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# Financial Management Competence of Founding Teams and Growth of New Technology-Based Firms

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**This article draws on the resource-based view to analyze the role founding teams' financial management competencies play for firm growth. Prior research stressed the importance of acquiring external financial resources. In this study, we broaden the understanding of financial management in new firms. We explore the relevance of strategic financial planning competence, external financing competence, competence in financing from cash flow, and controlling competence of entrepreneurial teams for the growth of new technology-based firms. A total of 212 founding teams provided self-assessments of their financial management competencies at start-up. We apply the partial least squares approach to determine the effects of the different financial management competencies on firm growth.**

## Introduction

The acquisition and effective use of scarce resources are a major challenge for entrepreneurs. At start-up, entrepreneurs generally control a very limited resource base (Ebben & Johnson, 2006; Hanlon & Saunders, 2007). They oftentimes have few employees and lack financial assets, organizational assets, and capabilities, as well as intellectual property (Bhide, 2000). Yet, immediate resource demands exist to establish the firm as well as to develop, manufacture, and market the offering. The acquisition of resources is challenging due to information asymmetry between entrepreneurs and external stakeholders (Cassar, 2004; Myers & Majluf, 1984; Watson & Wilson, 2002). Additionally, new ventures face a liability of newness and a liability of smallness (Bruderl & Schussler, 1990; Stinchcombe, 1965). The fledging new firm's competitiveness and growth depend on the founding team's capacity to acquire resources (Jones, Lanctot, & Teege, 2001; Zahra & George, 2002) and to configure them in a value creating fashion (Alvarez & Busenitz, 2001; Barney, 1991; Penrose, 1995; Teece, Pisano, & Shuen, 1997). In this study, we focus on the founding's teams competencies to acquire and manage financial

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resources, and analyze how these financial management competencies affect new firm growth.

Financial resources are key resources for the acquisition and configuration of other resources. They enable a new firm to acquire other resources and serve as an important intermediary medium in the resource configuration process (e.g., Alsos, Isaksen, & Ljunggren, 2006). Prior entrepreneurship research in the financial management domain focuses mainly on the financing of new and small firms. Research shows that the amount of start-up capital is positively related to new firm growth (e.g., Bruno & Tyebjee, 1985; Doutriaux & Simyar, 1987; Tyebjee & Bruno, 1982). Bootstrapping literature suggests that entrepreneurs apply informal and creative forms of financing and try to avoid financing needs (e.g., Thorne, 1989; Winborg, 2009; Winborg & Landström, 2000). Another stream analyzes the timing and structuring of different financing options and their causes (e.g., Chaganti, Decarolis, & Deeds, 1995; Watson & Wilson, 2002). Further, entrepreneurship literature suggests that various factors influence the acquisition of financial resources such as the founders' entrepreneurial abilities, their social capital, and similarity with investors (Baum & Silverman, 2004; Cassar, 2004; Franke, Gruber, Harhoff, & Henkel, 2006; Shane & Cable, 2002). While extant research highlights the importance of acquiring financial resources from investors, other financial management activities such as financing through operations, strategic financial planning, and financial controlling have received little attention. This entails the danger that financial management in the entrepreneurship domain is reduced to the acquisition of external financing, while other important areas of financial management are ignored.

In this study, we introduce a more comprehensive financial management concept to the entrepreneurship literature. Based on the more comprehensive financial management concept, we deduct financial management competence requirements for founding teams of new firms. Subsequently, we explore which of the different financial management competencies founding teams of new technology-based firms (NTBFs) need at start-up, in order to achieve firm growth. Because our broader financial management competence concept includes planning-related competencies such as strategic financial competence and financial controlling competence, we contribute to the current debate on the value of business planning in new ventures (Brinckmann, Grichnik, & Kapsa, 2008; Delmar & Shane, 2003; Gruber, 2007).

We chose NTBFs as objects of analysis for three reasons: (1) While NTBFs are unlikely to be representative of the population of new firms, they still form an important subgroup with respect to job creation, innovation, and national competitiveness (e.g., Almus & Nerlinger, 1999; Audretsch, 1995); (2) by and large, growth is an important dimension for founding teams of NTBFs, while other new firms might pursue different goals (Almus & Nerlinger; Roberts, 1991); and (3) because NTBFs generally have augmented resource demands due to intensive research and development efforts, the need of highly skilled labor, expensive production facilities, and costly sales and distribution systems, these firms provide a fertile ground to study resource acquisition and utilization.

The decision to focus on team-founded ventures was guided by their salient role in the technology-based entrepreneurship domain (Chowdhury, 2005; Cooper, Dunkelberg, Woo, & Dennis, 1990; Ensley & Hmieleski, 2005; Lechler, 2001; Roberts, 1991). Given the small size of founding teams, the close interaction, and joint decision making, often-times without clearly defined functional roles, it can be assumed that this level of analysis captures the relevant competence that determines the growth of the firm (Beckman, Burton, & O'Reilly, 2007; Forbes, Borchert, Zellmer-Bruhn, & Sapienza, 2006; Penrose, 1995).

## Financial Management and Financial Management Competence

For a new venture to operate, it needs to acquire resources and utilize these resources effectively and efficiently. Resource-based theory distinguishes between human, organizational, and financial resources (Barney, 1991). Financial resources serve as a catalyst in the resource acquisition process, as they can be used to acquire resources and configure the resource base (Alsos et al., 2006). In this work, financial management is defined as managerial activities that concern the acquisition of financial resources and the assurance of their effective and efficient use.

Financial management literature in the entrepreneurship domain is dominated by a focus on external financing of new ventures (Table 1). The literature suggests that financial resources constrain the growth of new firms (Cooper, Gimeno-Gascón, & Woo, 1994; Doutriaux & Simyar, 1987). In order to overcome resource limitations, entrepreneurs frequently employ bootstrapping methods. Bootstrapping methods are ways to reduce long-term external financing needs and to acquire financial resources without resorting to classical financing such as debt or equity finance (Winborg & Landström, 2000). Bootstrapping includes delaying payments or expenses, early or prepayment of customers, aiming for government financial support, paying salaries in stock, bartering, or leveraging social relationships to obtain resources (Starr & MacMillan, 1990; Thorne, 1989). Another stream of financial literature suggests that, in order to maintain ownership of their firms, entrepreneurs prefer a pecking order approach where internal financing precedes external financing (Myers, 1984; Watson & Wilson, 2002). However, while internal financing might be sufficient to fund limited operations, growth-oriented entrepreneurs generally have to draw on external finance such as bank or equity finance (Carpenter & Petersen, 2002; Cassar, 2004). The strong focus of researchers on the external financing domain can lead to the conclusion that growth of new ventures is mainly dependent on the amount of financial capital the entrepreneur can raise. Yet, while the acquisition of financial resources from investors might be important, entrepreneurs could also design their business models in order to finance their growth through cash flow from operations. Moreover, the acquired financial resources need to be used efficiently, requiring internal and external accounting. Further, legal obligations require entrepreneurs to do bookkeeping and pay taxes. Hence, financial management in new firms might necessitate a more comprehensive financial management approach.

The limited entrepreneurship research that analyzed financial management beyond financing finds that financial management in small firms is generally not professional. Small business leaders frequently lack oversight and have limited competence in managing the financial aspects of their business (Chaney, Custer, & Grotke, 1977; Lindeloef & Loefsten, 2005). The management of firm cash flows is generally not efficient (Cooley & Pullen, 1979). Yet, initial findings also show that effective financial management increases firm performance (McMahon & Davis, 1994). However, a comprehensive concept of financial management in new and small firms could not be identified.

Literature on financial management in established firms presents more comprehensive financial management concepts that encompass a broad range of activity domains (see Table 2). These financial management activities not only go beyond acquiring external financial resources but also include analyzing the effective and efficient use of resources (e.g., financial planning, controlling, and risk management), assuring a sufficient level of liquidity through internal and external financing and cash management (treasury), and compliance with internal and external regulatory requirements (e.g., internal auditing, accounting, financial reporting, and tax management) (Horngren, Foster, Datar, & Rajan,

Table 1

## Overview of Financial Management–Related Literature in Entrepreneurship

Stream in financial management literature	Substream	Central propositions/findings	Context of study	Literature
Financing	Financial resource base impacts performance	<p>Start-up capital increases sales.</p> <p>Start-up capital and financing experience increase performance.</p> <p>Initial capital constraints hinder entrepreneurial venture performance.</p> <p>Amount of start-up capital increases performance.</p> <p>Growth is greater in months after financing event.</p>	<p>NTBFs in California</p> <p>NTBFs in the United States</p> <p>New firms in Netherlands</p> <p>NTBFs in Germany</p> <p>Funded new firms which outsourced human resource mainly in Silicon Valley, U.S.A.</p> <p>New ventures in the United States</p> <p>New firms in Norway</p>	<p>Tyebjee and Bruuo (1982)</p> <p>Douriaux and Simyar (1987)</p> <p>Van Praag, de Wit, and Bosma (2005)</p> <p>Kulicke (1993)</p> <p>Davila, Foster, and Gupta (2000)</p>
	Bootstrapping (creative/ alternative forms of financing; lowering financing needs)	<p>Initial financial resources impacts survival and growth.</p> <p>Female entrepreneurs perceive financing requirements as more restrictive, start with less financing resources, and grow less.</p> <p>Entrepreneurs use alternative methods to obtain resources without relying on classic external finance. Forms of bootstrapping include (1) delaying bootstrappers, (2) relationship-oriented bootstrappers, (3) subsidy-oriented bootstrappers, (4) minimizing bootstrappers, and (5) private owner-financed bootstrappers.</p> <p>Owner-related, joint-utilization, delaying bootstrapping decreases over time. Firms increase the use of customer-related techniques. Firms are unlikely to start using techniques that they did not use early on.</p> <p>Frequently used financing techniques include (1) borrowing from suppliers, (2) customer early or prepayment, (3) free or low-cost labor and deferred salary payments (stock, family and friends employed, etc.), (4) special deals for rent, (5) special grants and loan programs, (6) resource partnering, and (7) side income (consulting, service offerings).</p> <p>Motives for bootstrapping change with experience from cost minimization to risk minimization.</p> <p>Firms retain income and raise limited external finance. Growth is constrained by internal finance. Firms that use external equity finance grow faster. For firms using external financing, the impact of internal finance on growth is weak.</p> <p>Owners of technology-based firms rated bootstrapping techniques that improved cash inflows more important than those improving cash outflows.</p> <p>Market success helps smaller firms to generate enough internal funds to smooth investment over time. Small enterprises rely on informal credit markets.</p>	<p>Small business managers in Sweden</p> <p>Small retail and service firms in Midwest of the United States</p> <p>Personal observation of new firms in the United States</p> <p>Small firms in Sweden</p> <p>Small firms</p> <p>Small technology-based firms</p> <p>Small manufacturing firms in Shanghai</p>	<p>Cooper et al. (1994)</p> <p>Alsos et al. (2006)</p> <p>Winborg and Landström (2000)</p> <p>Ebben and Johnson (2006)</p> <p>Thorne (1989)</p> <p>Winborg (2009)</p> <p>Carpenter and Petersen (2002)</p> <p>Auken (2005)</p> <p>Chow and Fung (2000)</p>

Financial capital structuring/pecking order theory	Firms rely heavily upon family wealth. Nontraditional debt capital sources are of secondary importance and utilized more by weaker start-ups. The larger the start-up, the larger the proportion of debt, long-term debt, and outside and bank financing. Incorporation increases bank and outside financing. Growth intention leads to bank financing. Financing impacts capital structure. Lack of tangible assets leads to less formal financing. Entrepreneurs start with own savings if firm is highly profitable, the likelihood of achieving the milestone is high, the venture capital market is large, and the amount needed to achieve the milestone is small. Entrepreneurs delay progress when business angels have senior claims on future cash flows. Bank loans are generally more attractive than VCs for entrepreneurs. Entrepreneurs prefer VC over bank finance if their productivity is low and VCs productivity is high. Few start-ups use VCs. VCs supply more capital than other sources per investment. Venture capital is more expensive since a higher share of equity has to be given up. VCs provide added management expertise. Confirm pecking order model implication that, when SMEs require additional finance, the use of retained earnings will be preferred over debt and that debt will be preferred over new share issues to outsiders. Goal orientation, satisfaction with economic need, and odds of success of the firm are among the most important predictors of capital structure decisions. Owners are familiar with traditional sources of capital, less familiar with growth capital, and least familiar with government-funding programs. Their perceived ability to negotiate and price externally funded investments augments as firms develop. Entrepreneurial firms choose between two funding institution: banks, which monitor less intensively and face liquidity demands from their own investors, and venture capitalists, who can monitor more intensively but face a higher cost of capital because of the liquidity constraints that they impose on their own investors. Trade-credit increases bank credit. Financial ratio use did not impact survival or profitability. Financial indicators mitigate the liability of newness. This effect is stronger the younger the organization. Growth does not impact financial ratios such as return on investment, asset structure, financial structure, liquidity, and solvency. Financial ratios comparing listed and unlisted companies are different. Extreme ranges of performance in terms of accounting ratios are likely for unlisted firms. State of financial reporting increases performance. Firms frequently have cash flow problems. They lack oversight of financial situation. Executives lack knowledge about cash management.	Chinese and Korean immigrants in the United States Australian new independently founded firms  Theory for new firms  Theory for new firms NTBFs in Northern California, U.S.A U.K. small and medium size enterprises  Independent businesses, U.S.A.  Small technology-based firms in the United States  Australian family and private businesses  Small firms in Russia Pharmacies in the United States New firms in Sweden  SME manufacturing in Australia  Small firms in U.K.  Australian SMEs Small firms in California, U.S.A., which were supported by university program.  Small businesses engaged in petroleum marketing in the United States  VC-financed SMEs in The Netherlands	Bates (1997) Cassar (2004)  Schwienbacher (2007)  De Bettignies and Brander (2007) Bruno and Tyebjee (1985)  Watson and Wilson (2002)  Chaganti et al. (1995)  Van Auken (2001)  Winton and Yerramilli (2008)  Cook (1999) Thomas and Evanson (1987) Wiklund, Baker, and Shepherd (2008)  McMalton (2001)  Hutchinson, Meric, and Meric (1988)  McMahon and Davis (1994) Chaney et al. (1977)  Cooley and Pullen (1979)  Wijbergen, Postma, and Stratling (2007)
Financial management practices	Financial ratio analysis		
Financial & cash management practices	Firms frequently do not prepare cash forecasts. If prepared cash flow forecasts are short-term oriented, controlling cash flows is more sophisticated than forecasting or investing cash. VCs simulate use of SME's control systems. Cost control systems increase SME performance when VCs provide service activities. The use of cost control systems tends to decrease financial performance when VCs are monitoring strongly.		

NTBF, new technology-based firm; SME, small and medium sized businesses; VC, venture capital.

Table 2

## Overview of Financial Management Roles in Established Corporations

Author (Year)	Domain title	Roles/Subdomains	Activities
Shim and Siegel (2000)	Financial management	Vice president of finance	Highest level, financial management functions including financial planning
		Treasurer	Obtaining finance, maintaining banking/investors relationships, managing cash, appraising credits, collecting funds, etc.
		Controller	Record keeping, tracking, financial and managerial accounting, audit, control, taxes, etc.
Hauschildt et al. (1981)	Financial management	Vice president of finance	Defining financial goals, representing financial function, conflict solution among executive team regarding investment decisions, supervision of financial domain
		Treasurer	Managing cash flows, assurance of liquidity reserve, debt collection and dunning
		Controller	Financial reporting and analysis, financial control, accounting, tax
Hornngren et al. (2008)	Financial management	Chief financial officer/finance director	Supervision of financial subactivities
		Controller/chief accounting officer	Managerial and financial accounting
		Treasurer	Banking, short- and long-term financing, investment, cash-management
		Risk management	Interest rate, exchange rate, derivatives management
		Investor relations	Responding and interacting with investors
		Taxation	Management of sales, income tax, etc.
		Internal audit	Reviewing and analyzing financial records, attest integrity of financial reports, etc.
Brealey, Myers, and Marcus (2005)	Financial managers in large corporations	CFO	Financial policy and corporate planning
		Treasurer	Cash management, raising capital, banking relationships
Ross et al. (2005)	Financial management Roles	Controller	Preparation of financial statements, accounting, taxes
		Treasurer	Controls
Moore and Reichert (1983)	Financial analysis techniques carried out by CFO, treasurer, and controller or assistants	Treasurer	Cash manager, credit manager, capital expenditures, financial planning
		Controller	Financial and cost accounting manager, tax manager, data processing manager
		Financial techniques are commonly used to evaluate business performance	Analysis profit margin on sales, return on assets or ROI, financial ratio analysis
		Working capital techniques	Projected cash budget, breakeven analysis, analysis of financial and operating leverage, sales forecasting models, sources and uses of funds, cash management models, inventory management models, statistical credit scoring models
		Capital budgeting techniques	Analysis of average rate of return, payback period, net present value, internal rate of return, at least one of adjusted rate of return, or payback
		Forecasting/Operations research techniques	Macroeconomic modeling and simulation, project/product financial analysis and modeling, optimal transportation modeling, linear programming, goal programming, program evaluation and review techniques (PERT)

CFO, chief financial officer; ROI, return on investment.

2008; Mian, 2001). In order to address these diverse tasks in larger firms, a division of labor is generally required. In consequence, various specific job roles have been defined in the financial management domain. Commonly, three prominent financial management job roles can be distinguished: the strategic financial planner, the treasurer, and the controller (e.g., Hauschildt, Sachs, & Witte, 1981; Mian; Ross, Westerfield, & Jaffe, 2005; Van Horne & Wachowicz, 2004).

The role of the strategic financial planner is generally fulfilled by the chief financial officer (CFO). The CFO defines financial objectives for their company and conceives a financial plan to achieve these objectives in dialog with other top management team members and financial advisors (Mian, 2001; Van Horne & Wachowicz, 2004). Being positioned at the top management level of a firm, the CFO is responsible for all subordinate financial task domains (Hornsgren et al., 2008). The CFO ensures that top management attributes attention to the financial domain in light of other functional domains such as marketing, human resources, and technology management, which all compete for the limited managerial attention of the top management team (Penrose, 1995).

The role of the treasurer is to ensure a sufficient level of liquidity, thereby avoiding insolvency (Hauschildt et al., 1981). Liquidity can be conceived of as the level of cash and near-cash assets as well as cash inflows and outflows that add to and subtract from the sum of these assets (McMahon & Stanger, 1995). As such, the treasurer is responsible for banking, short- and long-term financing, investment decisions, and cash management (Hornsgren et al., 2008). The provision of funds to ensure liquidity can have two sources: the provision of financial resources through operations (e.g., expense reduction, invoice management, trade-credit, factoring of receivables) and securing financial resources through nonoperations (e.g., funding from founder savings, angel investors, venture capital, banks, or governmental credits). Other literature often uses an information-based view to distinguish between internal and external financing (e.g., Myers, 1984; Myers & Majluf, 1984). According to these concepts, external finance is conceived of as financing from individuals or institutions such as venture capitalists, business angels, or banks that are at an information disadvantage compared with firm insiders such as top management. Our operations vs. nonoperation-based financing distinction enables the broadening of the understanding of financing options. Much literature is devoted to depicting nonoperation-based financing options such as acquiring financing from venture capital firms (VCs) or banks; yet, little attention is placed on financing from operations and trade-offs between the different nonoperation-based financing options. Yet, initial findings show that especially experienced entrepreneurs highlight the importance of financing from operations in the form of fast first sales, fast positive cash flows, and limited fixed costs (Baron & Ensley, 2006; Chow & Fung, 2000). Following our conception, the treasurer's primary responsibility is to manage operation and nonoperation-based financing options to ensure liquidity of the firm.

The role of the controller, who is frequently called chief accounting officer, is to ascertain an effective and efficient use of the firm's resources by reporting and interpreting financially relevant data. In large organizations, the controller reports the data to top management to facilitate strategic decision making (Hornsgren et al., 2008). Following strategic decision making, the controller monitors the execution of the financial plan. Contrasting the treasurer's and controller's functions, both roles serve different purposes that are relevant for the development of the firm. While the treasurer's task is to ensure a minimum level of resources for operations, the controller's task is to ensure that the existing resources are used in an effective and efficient way (Shim & Siegel, 2000).

If we consider the important task of managing risk in NTBFs (McMahon & Stanger, 1995), the different financial management roles can be further illustrated. The strategic

financial planner's role includes creating awareness of financial risks implied by different technology projects at the top management team level. The strategic financial planner has also to ensure that the top management team considers the relationship between financial risks and expected financial returns when selecting technology projects. The treasurer's task is to reflect the liquidity implications of high-risk technology development projects. Since those development projects increase the chances of development delays, the treasurer's task includes increasing the cash position of the firm by drawing on financing from operations and nonoperations. With regard to high-risk projects, the controller's role encompasses activities such as the analysis of whether the focus on higher risk R&D projects has improved key financial performance ratios.

The financial management job roles developed for larger companies impart a broader understanding of financial management than commonly discussed in entrepreneurship literature. Subsequently, we use this job role conception to distinguish four financial management activity domains that are expected to be of relevance for new firms: (1) strategic financial management; (2) financing through non-operations; (3) financing through operations; and (4) financial controlling.

For activities in these four financial management domains to be carried out, a respective competence is needed. While, in large companies, the determination of financial goals and financial planning is generally fulfilled by the CFO and the roles of the treasurer and controller are generally carried out by functional specialists (Mian, 2001), entrepreneurship scholars suggest that key managerial activities are carried out by the founding team (Mian; Penrose, 1995). At start-up, the founding team generally has few additional employees to delegate tasks to. Especially in NTBFs, initial employees often have a technological background to help in developing a prototype and established production. While some of the financial management tasks can be delegated to persons outside the new firm such as accountants, still, competence in the four financial domains might be needed to ensure the definition of correct goals, to represent the firm to external investors, exchange information with the external partners, interpret results for strategic decision-making, and supervise external partners. Hence, it can be expected that founding teams need competence in the different financial management domains.

Competence is defined as the degree of fit between the demands of a task and the abilities of the person or group that fulfills the task (Boyatzis, 1982; Chandler & Hanks, 1994; Man, Lau, & Chan, 2001). We refer to the ability of managing the acquisition and allocation of financial resources to achieve firm objectives as financial management competence. Competence refers to the potential of a person or group to act successfully (Boyatzis). As such, competence needs to translate into effective actions or activities in order to impact organizational outcomes. In the financial management domain, financial competence enables effective financial management activities, which, in consequence, impact the development of the new firm. In accordance with the financial management concept presented earlier, financial management competence comprises a bundle of four related skill areas: (1) strategic financial management competence; (2) competence in external financing; (3) competence in financing through operations; and (4) competence in financial controlling.

It is important to note that we focus in our competence conception in the "financing through nonoperations" domain only on the external financing activity subdomain, leaving aside the financing through internal investors. We believe that assessing a team's competence in acquiring financial resources from themselves is of limited value in light of our research framework but appears to be more relevant for researchers analyzing entrepreneurial commitment or cognitive biases (Baron, 2004; Keh, Foo, & Lim, 2002; Schwenk, 1986).



The four financial management competence domains are functional competencies, as they relate to a specific task domain. They can be distinguished from nonfunctional competencies such as social or conceptual competencies (Brinckmann, 2007; Katz, 1974; Man et al., 2001). Subsequently, we analyze how the different financial management competence domains impact the growth of new firms.

## **Financial Management Competence and New Firm Growth**

The abilities of a founding team can be understood as a limiting factor to the growth of new businesses. They determine the extent to which resources can be employed in a value-creating manner (Penrose, 1995). Competence-based research suggests that specific competencies translate into effective activities in the respective domains (Boyatzis, 1982). The activities in consequence can impact organizational development. Prior entrepreneurship research shows that a new firm's resources such as its human capital and social capital are crucial for its development (Chandler, 1998; Davidsson & Honig, 2003). General entrepreneurial and managerial competence can improve a new firm's performance (Chandler & Hanks, 1994; Chandler & Jansen, 1992). Using a competence-based approach, we build on prior research that showed that strong background experience can help in overcoming financial resource and capital constraints (Chandler). In other words, while new venture teams may lack a strong resource base at start-up, a supporting parent company or social capital to access resources with ease at favorable conditions, competence and especially financial management can help in forming linkages with resource providers, building social capital, acquiring resources, and leveraging the resources a new firm controls. The specific relationships between the specific financial competencies and firm growth are analyzed next.

## **Competence in Strategic Financial Management and New Firm Growth**

Following the competence-based approach, strategic financial management competence facilitates strategic financial management. With regard to strategic management related activities, entrepreneurship scholars currently debate the value of strategic planning in the entrepreneurial context (e.g., Gruber, 2007). One group of scholars highlights the importance of strategic planning for new venture success (Delmar & Shane, 2003; Shane & Delmar, 2004), while another group challenges this view (Bhide, 2000). Studies synthesizing empirical research on the planning performance relationship find that planning improves a new firm's development (e.g., Schwenk & Shrader, 1993). According to the planning school, planning implies the specification of goals and fosters the identification of effective steps to achieve these goals (Delmar & Shane). Planning allows more rapid decision making, assumptions can be tested without expending the resources, resource flows can be optimized, and bottlenecks can be avoided. Planning enables firms to control goal achievement. If deviations from the plan occur, causes for these deviations can be identified. Additionally, plans enable communication with persons inside and outside the firm. Planning scholars argue that the benefits of strategic planning increase especially in dynamic and unstable external environments (Dean & Sharfman, 1996; Goll & Rasheed, 1997; Miller & Friesen, 1977; Priem, Rasheed, & Kotulic, 1995).

Strategic planning in the financial domain is a central part of new venture planning (Delmar & Shane, 2003; Hisrich & Peters, 2002). Strategic financial planning in new ventures involves attributing importance to the financial domain, the determination of

financial goals, and the development of a financial plan to achieve the financial objectives (McMahon, 2001; McMahon & Davis, 1994). Because managerial attention is directed toward the financial domain, goals are determined, and financial plans are developed, the resources of the new firm are used more effectively and efficiently. The improved resource utilization, in consequence, augments firm growth. Thus, following competence-based literature, strategic financial management competence increases the quality of financial planning, which, in consequence, augments firm performance. This leads to the first hypothesis:

**Hypothesis 1:** A higher level of strategic financial management competence is positively related to venture growth.

### **Competence in External Financing and New Firm Growth**

Substantial literature proposes that achieving financing from investors is a major challenge for founding teams of NTBFs (e.g., Carpentier & Suret, 2006; Cassar, 2004; Lindeloef & Loeffsten, 2005). The provision of capital by investors can be understood as a selective system (Aldrich & Martinez, 2001; Baum & Silverman, 2004; Zimmerman & Zeitz, 2002). The financial resources, which are essential for the development of NTBFs, are only provided to those businesses that are selected by the financial intermediaries. Next to the financial capital, the selected firms receive management expertise and additional resources from a support network (Baum & Silverman). Since these financing institutions are perceived as informed agents, a selection of a NTBF by a renowned financial institution is a quality surrogate that assists the chosen firms when dealing with other stakeholders (Davila et al., 2000). In the process, these additional resources foster the development of the venture. Therefore, those teams that are able to obtain financing from investors will prevail and grow faster than those with fewer financial resources. The firms with fewer abilities in acquiring capital need to make detouring projects in order to finance their intended projects. Alternatively, they have to rely on bootstrap R&D (Winborg & Landström, 2000; Davidson & Dutia, 1991). Because these detouring activities are not preferred options but are started due to necessity, growth prospects will likely be less favorable (Van Praag et al., 2005). Consequently, we propose that competence in acquiring financing from investors increases a new firm's growth:

**Hypothesis 2:** A higher level of competence in external financing is positively related to venture growth.

### **Competence in Financing Through Operations and New Firm Growth**

Next to the acquisition of financing from investors, firms can finance their firm development through operations. Financing through operations does not provide the reputation effects of external financing. Nonetheless, financing through operations has various positive effects on the growth of the firm. First, financing through operations increases the amount of available financial capital. The increased amount of financial capital augments performance (Cooper et al., 1994). Second, according to financial theory, financing through operations is less costly than external financing, as information asymmetries, adverse selection effects, and transaction costs are avoided (e.g., Barton & Matthews, 1989; Cumming, 2006; Myers & Majluf, 1984). The perceived risk of NTBFs that aim for high growth is generally considerable (Shepherd, Douglas, & Shanley, 2000). A higher perceived risk augments the cost premium of outside financing (Heyman,

Deloof, & Ooghe, 2008). Third, in situations where sufficient external financing is generally or temporarily not available, financing through operations can substitute for the lack of external financing. Institutional investors such as venture capitalists are generally focusing on limited industries and special types of firms such as business-to-business markets or later stage ventures (e.g., Cumming). New firms that operate in industries that are unattractive for venture capitalists will face general challenges in attracting external financing. Banks demand collaterals for their loans (Thorne, 1989). New firms generally cannot offer collaterals (Denis, 2004). Additionally, the provision of external capital such as venture capital or debt financing fluctuates. In times of financial crises and/or economic downturns, new firms can face temporally challenges to attract external financing. In these situations, competence in financing through operations gains special importance (Brophy & Shulman, 1992). Hence, due to general or temporal external financing limitations, financing through operations competencies can be critical to cope with adverse scenarios and finance new firm growth.

**Hypothesis 3:** A higher level of competence in financing through operations is positively related to venture growth.

### **Controlling Competence and New Firm Growth**

Beyond the acquisition of financial resources, new firms need to ensure the economic use of the financial resources. As proposed above, strategic financial planning can facilitate the direction of resource flows. However, planning theorists additionally highlight the need for controlling the achievement of the plans (Delmar & Shane, 2003; Horovitz & Thietart, 1982). Through monitoring, analysis, and redirection of financial flows, the financial resources are used more economically. Additionally, the learning school suggests that observation, analysis, and reflection facilitate learning (Delmar & Shane). Controlling encompasses monitoring, analyzing, and reflecting the firm's development in light of conceived plans and understanding the causes for possible deviations from the plan (Roehl-Anderson & Bragg, 2004). As a result, controlling can facilitate learning. Because financial controlling facilitates learning in the financial planning domain, the financial planning function is improved in subsequent periods (Penrose, 1995). Thus, following the arguments proposed by the planning- and learning-based literature, financial controlling can be expected to increase a new firm's performance. Prior research suggests that, in order to determine and steer the efficient use of financial resources, entrepreneurs need to be able to interpret financial measures (McMahon, 2001; McMahon & Davis, 1994; Mramor & Valentincic, 2003; Pompe & Bilderbeek, 2005). Founding teams that are more experienced in interpreting and applying financial measures and that can regularly assess the financial performance of the new venture are able to adopt appropriate measures to ensure growth (Diamond, 1996; Granlund & Taipaleenmäki, 2004). Following the competence-based framework, financial controlling competence increases the quality of financial controlling, which, in consequence, improves performance. Hence, we conclude:

**Hypothesis 4:** A higher level of controlling competence is positively related to higher venture growth.

## **Method**

### **Sample**

Our sample was selected from different German technology industry registrars (VDI Technology Centers, AMA Verband für Sensorik, ADT Bundesverband Deutscher

Innovations-, Technologie- und Gründerzentren e.V., BioTOP, Vereinigung Deutscher Biotechnologieunternehmen) and from specific industry fair catalogs (Laser Optik Messe Berlin, Hannover Messe). Companies qualified to participate in our research if they met the following criteria: (1) the firm focuses on high-technology products; (2) the firm is lead by a founding team; and (3) the firm carries out its own research and development, production, and marketing activities (no trading businesses). The first and second requirements were introduced to reflect the framework of our study. The third requirement was introduced to obtain a homogenous sample of production-based technology ventures and to exclude trading businesses, which have different characteristics and financial resource requirements.

Companies willing to participate in our study received a questionnaire, which was followed up by several phone calls. The final questionnaire was directed to one member of each founding team. Following prior research, self-assessments through key informants of small groups are an adequate measurement tool (Baron & Markman, 2003; Chandler & Hanks, 1994; Chandler & Jansen, 1992; Delmar & Shane, 2003; Shortell & Zajac, 1990). Because the median size of the founding team is two persons, a close collaboration and increased information exchange can be assumed. Various studies illustrate the consistent assessments of different founding team members on central founding issues in the NTBF context (e.g., Chandler & Jansen). Considering the trade-off between the number of respondents and the obtainable sample size, we opted for a single-informant design to facilitate a large sample study. Using the team as a point of reference, compared with competence, self-assessments of the responding individual has the benefit of reducing common method bias (Podsakoff, MacKenzie, Jeong-Yeon, & Podsakoff, 2003).

Out of the 617 contacted companies, 212 completed the questionnaire, yielding a response rate of 34%. A possible nonresponse bias was analyzed by comparing early vs. late respondent data. *t*-tests comparing the variable means of central descriptive measures (number of team members with financial background, average financial management competence assessment, current sales, and number of current employees) of these two groups indicated no significant differences between early and late respondents. This suggests that a nonresponse bias is unlikely. In order to ensure that all ventures correspond to a similar development level at the beginning of their business, we analyzed the specified activities in the marketing and the technological domain at start-up. In order to focus on pure start-up firms and exclude those that had some substantial prior development history, the study only included companies that, at the time of start-up, had neither a functioning production in place nor a customer base established. This enables us to derive specific findings concerning ventures in early development stages and to control for effects that activities prior to start-up might have. The criteria were met by 181 firms. The firms commenced with R&D, prototype development, and market research. The sample companies were active in the following technological areas: micro (36), nano (25), medical (17), biotechnology (20), electronics (54), instrument development (26), and laser/optics (27). The firms in our sample had been, on average, in existence for 6 years. Firms that were less than a year old were eliminated from the growth analysis. Moreover, to control for possible recall effects, we also calculated all models, based on a sample of the younger half of all firms. The average firm age in this young firm sample group was 3 years. The average founding team consisted of two to three members, and their ventures had two to three additional employees at start-up. At the time of questioning, the median sales of these companies were €650,000 (SD: €2,113,000), and the median number of employees was 10 (SD: 32.0).

## Independent Measures

Competence measurement development in entrepreneurship research is still in its infancy. Due to the lack of financial management competence measures, we developed an initial set of measures for this research to explore the relevance of the financial management competence domains for NTBF growth. With regard to construct specification, formative and reflective settings must be distinguished since they demand different construct development approaches (e.g., Jarvis, MacKenzie, & Podsakoff, 2003). In formative measurement settings, the indicators influence the latent construct, while, in reflective operationalizations, the causality is reverse (Diamantopoulos, 1999; Diamantopoulos & Winkelhofer, 2001). In contrast to character traits, competence is measured in a formative way (Diamantopoulos & Winkelhofer). This is in accordance with widely used measurement concepts (Jöreskog & Sörbom, 1989; United Nations Development Program, 1990). The formative specification implies that an increase of specific indicators (e.g., know-how in assessing customer credit ratings) augments the overall competence (e.g., financing through operations competence). At the same time, higher competence in one financial management domain (e.g., financing through operations) does not imply that competence in all subdomains has increased (e.g., the team might not know how to assess customer credit ratings but have high competence in all other subdomains). The weights of each indicator in a formative measurement model can be interpreted in analogy to betas/coefficients in OLS modeling (Chin, 1998). Our competence measure development followed Diamantopoulos and Winkelhofer. The specification of content and indicators of each domain was based on a literature review. Additionally, we conducted interviews with 17 founders of NTBFs to identify specific competencies needed in the financial management domain and its subdomains. This led to a multi-item measurement of each financial management competence measure. Following Diamantopoulos and Winkelhofer, we calculated variance inflation factors for each item and condition indices for the resulting scales in order to avoid indicator collinearity (Belsley, Kuh, & Welsch, 1980).

In order to determine nomological validity of our financial management competencies, we analyzed relationships of the financial management construct with team background data. An analysis of variance illustrated significant links between the initial number of team members with academic and practical experience in financial management and their overall self-assessed financial management team competencies as well as each financial management construct. Moreover, nomological validity was indicated by positive correlations of financial management constructs and different growth measures. Furthermore, nomological validity was tested by using the partial-least-squares approach (PLS) approach.

The resulting measurement items and measurement characteristics are presented in Table 3. Each item refers to the competence of the founding team at start-up. The founders assessed their start-up competence on a 5-point Likert-type scale ranging from “fully agree” (5) to “do not agree” (1). The start-up time point was defined as the time when members of the founding team first got together to undertake joint business activities.

## Dependent Measures

The growth of NTBFs is analyzed by using sales and employment data. Sales and employment growth are the most frequently used measures for new venture growth (Delmar, 1997). They depict progress of the firm internally and externally (Delmar, Davidsson, & Gartner, 2003). Applying different growth measures has the advantage of gaining more detailed insights as to which type of growth is achieved. It also reflects the proposition that there is no single or composite best measure of growth. Sales growth

Table 3

## Measurement Model of Financial Management Competencies

Constructs	All ventures			Younger half			Firms dependent on outside finance	
	Weights Model 1 sales growth	Weights Model 2 empl. growth	Weights Model 3 sales growth	Weights Model 4 empl. growth	Weights Model 5 sales growth	Weights Model 6 empl. growth	Variance inflation factor	
Strategic financial management competence (Condition Index: 6.74)								
The founding team (FT) attributes greatest importance to financial management.	.22	.50	.47	.01	.26	.19	1.22	1.22
The FT has developed an integrated set of financial plans.	.88	.68	1.11	1.00	.86	.89	1.22	1.22
External financing competence (Condition Index: 7.55)								
The FT assessed external financing needs in detail.	.12	.05	.84	.59	.27	.04	1.56	1.56
The FT has know-how in obtaining external financing.	.92	1.03	1.13	1.17	.83	.98	1.56	1.56
Internal financing competence (Condition Index: 10.00)								
The FT has knowledge of internal financing instruments to overcome short-term liquidity problems.	.21	.28	.11	.27	.25	.39	1.36	1.36
The FT assesses customer credit ratings when selecting customers.	.14	.26	.23	.15	.20	.17	1.74	1.74
The FT has an awareness of payment habits of the industry.	.04	.24	.42	.46	.16	.43	1.86	1.86
The FT has know-how in invoicing and debt collection.	.78	.48	.49	.61	.60	.23	1.59	1.59
Controlling competence (Condition Index: 8.40)								
The FT has know-how about profitability ratios to analyze investments.	1.28	.32	1.11	1.24	1.20	.54	1.78	1.78
The FT analyzes the firm success systematically.	.24	.59	.22	.28	.13	.58	1.86	1.86
The FT knows how to interpret balance statements.	.58	.27	.97	.65	.88	.01	1.58	1.58
Venture growth (Condition Index: 2.68)								
Annual sales growth	1		1		1		1.32	1.32
Annual employment growth		1		1		1	1.32	1.32

reflects the successful acceptance of a new firm's offerings in the market. It signals a perceived benefit of a new firm's offering by customers and a firm's competitiveness. Overall, it captures the successful bridging of an organization's boundaries. In addition, the growth of the employment base reflects the organizational growth. Following human capital theory, as employees are added, the organization can develop a greater productive capacity and generate increased returns. Employment and sales growth were calculated in terms of absolute growth per year. Because the vast majority of new firms were private companies, sales and employment data were provided by the firms.

### Control Variables

In order to control for other factors that can affect the growth of new firms, we included three control variables. First, we controlled for the founding background of the NTBF. New firms that have parent organizations to support them can be expected to grow faster, as these parent organizations can supply them with resources such as social capital, human capital, and especially financial resources (Steffensen, Rogers, & Speakman, 2000). Firms that were spin-offs from other firms or research institutions were coded zero, while independently founded firms were coded one. Additionally, we used the number of employees at start-up to control for the initial resource endowment. New firms that start with more resources can be expected to grow more rapidly (Cooper et al., 1994). As discussed earlier, the annual growth of the firm can depend on the age of the firm. Thus, we introduced a control variable for the age of the firms in months. Table 4 presents means and standard deviations of the constructs and correlations between the constructs.

## Results

In order to validate our constructs in a nomological framework and simultaneously assess the interconstruct relationships, we used the PLS (Fornell & Bookstein, 1982;

Table 4

Construct Means, Standard Deviations (SDs), and Inter-Construct Correlations

Construct	Mean	SD	1.	2.	3.	4.	5.	6.	7.	8.
1. Strategic financial competence	3.15	1.03								
2. External financing	3.04	1.07	.48							
3. Cash flow financing competence	2.84	1.06	.39	.57						
4. Controlling competence	2.89	1.01	.56	.31	.44					
5. Firm background <sup>†</sup>	.59	—	-.04	.07	.00	.03				
6. Firm age	6.90	3.66	-.17	-.00	-.03	-.04	.27			
7. No. of initial employees	4.54	5.42	.08	.10	.20	.11	-.09	.12		
8. Sales growth <sup>‡</sup>	188.90	337.03	.09	.11	.21	.11	.12	.25	.10	
9. Employment growth	1.98	2.88	.21	.36	.33	.26	-.01	.14	.23	.26

n = 181.

<sup>†</sup> Firm background is a dummy variable. The mean represents the proportion of the total in each category. Standard deviations for dummy-coded variables lack meaning and are not reported.

<sup>‡</sup> In thousands.

Hulland, 1999). This approach allows us to (1) develop and test formative constructs, and (2) test for nomological validity by assessing performance effects of our competence constructs using PLS modeling (Chin, 1998; Wold, 1974, 1985). In contrast to covariance-based, structural equation modeling techniques, the PLS approach yields more accurate results with limited sample sizes, variables do not have to follow standard distribution, and it allows formative construct specifications (Fornell & Bookstein; Fornell & Cha, 1994; Hulland). The PLS approach is especially suitable for explorative research settings (Bookstein, 1980; Chin). Moreover, bootstrapping procedures can be applied to evaluate the robustness of the structural equation models. Since the PLS method does not rely on distribution assumptions, bootstrapping allows us to calculate levels of significance for the path coefficients (Efron & Gong, 1983).

The resulting path models are presented in Table 5. The first two models are based on the full sample (average age is 6 years). The third and fourth models are calculated to assess the robustness of our findings. They are based on a sample of the younger half of all firms (average age is 3 years). We calculated these models to explore whether a recall bias or the duration between cause and effect impacts the findings. Moreover, in models 5 and 6, we analyzed whether the need for external financing has an impact on the importance of the different financial competence domains. In models 5 and 6, we just included firms in the sample that needed external financial resources. A substantial proportion of new firms are generally able to finance their growth through operations. These firms do not need external finance and, hence, might bias the results, e.g., the effect of external financing competence on growth.

All path models explain considerable variance of new venture growth, which is a key model evaluation characteristic, as overall goodness of fit measures known from covariance-based structural equation models are meaningless (Hulland, 1999). In the first model predicting sales growth, competence in financing through operations leads to higher venture growth. The other three competence dimensions do not affect sales growth. The model predicting employment growth shows that both competence in external financing and competence in financing through operations augment NTBFs' growth significantly. The validation calculations of the younger firms sample support the findings. Again, competence in financing through operations augments sales growth. Additionally, controlling competence increases sales growth significantly. With regard to employment growth, the young firm sample shows that external financing competence increases growth. However, financing through operations competence does not increase employment growth.

Due to the salient role of the competence in financing through operations, we additionally studied the external financing behavior of the NTBFs. Out of 212 NTBFs, 78 (37%) firms stated that they were able to finance themselves without external investors. In order to test whether the external financing competence has a greater importance for those ventures that needed external funds, we calculated separate analyses for this subsample. The results indicate that there is no systematic difference in the importance of the different financial management competencies for the growth of NTBFs in this subsample (models 5 and 6).

Overall, we find that hypothesis 1, stating that strategic financial management competence increases performance of the firms, needs to be rejected. Hypothesis 2, proposing a positive relationship between external financing competence and growth, is supported with regard to employment growth. Hypothesis 3, positing that financing through operations augments firm growth, is supported with respect to both sales and employment growth (except for the younger half sample where it does not increase employment growth). With regard to hypothesis 4, we only find partial support that controlling



Table 5  
Path Model Results

Dependent variable	All ventures			Younger half sample			Firms dependent on outside finance		
	Sales growth	Employment growth		Sales growth	Employment growth		Sales growth	Employment growth	
Sample									
Control variables									
1. Firm background	.05	-.06		.01	.00		.07	.04	
2. Firm age	.23**	.14		.10	.04		.24**	.04	
3. No. of employees at founding	.05	.16 <sup>†</sup>		.03	.21*		-.03	.14*	
Explanatory variables									
4. Strategic financial management competence	.06	.03		.00	-.03		.03	-.02	
5. External financing competence	-.02	.26***		-.07	.25*		.00	.27***	
6. Financing from operations competence	.15*	.15*		.22*	.02		.21**	.17**	
7. Controlling competence	.10	.04		.34***	.20		.18 <sup>†</sup>	.03	
R <sup>2</sup>	.13	.19		.16	.13		.15	R <sup>2</sup> :20	

<sup>†</sup>  $p = .10$ , \*  $p = .05$ , \*\*  $p = .01$ , \*\*\*  $p = .001$

competence increases sales growth, while it does not impact employment growth in the younger firm sample.

## Discussion

This research offers several contributions to entrepreneurship literature. We introduce a multidimensional concept of financial management to the new venture context. This concept encompasses strategic financial management, financing through nonoperations, financing through operations, and financial controlling activities. Based on the financial management concept, we propose a new financial management competence concept. This financial management competence concept captures ability domains of the founding team that are expected to help overcome resource restrictions of new firms and foster their growth. A theoretical foundation is built to illustrate the effects of the different financial management competencies on a new venture's growth. For the performance effects of the different financial management competence domains to be explored, a measurement model is developed. The performance effects are then tested using the PLS approach.

The PLS models highlight the salient importance of competence in financing both through external financing and through operations in order to achieve venture growth in NTBFs. A new venture team's competence in external financing has a positive impact on employment growth. Competence in financing through operations is found to be a significant predictor of the growth of both sales and employment. These findings add important insights to the extant financial management literature. While prior literature stresses the importance of the ability to obtain outside finance, our models show that financing through operations, in particular, is a driver of a new venture's growth. This important dimension is generally disregarded by entrepreneurship scholars. Yet, literature regarding optimal capital structuring, in particular, suggests the salient role of financing through internal sources and especially operations (e.g., Heyman et al., 2008). In this regard, it is important to highlight that a significant portion of our sample did not use any form of external funding. This observation is consistent with other literature (Carpenter & Petersen, 2002; Lindeloef & Loefsten, 2002). Different reasons can be found to explain why entrepreneurs might not opt to obtain external funding, such as the lack of collateral, higher financing costs than internal sources, unavailability of external finance, and an unwillingness to yield influence to outsiders. However, this finding also underlines the need for entrepreneurship scholars to look beyond the limited scope of external financing to identify sources that help in overcoming resource constraints.

Another finding of our study is that external financing competence increases employment growth, while its effect on sales growth is nonsignificant. Founding teams that acquire outside financial resources are able to outgrow their peers, based on employment figures, since they can obtain the necessary resources for these hires. A well-funded venture signals job security and likely success to potential employees. This helps in overcoming the perceived liabilities and risk of new ventures. While our data show a positive correlation between employment and sales growth, this relationship does not appear to be a simple one. New hires might need substantial time to become productive (Penrose, 1995), and coordination efforts might increase (Chandler, Honig, & Wiklund, 2005; Yli-Renko, Autio, & Sapienza, 2001). Market success as indicated by sales growth might be dependent on the presence of other factors, such as market orientation and competencies in the marketing domain, to complement the financial resources (Doutriaux & Simyar, 1992). The high uncertainties of high technology markets might also contribute

to explain the nonsignificant effect of financing through nonoperations competence on sales growth. Moreover, those NTBFs that are able to use the financial resources from their operations might not need additional external financial resources to grow their sales.

In addition, our findings suggest that teams that have the ability to finance themselves through external financial resources can achieve above average employment growth early in the venture development. While the initial cash flow from operations is helpful in driving sales growth, initially, it might not be sufficient to finance a strong expansion of employment (Carpenter & Petersen, 2002). In this context, external financial resources can help in financing the expansion of a NTBF's costly staff.

Further, strategic management and controlling competence generally do not have a significant impact on new venture growth at start-up; we only find a positive relationship between controlling competence and sales growth in the younger firm sample. Different arguments might explain these findings. With regard to strategic financial management, an increased awareness by the founding team about the financial challenges of NTBFs might cause them to opt for more moderate growth trajectories when considering a possible trade-off between growth versus positive cash flow and profitability. The modest growth path might appear to be less risky and relatively more profitable. This would conform to findings of other entrepreneurship researchers who observed that high growth does not necessarily imply profitability (Chandler & Jansen, 1992; Markman & Gartner, 2002; Roper, 1999; Shepherd & Wiklund, 2009; Wiklund, Davidsson, & Delmar, 2003). If we assume that high growth increases the risk (variance of profitability), which is expected by the executive team, while average profitability is not expected to be positively affected by high growth, it could be rational to choose a modest growth path. An alternative explanation of the nonsignificant growth effect of strategic financial management competence relates to the limitations of detailed financial planning in environments of high uncertainty. As other researchers suggest, there can be negative effects to extensive planning in dynamic situations (Bhide, 2000). Financial planning generally consumes valuable time of the founding team that cannot be spent on other value creating activities. Additionally, detailed financial plans might even have negative outcomes, as they could suggest a belief in artifacts and limit the strategic flexibility of the team (Vesper, 1993).

The argument of the limited value of extensive planning in dynamic environments might also explain why the financial controlling competence generally does not impact growth. Controlling is based on an intensive use of information to facilitate managerial decision making. Yet, the necessary information might be unavailable, unreliable, or leading to ambivalent interpretations, considering the degree of uncertainty of internal and external factors of an emerging firm (Brinckmann et al., 2008; Forbes, 2007). Due to the environmental information uncertainty, learning based on financial metrics might be limited. In light of the intense debate about the value of planning in the entrepreneurship field, this study suggests that financial activities that impact the shorter-term financial situation, such as financing activities, might be more important than creating long-term financial projections (Cooley & Pullen, 1979).

For entrepreneurs, investors, and educators, this work provides insights about different financial management domains and respective competence requirements. Financial management is a multidimensional activity sphere that goes beyond obtaining outside funding. Knowing how to attract outside capital can be critical to finance especially strong employment growth. Additionally, however, competence in obtaining financial resources through operations can be a complementary form to overcome resource restrictions and finance both employment and sales growth. In practice, entrepreneurs oftentimes focus on the acquisition of financial resources through large-scale outside investments without considering alternatives. Yet, internal financing can have advantages with regard to cost of

capital, availability of capital, and limiting outside control. Hence, it might be an interesting substitute or complement for obtaining financing from the outside. While limited research concerning strategic financial planning and controlling practices in new firms exists, these research findings provide initial indications that they might be of limited value *at start-up*; yet, we need to caution that these might become more important as the venture develops (Brinckmann et al., 2008; Robinson & Pearce, 1983).

The explorative research presented here has some inherent limitations. Since only existing firms were evaluated, this study can determine development implications only for this group of surviving firms, while the ventures that ceased to exist and their reasons for failure remain undocumented. However, because this research seeks to identify those factors leading to high growth, it seems appropriate to exclude nonsurviving firms and to focus on NTBFs that continue to exist and yet achieve different venture growth rates. Also, the assessment of some independent variables by one key informant may be regarded as a limitation of our study. It would have been preferable to include additional team members in order to capture their common assessment of the competence dimensions. However, questioning different founders of the team would have reduced our sample size significantly and did not prove a fruitful endeavor given the time restriction of top management in NTBFs. Furthermore, several studies fail to report significant differences of assessed competence-related characteristics between multiple respondents from founding teams of new firms and base central calculations on key person assessments (Baron & Markman, 2003; Chandler & Hanks, 1994; Chandler & Jansen, 1992; Shortell & Zajac, 1990). Thus, one respondent can be expected to provide a valid assessment of the competence. In this study, we used team member background information to validate our single-respondent assessments. The analyses indicate the validity of our assessment tool.

This article intended to broaden our understanding of financial management and its respective competencies in new ventures. It especially suggests to go beyond external financing and analyze operation-based financing concepts as well as strategic financial management and controlling practices. This research focused on how the financial management competence of the founding team *at start-up* impacts longer-term growth. More research is needed to analyze the importance of financial management practices and respective competence requirements as the venture develops. Even if financial planning and controlling are not managerial challenges at start-up, they might become more important as the firm gets bigger. In addition, the amount of resources that are controlled by the emerging new firm, the planning and controlling approach, the dynamism of its environment, its informational uncertainty, or informational ambiguity might moderate the controlling competence–performance relationship. More research is needed to identify ways for founders to overcome their resource limitations through comprehensive financial management. A focus on external financing is one way, yet it might hinder us to uncover alternative growth avenues.

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