furthered this proposition, relating the strategies of HGFs to the extent to which they exploit internal job markets or engage in external selection processes in their search for talent. They found that HGFs pursuing technology strategies, where the focus is on innovation or product diversification, more often engage in external searches for talent. Firms that pursue a cost or quality strategy, where the focus is on lowering unit costs or increasing product or service quality, especially among large firms, are more likely to engage in HR planning and developing internal job markets (Fombrun and Wally, 1989).

However, the literature also raises some alternative views, especially with respect to the difficulty of HR planning in HGFs. Fischer et al. (1997) interviewed managers in eight HGFs. They found that these firms were inclined to select employees based on their ability to

handle the pace of company growth rather than based on their talent or fit with the group. Specifically, the companies studied by Fischer et al. (1997) were prone to recruiting employees who had a flexible mindset, were hard working and adaptable to the current situation, and shared a common vision. However, our review shows that later research found a potential tradeoff between high growth and careful search and selection of personnel. For example, Coad et al. (2014b) found that HGFs in Sweden often tend to employ “marginal employees” with extensive general human capital rather than specialized complementary human capital. Overall, these studies show that employee selection in HGFs is significantly dependent on the firms’ growth ambitions and new recruits’ ability to enhance firm performance (Huselid, 1995).

3.4.2. Employee training

Several studies took employee training into consideration, implying the need for flexible and alert employees in the volatile environment of HGFs. Barringer et al.’s (2005) study of HGFs in the United States showed that firms with an emphasis on employee training and development tend to enjoy positive returns in terms of high growth. Another study on HGFs in the United Kingdom by Sims and O’Regan (2006) revealed a positive relationship between employee training and well-being practices and high growth. Further, Barbero et al.’s (2011) study in Spain identified that employee training across all levels is particularly important for HGFs pursuing an innovation-based growth strategy.

To the extent that firm-specific on-the-job training occurs, it is likely that such HRM practices yield “sticky competencies” that are difficult for competitors to attract and absorb. Hence, the role of training is equally adequate for growth as it may be for the competitiveness of HGFs.

3.4.3. Employee and manager incentive systems

Employee retention in HGFs often revolves around the importance of adequate material compensation as employees are regularly pushed very hard (Hambrick and Crozier, 1985), working “seventy-hour, seventy-five, or eighty-hour weeks” (as noted by a Marketing Manager of a HGF, in Fischer et al., 1997: 22). The importance of employee compensation practices was visible in findings from a qualitative study of a Canadian business network whose members, all CEOs of HGFs, advise other network members and recommend consultants who had helped them develop and implement employee-shared ownership plans (Fischer and Reuber, 2003). The value of such programs also received support in the study by Barringer et al. (2005), who showed that HRM practices offering financial incentives and stock options to employees had a positive relationship with high growth.

However, the positive association between employee incentive systems and high growth may be different for top managers in HGFs. Ensley et al. (2007) studied the effects of pay and stock-option dispersion among top managers in HGFs, finding that pay dispersion among managers negatively impedes both teams’ decision-making abilities and overall firm growth. While the short-term effects are lower among both family-based and non-family managers, the former tend to respond negatively to long-term pay dispersion. Ensley et al.’s (2007) findings thus indicate that family-based managers in HGFs may be prone to affective and cognitive contagion from past family relationships.

Parker et al.’s (2010) study of HGFs in the United Kingdom showed that firms that continue to grow rapidly are the least likely to sell shares to managers and employees. One explanation provided for the reluctance to enact financial incentive programs is that owners of HGFs have inside information on the performance of their firms. This may make them reluctant to share sensitive information about the future value and prospects of their firms if they expect the firm to continue to grow along the same trajectory. Conversely, “only owners

who are either more uncertain or who know that the business will not perform as well actually sell their shares” (Parker et al., 2010: 224).

While several studies in our review highlighted the importance of employee-incentive systems to realize high growth, the studies by Ensley et al. (2007) and Parker et al. (2010) suggested that poorly designed incentive programs may have adverse effects for HGFs, especially if they are targeted to managers and employees with vested interests.

3.5. Innovation in HGFs

Innovation has long been assumed to have a positive relationship with high growth. We adopted Schumpeter’s (1947: 151) notion of innovation as the “doing of new things or the doing of things that are already being done in a new way,” including products, services, and processes that are either new to the firm or the industry in which the firm operates. Only a few studies in our review (10.26%) examined the relationship between new products and product innovation and high growth. These studies employed both qualitative approaches (Rindova et al., 2012) and quantitative methods (Barbero et al., 2011; Ryzhkova, 2014).

A number of studies in our review looked at the link between innovation and high growth using measures like R&D spending, number of patents, and amount of new products or processes introduced to the market to capture innovation. For example, Coad and Rao’s (2008) study of US manufacturing firms revealed innovations in the form of patent applications and R&D spending to be strongly associated with high growth. Stam and Wennberg’s (2009) study of Dutch firms suggested contingent effects of R&D spending and new products for firms’ growth. These studies’ findings show that overall, innovation seems to be important for sales growth in HGFs.

Still, the role of innovation for high growth seems to differ across various economies as does the role of product versus process innovation. In their study of African firms, Goedhuys and Sleuwaegen (2010) showed that product innovation is positively associated

with high growth but not process innovation. Hölzl's (2009) study of HGFs in 16 European countries showed that HGFs are more innovative than non-HGFs but only in countries close to the technological frontier. Studies using smaller samples of HGFs in the United Kingdom suggested that product development may be less important for high growth compared to a proactive marketing strategy focusing on growth opportunities (O'Regan et al., 2006; Parker et al., 2010). However, in a large study of UK firms, Lee (2014) revealed that both product and process innovation are important for high growth.

Together, these studies' findings suggest that researchers need to probe the potentially separate roles of product and process innovation for the strategic management of HGFs. Extant studies also argued that the role of innovation in HGFs may be contingent on firm strategy (Parker et al., 2010; Stam and Wennberg, 2009). Senderovitz et al. (2016: 405) raised the question of whether the contingent effect of a growth strategy is about achieving a greater share of a given fixed-sized market or whether it is about enhancing or creating a new market. As our literature review does not provide sufficient evidence to inform us about this issue, we can only speculate. The entrepreneurship literature shows that innovative products tend to create opportunities for new firms wanting to penetrate a pre-existing market as well as those wanting to open up new niches within a product or geographic market (Li and Atuahene-Gima, 2001). However, HGFs have been found to be as prevalent in low-technology industries as in high-technology industries, suggesting that technology and products may not be the major determining factor for high growth (Daunfeldt et al., 2016). The potential links between firms' growth strategy, their product and process innovations, and the penetration of new or existing markets remain poorly studied in the HGF literature.

3.6. Capabilities in HGFs

The concept of capabilities denotes an ability to purposefully enact resources, practices, and processes as well as to change, modify, and replace these in order to achieve certain goals or

ends beneficial to the firm. Our view of capabilities is influenced by the view that capabilities are core to the firm by way of being (1) embodied in employees' practices and (2) embedded in the firm's systems and technologies (Leonard-Barton, 1992). The emphasis on firm-level attributes distinguishes the concept of capabilities from that of human capital, although one must bear in mind that individual-level capabilities are to some extent contingent upon the individual's human capital, such as accumulated experiences. While related, organizational capabilities are different from individual capabilities since the prior reflects processes and relationships for coordination (Summers, Humphrey, and Ferris, 2012).

Although the role of capabilities is one of the most important dimensions of the study of growth (Penrose, 1959), only five studies in our review highlighted the importance of capabilities for high growth. These studies addressed three different capabilities for high growth: managerial, financial, and innovation. Studies that addressed the link between high growth and *managerial capabilities* also highlighted the importance of organizational capabilities for high growth as these studies tended to treat both managerial and organizational capabilities as overlapping in HGFs. For example, Barbero et al. (2011) referred to managerial capabilities as a compilation of several other capabilities, including organizational, HR, marketing, and financial capabilities. Chan et al.'s (2006) conceptualization of organizational capabilities involved managerial abilities to handle different types of strategic challenges in HGFs. They found that the managerial ability to identify and overcome competitive or organizational barriers distinguished HGFs from non-HGFs. Willard, Krueger, and Feeser (1992) further revealed that HGF founder-managers are as capable as non-founding managers in terms of managing high growth. To some extent, this finding ends the debate as to whether different managerial capabilities are needed in different phases of HGFs. Finally, Florin et al. (2003) tested HGFs' ability to compete for customers and limited resources by measuring human, social, and financial capital as proxies for

ventures' managerial capabilities. They found that ventures that were capable of accumulating more financial capital tend to grow faster.

As noted above, HGF research has also highlighted the importance of *financial capabilities* in driving high growth. For example, Barbero et al. (2011) measured financial capability as (1) budgeting and cash-flow management, (2) availability of financial capital, (3) financial reporting processes, (4) analysis of financial statements, and (5) cost control (i.e., bootstrapping). Using these measures, they found positive relationships between financial capability and two distinctive growth paths—market expansion and product innovation—among their small sample of HGFs (only 89 firms). Further, Moreno and Casillas (2007) found that financial capital itself was negatively correlated with high growth, but the higher the growth of the firm, the more the firm relied on its capability of capturing opportunities that required fewer finances—a form of financial capability of doing more with less (Baker and Nelson, 2005). This finding is in line with Florin et al. (2003), who emphasized that firms' ability to attract funds is a more critical resource than the funds themselves. Finally, Stam and Wennberg (2009) found that new high-tech firms' successfully enjoyed exceptional high growth rates from their R&D capability. Put differently, *innovation capability* was theorized as an organizational-level dynamic capability that facilitates exceptional growth among a select group of HGFs—new high-tech firms.

All in all, there is a relatively limited but nevertheless important part of the HGF literature that addresses the role of firm capabilities in driving growth. These studies focused on managerial capabilities, financial capabilities, and innovation capabilities. There is less debate about which of the capabilities are the most important; rather, the studies showed that capabilities are important for driving growth. However, the studies had multiple views and operationalizations of capabilities, and each focused on different aspects and timing of growth.

4. A framework for the strategic management of HGFs

Our review suggests that while some progress in research on the strategic management of HGFs has been made, the five different drivers of high growth (human capital, strategy, HRM, innovation, and capabilities) that we found have tended to be studied in isolation from each other, with approximately half of the studies in the review addressing only one driver. As we reviewed the main findings in the literature, we were able to identify a number of opportunities for continued theory development and deeper empirical insights building on the contributions of research on HGFs. Our focus is on discovering how the five drivers can work together—as contingencies—rather than adding numerous other factors into the mix. We do this as we believe that additional factors will only further fragment the research on HGFs rather than help bring it closer together.

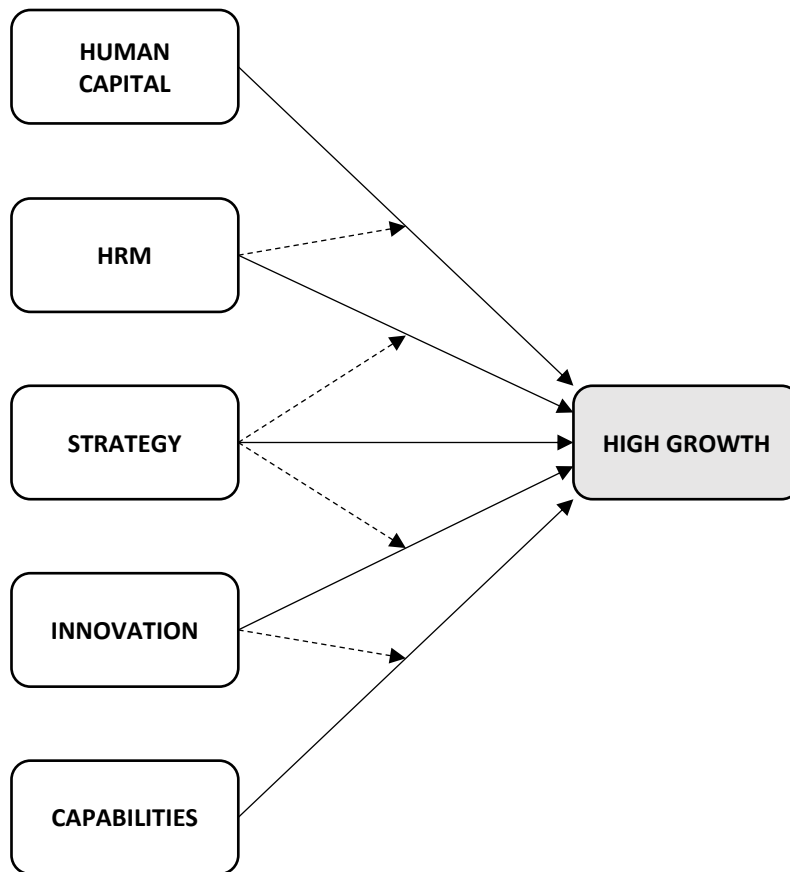
In Figure 1, we build on the outline of factors driving high growth from Section 3 with a keen focus on areas for future research based on strengthening the direct relationships of the five main drivers and the potential contingent relationships between these factors and high growth. To that end, the model does not represent a full-fledged theory or framework for the strategic management of HGFs. Consistent with most studies reviewed here, we consider high growth the dependent variable, as depicted in Figure 1. We consider each of the five drivers as independent variables vis-à-vis high growth and as moderating variables in relation to other variables in the framework. Hence, the framework outlines a set of theoretical factors (i.e., drivers) and a set of contingent mechanisms moderating these factors. The factors and contingent mechanisms are further grounded in the HGF literature we have reviewed here.

As depicted in Figure 1, the accumulated evidence in our review suggests a direct relationship between human capital and high growth. Several studies related to strategic HRM also lead us to suggest the moderation of the relationship between human capital and high growth by effective HRM practices (see the dotted line from HRM to human capital), such as

on-the-job training (Barringer et al., 2005). Our review also suggests a direct relationship between HRM and high growth. This is illustrated in the solid line between the two variables. The strategy of the HGF is another major predictor of high growth, as depicted in Figure 1 (see solid line). We also suggest that strategy affects the relationship between HRM and high growth as strategy tends to favor certain recruitment patterns as well as innovation and high growth (see dotted lines). The fourth component of the framework (i.e., innovation) distinguishes the focus of HGFs on activities like R&D and new product development and its direct relationship with high growth, as depicted in the line between innovation and high growth. Our review further suggests that innovation may moderate the relationship between firm capabilities and high growth (see dotted line). Finally, our framework suggests a direct link between HGFs' capabilities and high growth, as indicated by the line leading to high growth. The purpose of this framework is to outline potential areas of study, including some areas for which the extant literature is equivocal on the direct effects.

In the remainder of this section, we will present the underlying rationale for how each factor, or driver, is directly linked to high growth and the theoretical rationale by which it is thought to moderate the relationship between other factors and high growth. Our presentation follows the order in which each driver is depicted in Figure 1.

Figure 1: A conceptual model of strategic drivers of high growth



4.1. Human capital and high growth

Findings related to the human capital of HGFs suggest some important considerations of the human capital construct in relation to predictions of high growth. Our immediate observation from a large number of studies is that human capital is a driver of high growth (see solid line in Figure 1) through the education and skills of key employees, the experience of founder-managers, the cognitive ability of managers, and the domain expertise of founder-managers. These human capital elements are worthy of further attention and refinement following recent developments in the strategic management literature. Future research may seek to extend the research on human capital for high growth by investigating its potential impact on intermediary strategic outcomes, such as managerial cognition (Kaplan, 2011) or opportunity attention (Shepherd, McMullen, & Ocasio, 2016), to provide a more in-depth explanation of how managers are able to achieve high growth. These lenses provide powerful concepts for studying growth-oriented managerial behaviors (e.g., Greve, 2008). Nevertheless, although

the concept of human capital is wide enough to cover proxies like organization members' training, experience, and intelligence (Becker, 1964), we see a number of potential limitations and prospects for specifying its relationship to high growth and its potential as a source of sustained competitive advantage (Coff and Raffiee, 2015).

First, several studies in our review confirmed a positive and direct relationship between human capital and high growth (the solid line in Figure 1). The most prevalent among these relationships is the impact of founder-managers' education and skills and high growth (Almus, 2002; Barringer et al., 2005; Brüderl and Preisendörfer, 2000; Senderovitz et al., 2016). While this aspect of founder-manager's human capital seems well established in the HGF literature, we see further potential of elaborating on how various compositions of human capital among top management teams (TMTs) of HGFs are related to high growth. For example, studies of entrepreneurial ventures show positive relationships between diverse experience of TMTs and sustained growth (Kor, 2003). Hence, the impact of TMT human capital diversity is a promising avenue for further inquiry in HGFs.

Second, our review surprisingly reveals that prior studies have treated human capital from a more static perspective, disregarding its changing and changeable nature. While HRM interventions, such as learning and training, are fundamental aspects of the human capital concept, remarkably few studies in our review accounted for the roles of HRM and human capital jointly in relation to high growth (Barringer et al., 2005; Hambrick and Crozier, 1985). More specifically, prior studies overlooked the potentially important moderating effect of learning and on-the-job training that might help increase human capital. For example, Coad et al. (2014b) speculated that HGFs might offer relatively poorly educated workers on-the-job training. This training provides them with firm-specific skills to allow them to become valuable to the HGF, but these skills are rare among firms within the same industry, difficult to imitate by rivals, and not easily substitutable by generic competencies on the market

(Barney, 1991). However, this linkage is only speculative and needs further empirical grounding. The rationale for this call is well established in the behavioral theory of the firm (Cyert and March, 1963) and in evolutionary economics (Nelson and Winter, 1982), which account for the potential discrepancies between managerial action and environmental change but less so in the context of high growth. Hence, understanding how HRM interventions positively change the quality of human capital in HGFs is an important first step for understanding how human capital can keep pace with the rapid changes of HGFs. Thus, HGF research needs to better understand the changing role of different HRM interventions on human capital in relation to high growth, as depicted through the dotted line in Figure 1. This suggests greater potential for understanding the relationships between initial human capital in employees and the HRM practices that go on in HGFs.

Further, our observations reveal that learning outcomes from training and managerial experience seem to prepare managers to act creatively and swiftly in the face of high growth (Baum and Bird, 2010) and to develop growth-oriented market strategies (Brüderl and Preisdörfer, 2000). However, a firm's human capital is subject to adequate HRM practices that promote knowledge accumulation, specialization, and shared attention on the HGF's growth vision (Nicholls-Nixon, 2005). The same logic may therefore apply to the extent that practical on-the-job training can develop managerial (Baum and Bird, 2010; Brüderl and Preisdörfer, 2000) and leadership skills (Stam and Wennberg, 2009). In general, exploring the potential moderations of HRM practices in how human capital resources in the firm drive high growth is a notable opportunity for future study. This includes research that separates the human capital of both founder-managers and other employees in HGFs as there is likely a moderation effect of initial human capital and HRM practices, such as further training, on HGFs, as illustrated through the dotted line in Figure 1.

4.2. HRM and high growth

HRM practices vary across HGFs. However, early findings point to the importance of developing a professional HR unit for high growth to take place (Hambrick and Crozier, 1985). Further, the literature consistently raised the importance of employee selection, training, and retention practices for high growth. While selecting talented workers has proven to be important for high growth, some results indicate that flexible workers (Fischer et al., 1997) as well as workers with general rather than specialized human capital (Coad et al., 2014b) are important to sustaining high growth. Overall, there is strong evidence that effective HRM practices are positively related to high growth. This relationship between HRM and high growth is illustrated through the solid line in Figure 1.

While our review reveals the importance of effective HRM practices for high growth, it also highlights some areas for further inquiry. First, our review reveals a lack of systematic studies on employee-selection practices across different stages of the HGF lifecycle, in different industrial settings, and based on various HGF growth strategies. Prior studies highlighted the different recruitment needs of firms with various growth levels (Rutherford, Buller, and McMullen, 2003) and found that high growth is marginally dependent on founder-managers or professional managers (Willard et al., 1992). To our knowledge, no prior studies have taken a life cycle approach to employee selection in HGFs, which could be important as there may be fundamentally different HRM strategies in firms of various stages of development. Firm-size differentials when growth is experienced are likely to involve substantial heterogeneity in terms of the processes and needs for new hires (Nason, McKelvie, & Lumpkin, 2015). Similarly, studies have yet to investigate the need for different recruitment practices of HGFs across dissimilar industrial settings and with different growth strategies. These industry-based dissimilarities may affect differences in best practices across a wide range of HRM activities and needs, especially given that HGFs appear in both high- and low-tech sectors. These topics have recurrently appeared across the studies included in

our review but less so in relation to employee selection. Therefore, we find potential for HGF research to capture this strategic dimension of HRM by systematically studying these aspects over time in firms of different sizes and across different industry contexts.

Second, despite the importance of employee training for the continued growth and competitiveness of HGFs, our review reveals a systematic lack of research on *how* and what type of employee training best leverages HGFs' strategic agenda. This neglect may potentially be linked to the fact that such data is difficult to access and compare across firms. However, this aspect of "high-involvement" HRM practices and their impact on growth have proven to be adequately studied through survey methods (Bae and Lawler, 2000). Therefore, we find exploring the relationship between employee training and high growth a potentially valuable way of understanding how HGFs continue to increase the value of their human capital by preparing them for the new challenges and tasks involved within rapid growth. This area of study would specifically relate to how HRM moderates the relationship between the human capital of the firm and high growth (as illustrated in the dotted line).

Finally, our observation of the divergent findings regarding the importance of incentive programs for HGFs prompts the need for further testing how various incentive systems affect the commitment of both employees and managers to the goals of rapid growth. Investigating this topic is an important and challenging issue as it has the potential to reinvigorate the assumptions of self-determination theory (Deci and Ryan, 1985) in the demanding context of HGFs. Doing so could potentially uncover the role of HRM practices in sustaining high growth, a topic we discuss in greater depth in the next section. This relationship is illustrated by the solid line between HRM and high growth in Figure 1.

The literature also suggests a direct connection between firms' HRM practices and their most important human capital. Since not all human capital is of equal importance to the success of the firm (Lepak & Snell, 1999), facilitating an HR architecture that allows the firm

to identify and develop the specific human capital needed to address the changing nature of the growing firm is an important task. This is noted as causal path in the dotted line between human capital and HRM in Figure 1.

4.3. Strategy and high growth

Our review shows that an HGF's strategy plays a central role in driving high growth (Feeser and Willard, 1990)—directly through its relationship with high growth (solid line in Figure 1) and seemingly also by way of moderating the relationship between HRM and high growth (dotted line) as well as between innovation and high growth (dotted line). First, the literature reveals that strategic planning and forecasting problems tend to compound in HGFs (Bos and Stam, 2011; Hambrick and Crozier, 1985), indicating the need for flexible routines and process-performance adjustments along with standardized planning cycles in HGFs (Grant, 2003). As a result, we anticipate an inevitable feature of HGFs to address adapting organizational structures and systems to environmental changes (Davila and Foster, 2005; Hambrick and Crozier, 1985). This means that models of HGF management need to account for the often dynamic and rapidly changing organizational structure of HGFs (Eisenhardt and Schoonhoven, 1990). Among the few empirical studies in existence to date, Keen and Etemad (2012) found that managers' capability to drive strategy was a precursor to high growth among Canadian HGFs. Associated research showed that major changes are required in systems, structures, and capabilities to cope with the increasing complexity that accompanies high growth (Garnsey, Stam, and Heggeman, 2006; Nicholls-Nixon, 2005).

The relationship between strategic planning and high growth demonstrated in the extant research illustrates the significance of strategic plans for growth. However, as demonstrated in some studies (e.g., Barringer et al., 2005), strategic plans' link with growth speed and HGF size (Siegel et al., 1993) requires further research attention. For example, future research should address the potential of boundary conditions and limitations for the link

between strategic plans and firm size and growth speed. Do all strategic plans help growth universally, or are there various stages of firm development or industry context (e.g. more or less dynamic environments, capital versus technology intensive) in which strategic planning may hinder rapid growth?

The link between product-market differentiation and growth is another well-established finding in the HGF literature. However, our review uncovers the need to better understand the link between differentiation and specialization strategies and high growth. This call for further inquiry is motivated by the view that differentiation of both products and markets is contingent upon the expansion and refinement of the firm's skills, technologies, resources, and even its organizational structure (Ansoff, 1957)—factors that jointly challenge the definition of HGFs. Hence, deeper knowledge is needed on *how* product-market differentiation strategies increase or hinder growth and during what phase of development these strategies affect firm growth most (as implicated by Siegel et al., 1993).

Second, our review reveals several potential ways firm strategy and HRM practices may be related to high growth. Firms' high-growth strategies have been associated with high growth by means of strategic HRM practices: "Managerial practices respond significantly to strategy: firms pursuing either a cost strategy or a quality strategy tend to promote from within, whereas firms pursuing a technology strategy favor external search for the best qualified candidates" (Fombrun and Wally, 1989: 115, 117). This finding suggests the existence of a potentially important moderation between the HGF's enacted strategy and the HRM practices employed. We indicate this relationship as a moderating path through the dotted line between strategy and HRM for high growth in Figure 1.

Finally, the link between firms' growth strategy and product and process innovations for high growth remains under-examined. Although several studies in our review indicated the importance of a technology strategy (Fombrun and Wally, 1989) or an innovation strategy

(Barbero et al., 2011), we found few empirical studies on how innovation-oriented strategies moderate innovation output in relation to high growth. The lack of studies on the specific role of innovation strategies is surprising as the importance of innovation for firm growth is well documented in the literature (Coad and Rao, 2008; Corsino and Gabriele, 2011; Koellinger, 2008). We see this as a potentially important area for future studies. That is, future studies could explore how HGFs' different strategies moderate the link between innovation and high growth. We outline this relationship through the dotted lines in Figure 1.

4.4. Innovation and high growth

Our review shows that various *forms of innovativeness*—namely, product, process, and market innovativeness—may be differentially related to high growth (e.g., Coad and Rao, 2008; O'Regan et al., 2006; Parker et al., 2010; Stam and Wennberg, 2009). The interactive nature of innovation elements in moderating the rate of growth has been generally suggested in the strategic entrepreneurship literature (Crossan and Apaydin, 2010; Delmar, Wennberg, and Hellerstedt, 2011). However, it has not permeated research on HGFs thus far, which we believe offers a natural extension of the literature.

Further, our review reveals that prior studies present inconsistent results as to the influence of process innovations on high growth. In the meantime, the innovation literature has shown some promising relationships between organizational process innovations and firm performance (e.g., Utterback and Abernathy, 1975; Zmud, 1984). Thus, we believe that the relationship between process innovation and high growth is a particularly promising area of study. Furthering the study of the relationship between process innovation and growth is motivated by the view that high growth is contingent on organizational processes and structures (Hambrick and Crozier, 1985). Recent findings also showed discrepancies in the effects of process innovation on growth based on firm size and age (Sappasert and Clausen, 2012)—both contested defining features of HGFs. One reason for these discrepancies may be

the temporal use of process innovations. The development of patentable new technologies may fuel the initial high growth of firms as they separate from competitors (Siegel et al., 1993). Upon achieving this initial success, HGFs may turn to process innovations in order to sustain their growth and efficiency over time. This temporal aspect may also reflect varying investments into a technology strategy to promote future growth by way of major investments in R&D (Stam and Wennberg, 2009).

Finally, our review indicates some important links between HGFs' finances (Koski and Pajarinen, 2013; Stam and Wennberg, 2009) and their financial capabilities for innovation (Barbero et al., 2011). However, the reverse relationship whereby innovation output affects the capabilities of HGFs remains unexplored. One such aspect that directly results from our review is the relationship between the firm's innovation capabilities and its financial capabilities for high growth. There seems to be a clear contradiction between the notion that "necessity is the mother of invention" (Baker and Nelson, 2005) and the empirical findings suggesting that funneling financial capabilities toward R&D and other innovation sources leads to high growth. This contradiction suggests a potentially important need to examine the contingency effects of these different types of capabilities. The equivocal findings in the literature may be resolved within the unique context of HGFs as interactions across firm innovations and various types of capabilities could illustrate the importance of financial capabilities for the development and execution of other capabilities. Understanding this link between innovation and capabilities (see the dotted line in Figure 1) in the context of HGFs is further motivated by growth theories of the firm (Penrose, 1959).

4.5. Capabilities and high growth

Our review reveals that organizational capabilities have been sparsely studied in relation to high growth. It is surprising that only five studies addressed the role of capabilities given that organizational capabilities are important means for creating, configuring, and reconfiguring

the firm's resource base and are therefore necessary for the firm's growth and competitive advantage (Barney, 1991; Penrose, 1959; Teece, Pisano, and Shuen, 1997). For instance, one part of the capabilities and HGF literature emphasized the importance of financial resources for high growth. However, this view tends to overlook the basic notion that financial capabilities are not sufficient to drive growth without the ability to know how to leverage other types of capabilities throughout the growth process (Barbero et al., 2011; Moreno and Casillas, 2007). Nevertheless, while few studies in our review explicitly focused on the relationship between financial capabilities and high growth, most studies acknowledged the importance of financial resources as being an important condition to fuel growth. An exemplary statement is found in Todd and Taylor's study of UK "supergrowth" companies: "Growth requires funding, and the provision of finance is a particularly important strategic skill" (1993: 75), and "those [HGFs] that are less likely to receive funds will grow more slowly" (Moreno and Casillas, 2007: 75). Hence, we expect financial capability to be one among several important capabilities for high growth.

Our review also underscores the importance of managerial capability for high growth. Because HGFs are exposed to rapid fluctuations and changes over time that concern many different parts of the firm, we expect such managerial capabilities to be dynamic and involve "the capabilities with which managers build, integrate, and reconfigure organizational resources and competences" (Adner and Helfat, 2003: 1012). In the context of HGFs, this view offers two distinctive implications. First, it is specific enough to capture HGF managers' ability to make and act on strategic decisions in anticipation of growth (Tushman and Rosenkopf, 1996). There are likely some connections to the human capital of the executives and employees in these firms, or their specific training and development, and their ability to make these decisions. Second, it is inclusive enough to serve as a meta, or "higher-order," capability upon which other capabilities are contingent and generate returns (Collis, 1994). In

this regard, our prediction resonates with the assumptions of upper echelon theory, which conceives of the organization as a reflection of its managers' strategic choices and behaviors (Hambrick and Mason, 1984). Again, understanding the crossing roots of these types of capabilities would provide additional contributions to the HGF literature.

Only a few studies in our review addressed three types of capabilities (managerial/organizational, financial, innovation) and their relationships with high growth. Given the view that capabilities should be studied as bundles when addressing growth (Penrose, 1959), there is an obvious lack of studies examining the effects of multiple capabilities on high growth (for an exception, see Barbero et al., 2011). Barbero et al.'s (2011) observation that various but enduring capabilities have a long-term positive impact on high growth is notable as it suggests an important supporting role for HRM capabilities in driving growth. However, appropriate HRM capabilities also help provide greater strategic focus on product development and innovation, suggesting that these capabilities may have higher importance during certain growth periods than others. Equally, we suspect that capability development will be a critical factor for driving growth given the constraints imposed by firm-environment and firm-technology misfits as part of rapid growth and change, which is predicted in the dynamic capabilities literature (Helfat et al., 2007). Hence, we urge future studies to test for (1) interactions between different types of capabilities in relation to high growth; (2) the relationship between individual capabilities and high growth, including those addressed here and in other studies; and (3) the relationship between bundles of capabilities and high growth. Thus, we illustrate this multi-capability linkage with high growth through the solid line between capabilities and high growth in Figure 1.

This prediction is further supported in the business model literature, which suggests that when the firm is innovation driven and focused on re-inventing itself as a result of environmental and technological challenges, it will have to adapt its capabilities accordingly

(Doz and Kosonen, 2010; Zott, Amit, and Massa, 2011). This moderation effect is illustrated in Figure 1 by the dotted line pointing from innovation to capability.

Moreover, HGF research has shown a positive relationship between high growth and the organizational capability of managing idle (i.e., non-financial) and financial resources in HGFs (Moreno and Casillas, 2007). While this is in line with the resource-based view of leveraging bundles of resources to maintain a competitive advantage (Barney, 1991), the HGF literature has not yet drawn upon the dynamic capabilities view, which predicts that the “strategy in high-velocity markets is about creating a series of unpredictable advantages through timing and loosely structured organization” (Eisenhardt and Martin, 2000: 1118). To that end, further incorporating dynamic capabilities thinking into the HGFs literature is an important consideration for understanding the role of capabilities in driving high growth over time.

5. Discussion

Our review reveals the existence of and potential contingencies between the five factors that drive high growth: human capital, human resource management, strategy, capabilities, and innovation. Extant research has predominantly looked at these factors separately, and we believe examining them together will help further scholars’ understanding of HGFs. In addressing the importance of the direct effects of the five most salient drivers of high growth as well as their potential contingency relationships, we believe that research on HGFs is now reaching a stage where scholars are able to start to generalize under what conditions the strategic management of HGFs can be more or less successful in achieving and sustaining high growth. For example, innovation in general seems to be more important for HGFs than for other firms; however, there is less scholarly agreement about whether HGFs benefit more from product or process innovations and about what the relationship between firms’ growth strategy and their product and process innovations means for high growth.

Another aspect unique to HGFs is the central role of the founder-manager. Our review shows that there is unequivocal evidence that founder-managers' human capital is vital predictors of their firm's achievement of high growth (Coff and Kryscynski, 2011). However, the studies in our review dealing with founder-managers' human capital for high growth tended to neglect the role of management experience. As noted previously, future research on high growth would benefit from adopting more integrative measures of human capital as a multidimensional construct from the strategic management literature (Coff, 2002). Research may also seek to move beyond standard measures of human capital to study cognition and cognitive abilities as a microfoundation to other elements of human capital and the circumstances under which it favors or stymies high growth (Helfat and Peteraf, 2015).

Finally, related to the relationship between employees' human capital and high growth is also the adoption of various HRM systems. An HGF's ability to upgrade and leverage employees' skills has been shown to depend largely on HRM systems and practices in the firm (Barringer et al., 2005), indicating important boundary conditions in terms of how human capital can affect firms' chances of realizing high growth (Coff, 1997). Despite the general importance of HRM systems related to training and incentive schemes noted in our review, we note a lack of research on *how* and what type of employee training can best leverage HGFs' strategic agenda as well as how to effectively design incentive schemes for both employee and management retention.

5.1. From high growth to sustained growth

While there is an implicit assumption that high growth is something positive for firms and their stakeholders, there has been little discussion of the amount of growth that an HGF should pursue. In other words, is there an optimal amount of growth that can be sustained? The fundamental question of whether there are ideal levels of growth that allow firms to sustain a higher level of performance or achieve a sustained competitive advantage remains

unexplored in the literature on the strategic management of HGFs. The importance for HGFs to develop their companies from initial “growth spurts” to sustained levels of high growth has been suggested in several studies (Daunfeldt and Halvarsson, 2014; Flamholtz and Randle, 1990; Pierce and Aguinis, 2013). The strategic management literature indicates several potential problems with excessive growth, such as managerial complexity traps and myopia (Levinthal and March, 1993; Muurlink et al., 2012) or failure to upgrade managerial and personnel resources at different levels of growth (Penrose, 1959)—problems that have yet to be addressed in the literature on HGFs.

Excessive growth is closely connected to a firm’s financial health. Our review reveals that financial issues have been surprisingly scant in the literature on HGFs despite the obvious connection between a firm’s financial structure and its ability to grow rapidly. Prior research has shown that financial ability is a strong predictor of growth by acquisition, whereas it is less so for organic growth (McKelvie, Wiklund, and Davidsson, 2006). Understanding the links between financial structure and mode of growth may also help explain empirical patterns of HGFs (Delmar et al., 2003). Nevertheless, we could only find two studies noting the general importance of external funding for HGFs (Todd & Taylor, 1993) and showing that HGFs often exhibit higher financial liquidity and solvency (Moreno and Casillas, 2007). Overall, managerial strategies to counter “too much growth” and modes of growth remain an important topic for future research on the strategic management of HGFs.

5.2. Methodological implications for HGF research

An important outcome of our literature review is the lack of methodological rigor in many of the empirical studies on the strategic management of HGFs. Two-thirds of the quantitative studies conducted in the past 30 years relied on descriptive or bivariate statistics rather than multivariate statistics in drawing inferences between independent and dependent variables. Only a few studies built on prior work to introduce control variables to help eliminate obvious

and alternate explanations for high growth. Further, there is a fundamental lack of studies accounting for the potential sample-selection and endogeneity biases that comes with only studying surviving samples of HGFs (Delmar and Shane, 2003). Future research should seek to collect data and employ methodologies that account for such potential methodological biases to more rigorously draw inferences between independent and dependent variables related to high growth and over time.

Research could also draw inspiration from studies looking at “extreme” cases—either in the form of qualitative comparative case studies or through the use of statistical model designs for power law distributions (Coad and Rao, 2008; Crawford, McKelvey, and Lichtenstein, 2014). The lack of large-N studies with multivariate statistics and control variables derived from prior research also means that our systematic literature review is qualitative rather than quantitative, such as would be done in a meta-analysis. With further development in the field and more empirical studies published using proper control variables and reporting the effect sizes of independent variables, future literature reviews would be able to assess the accumulated findings in the form of meta-analyses of factors related to HGFs.

6. Conclusion

The study of HGFs has contributed a body of research that remains relatively fragmented based on differences in definitions and operationalizations, for which cumulative knowledge about the broad set of factors driving high growth is lacking. By conducting a review of extant research on the strategic management of HGFs, we were able to identify five common factors that individually and in combination drive high firm growth: human capital, HRM, strategy, innovation, and capabilities. By synthesizing these factors and highlighting how theories of strategic management provide opportunities for future research on the drivers of high growth, we provide researchers with a more substantiated level of knowledge about past accomplishments, unresolved issues, and unanswered questions related to the strategic

management of HGFs. We believe that further examining the contingency factors among the five key drivers will help inform more of the taken-for-granted assumptions of high growth.

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