

Top management characteristics and comprehensive focus on budgeting

Top management characteristics and budgeting

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Abstract

Purpose – This study examines how the strong emphasis placed on the purposes of budgeting, referring to a comprehensive focus on budgeting, is related to top managers' education and tenure while controlling for their functional positions in their respective firms and ages, as well as several company-specific predictors (information quality, firm size, information technology, importance of profit and strategy).

Design/methodology/approach – Survey data were collected from senior managers of large manufacturing firms in Finland and Sweden.

Findings – The results suggest that academic business education is positively associated with a comprehensive focus on budgeting, but tenure as well as functional position in the company (Chief Financial Officer (CFO) or not) and age are not. Overall, the company-specific control variables in general and information quality in particular are shown to have greater explanatory power than the top management characteristics analyzed.

Research limitations/implications – This study identifies several empirically supported factors that seem to contribute to a comprehensive focus on budgeting. The effects of information quality, business education, the importance of profit and firm size could be considered in future research.

Practical implications – Academic business education matters more than the other top management characteristics analyzed. If organizations want to make comprehensive use of budgets, they should employ business graduates and be mindful of company-specific variables.

Originality/value – This study is the first to address a comprehensive focus on budgeting and some of its determinants. Future research could investigate a broader set of such determinants in different contexts.

Keywords Budgeting, Business education, Management accounting, Survey, Tenure, Upper echelons

Paper type Research paper

1. Introduction

Formal quantitative plans known as operating budgets are much researched and well-established in management accounting (Covaleski *et al.*, 2007, p. 587; Kenno *et al.*, 2018,

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A statement of data availability: Survey data cannot be opened to public due to ethical reasons. Confidentiality was promised to respondents.



p. 507). They are known to serve many important purposes in firms ranging from forecasting to rewards (Bergmann *et al.*, 2020; Ekholm and Wallin, 2000; Hansen and Van der Stede, 2004; Henri *et al.*, 2020; Sivabalan *et al.*, 2009; Schoute and Wiersma, 2011; Becker *et al.*, 2016; Sponem and Lambert, 2016). Most studies to date have focused on a specific purpose of budgeting or, to a lesser extent, compared the importance of various purposes of budgeting. While some organizations have been found to place a strong simultaneous emphasis on the purposes of budgeting (Simons, 1987a; Knight, 1992; Arnold and Gillenkirch, 2015) – here referred to as a comprehensive focus on budgeting – our understanding of the determinants of a comprehensive focus on budgeting is still relatively underdeveloped.

The empirical research so far has analyzed, and found, organizational and strategic frameworks to explain intense use of control and budgeting systems with variables descriptive of the corporate context (e.g. Hopwood, 1972; Otley, 1978; Merchant, 1981; Simons, 1987a, 1987b; Chenhall, 2003; Reheul and Jorissen, 2014). Analysis of the effects of top management characteristics has also been called for in management control in general (Schäffer and Dossi, 2014) and in budgeting in particular (Kihn, 2011, p. 233; Sponem and Lambert, 2016, p. 58). Some of the research has also applied upper echelons theory (Hambrick and Mason, 1984; Hambrick, 2007) to explore the effects of observable top management characteristics on the extent of budget use in specific settings such as in small and medium-sized enterprises (Reheul and Jorissen, 2014; Zor *et al.*, 2019) and in festival organizations (Knardal and Bjørnenak, 2020). However, the determinants of high use of control may be context-dependent (Hambrick, 2007). Taken together, there is a need to relate a comprehensive focus on budgeting to variables descriptive of both the corporate context and observable top management characteristics in a broad sample of large manufacturing firms.

This study aims to examine how variation in the comprehensive focus on budgeting is related to two important top management characteristics – business education and job-tenure – while controlling for their functional position in the company, age and several important company-specific predictors (information quality, firm size, information technology, importance of profit and strategy). While budgeting has many purposes, in this paper, the comprehensive focus of budgeting is understood as a high emphasis placed simultaneously on the following important purposes of budgeting: forecasts, estimates, plans, communication of expectations, coordination of activities, resource allocation, performance evaluation of managers, performance evaluation of personnel, performance evaluation of unit, rewarding management, rewarding personnel (Emmanuel *et al.*, 1991), commitments (Haka and Krishnan, 2005; Merchant and Van der Stede, 2017, p. 298), contracts (Goold and Campbell, 1987, pp. 154–155; Libby and Lindsay, 2010) and benchmarking (Kihn, 2011). In this study, business education refers specifically to academic business education, while tenure refers to the top manager's current job. Drawing on a broad sample of large manufacturing firms, the study also sheds light on the issue of whether the selected top management or company-specific characteristics better explain a comprehensive focus on budgeting.

The empirical results of this study partly support our hypotheses and contribute to both the budgeting and the upper echelons literature. Firstly, the literature on the development of budgeting practice has often focused on advanced (Bunche *et al.*, 1995) or modern budgeting (Henttu-Aho, 2016), or beyond budgeting (Ax and Ax, 2021; Becker, 2014; Bourmistrov and Kaarbøe, 2013; Henttu-Aho and Järvinen, 2013; Kaarbøe *et al.*, 2013; O'Grady and Akroyd, 2016; Popesko *et al.*, 2015; Sandalgaard and Bukh, 2014; Valuckas, 2019; Østergren and Stensaker, 2011). As far as we know, this study is the first to address how comprehensive the focus on budgeting (based on several different purposes of budgeting) is. Secondly, there is little empirical evidence on how individual-level variables affect the use of more extensive or comprehensive management accounting systems in general (Naranjo-Gil *et al.*, 2009; Pavlatos, 2012) or budgeting variables in particular (Covaleski *et al.*, 2007, p. 601). To the best

of our knowledge, our empirical evidence on the direct effects of key observable top management characteristics on a comprehensive focus on budgeting in large manufacturing firms is novel. While upper echelons theory (Hambrick and Mason, 1984; Hambrick, 2007) focuses on the impact at executive officer level, our data collected from CFOs and other top managers support individual-level effects on budgeting over and above the executive level. Thirdly, we control for several important company-specific variables. In so doing, our findings provide some limited support for the upper echelons perspective in highlighting the additional effect of academic business education in explaining variation in budgeting but indicate that, overall, company-specific variables are more important.

The remainder of this paper is organized as follows. In the next section, the literature is reviewed and hypotheses are developed about the relationships between business education, tenure and the comprehensive focus on budgeting. Thereafter, data and methods are described. Finally, empirical results and conclusions are presented.

2. Literature review and hypothesis development

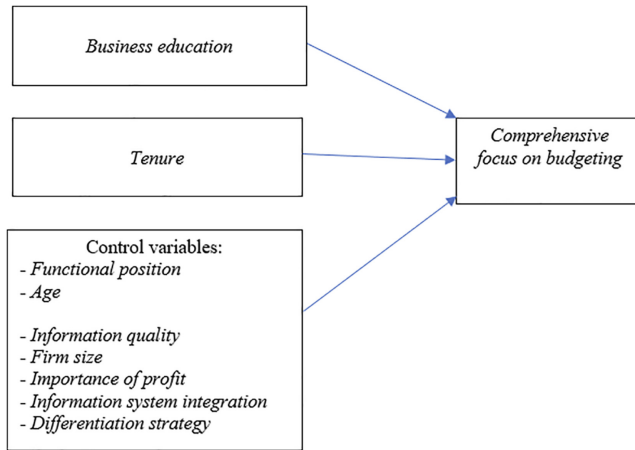
2.1 *The upper echelons perspective*

Top management characteristics have been recognized as essential amongst firms' choices (Carpenter *et al.*, 2004; Shen, 2021). Despite some criticism (Abernethy and Wallis, 2018; Neely *et al.*, 2020), scholars from many disciplines, such as strategic management (Hambrick and Mason, 1984; Nielsen, 2010), financial accounting (E-Vahdati *et al.*, 2023; Ge *et al.*, 2011; Plöckinger *et al.*, 2016), corporate social responsibility and management accounting and control (Abernethy *et al.*, 2010; Bobe and Kober, 2018; Hiebl, 2014; Jukka, 2021, 2023; Reheul and Jorissen, 2014), have engaged in the analysis of upper echelons, finding that top managers exert significant influence over a range of decisions.

In their macro-organizational upper echelons perspective, Hambrick and Mason (1984, p. 195) and Hambrick (2007) suggest that major strategic choices and outcomes can be viewed as being a result of both the cognitive base and values of decision makers and the observable managerial characteristics. They place considerable emphasis on observable managerial background characteristics such as business education, other career experiences, age, functional track, socioeconomic roots and group characteristics (Hambrick and Mason, 1984, 196). They expect that administrative complexity related to budgeting detail and thoroughness and the use of formal planning systems, among others, can be explained by these characteristics (Hambrick and Mason, 1984, p. 199). In this study, we focus on business education and tenure, because of their potentially positive effects on comprehensive focus on budgeting. The research model of this study is presented in Figure 1.

2.2 *Hypotheses development*

We first hypothesize a direct link between business education and a comprehensive focus on budgeting (Figure 1); that is, top management's academic business education may increase a comprehensive focus on budgeting. Because a person's formal educational background yields rich but complex information, education indicates, to some extent, such a person's knowledge and skills base, cognitive preferences and values (Hambrick and Mason, 1984, 200). According to Hambrick and Mason (1984, p. 201), management education, among others, is likely to have an effect on the administrative complexity and sophistication of firms, both because of the types of people who are drawn to business schools (i.e. organizers and rationalizers) and the emphasis placed on complex administrative systems in business schools. It enhances familiarity with management accounting in general (Naranjo-Gil *et al.*, 2009, p. 676) and budgeting in particular. Specifically, Hambrick and Mason expect that firms whose top managers have had substantial formal management education will be more



Source(s): Created by authors

Figure 1.
Research model

complex administratively than those whose top managers have less of such training. This manifests in the thoroughness of formal planning systems, complexity of structures and coordination devices, budgeting detail and thoroughness and in the complexity of incentive-compensation schemes (Hambrick and Mason, 1984, p. 201).

According to Burkert and Lueg (2013) and Knardal and Bjørnenak (2020), mental models change over a person's life time and are adapted and shaped by learning. A higher level of formal education tends to be associated with a higher capacity for information processing (Schroder *et al.*, 1967 in Reheul and Jorissen, 2014). More highly educated managers are likely to have a greater need to gain a thorough and complex understanding of a situation and to have a higher level of planning and control sophistication in their budgets. Regarding evaluations, they are likely to reckon more with the complexity of the organization and the multitude of intervening variables that can prevent managers from achieving their plans and budgets (Reheul and Jorissen, 2014, p. 473). In this study, we extend the above line of argumentation and propose that top management with academic business education is also more likely to place a comprehensive focus on budgeting. A greater emphasis on the various purposes of budgeting at the same time depends on the capacity for information processing, relevant knowledge and expertise in budgeting and knowledge of its benefits and, hence, on a formal business education.

Our logic also follows the general finding in management accounting research that the business education of top management is likely to increase the use of management accounting and budgeting systems. Chief executive officer's (CEO's) business-related (administrative) educational background is likely to increase the use of financial information (Narjanjo-Gil and Hartmann, 2007). CFO's business education is likely to foster the use of more extensive or sophisticated management accounting instruments (Naranjo-Gil *et al.*, 2009), cost-management systems (Pavlatos, 2012), value-based management systems (Burkert and Lueg, 2013) and capital budgeting methods (Bruzell *et al.*, 2011). Limited evidence from prior budgeting studies suggests that the educational level of CEOs increases the frequency of using a formal budget in small and middle-sized enterprises (Zor *et al.* 2019) and that business educational background among (festival) managers increases the use of budgets for planning, coordination and resource allocation, target setting and variance analysis (but not for performance evaluation and reward) (Knardal and Bjørnenak, 2020) [1].

In conclusion, academic business education is likely to attract such people who are organizers and rationalizers and to create knowledge of (Hambrick and Mason, 1984, p. 201) and familiarity with management accounting and budgeting (Naranjo-Gil *et al.*, 2009, p. 676). Although the theory points unequivocally towards the possible effects of top management's business education on management accounting and budgeting systems, empirical examination of these effects on a comprehensive focus on budgeting is needed. This is particularly true in large manufacturing companies, where top managers' educational background is often in either business or engineering. The following hypothesis was formulated in order to explore whether top managers' business education increases a comprehensive focus on budgeting:

H1. There is a positive association between top managers' business education and a comprehensive focus on budgeting.

This study also hypothesizes a relationship between tenure and a comprehensive focus on budgeting. According to Hambrick and Mason (1984, p. 199), career experiences can be expected to have a significant effect on the types of actions taken by a manager (or an entire top management team). This is because career experiences partially shape the lenses through which managers view strategic opportunities and problems (Hambrick and Mason (1984, p. 200).

Empirical evidence suggests that managers with shorter tenure are likely to face significant challenges in acquiring position- and firm-specific skills (including expertise, capabilities and knowledge) in adapting to new processes and carrying greater levels of responsibility (Harris and Helfat, 1997; Burchard *et al.*, 2021). There is uncertainty about the ability of newly appointed top managers (such as CEOs) because the skills required to be a successful top manager (CEO) are different from those required in lower-level positions (Gibbons and Murhpy, 1992). Similarly, from a budgeting standpoint these results could imply that managers with shorter tenure can be expected to have less experience in the comprehensive focus on budgeting in the firm. Manager awareness and discretion regarding the various purposes of budgets are likely to improve with tenure. Managers with longer tenure experience more budgeting cycles, develop more firm-specific skills and are likely to place a more comprehensive focus on the various purposes of budgets than are managers with shorter tenure.

Moreover, because budgeting creates power structures, top managers with longer tenure can be assumed to benefit from these structures and, thus, have a more positively disposed towards budgeting than managers with shorter tenure (Bjørnenak and Valuckas, 2021, p. 93). It can also be expected that managers with longer tenure have learned to accept budgeting weaknesses and are thus less critical of the budgeting practice (Bjørnenak and Valuckas, 2021, p. 93).

Empirical research provides inconsistent results on aspects of tenure and budgeting. On the one hand, empirical studies have not found relationships between tenure and individuals' (positive or negative) attitudes to budgets (Collins, 1978), the frequency of using budgets in SMEs (Zor *et al.*, 2019), the use of budgets for specific purposes in festival organizations (Knardal and Bjørnenak, 2020), or the perceived value of budgets (Bjørnenak and Valuckas, 2021). One the other hand, CEO tenure has been found to be related to evaluation system design (but not to planning and control system design) (Reheul and Jorissen, 2014). The following hypothesis was formulated to explore the above arguments from the standpoint of a comprehensive focus on budgeting, i.e. is increase in top managers' tenure conducive to a comprehensive focus on budgeting (and vice versa):

H2. There is a positive association between top managers' tenure and a comprehensive focus on budgeting.

3. Data and method

3.1 Research design

Our sample consists of top managers of large manufacturing firms using budgets due to their positions and participating in cross-sectional surveys. In addition to CFOs, [2] the highest ranked top managers responsible for production and R&D [3] were first contacted in Finland from December 2016 to May 2017 and then in the neighboring country Sweden, between March and November 2017 to increase sample size. The companies targeted were randomly selected from the Research Institute of the Finnish Economy database of the largest companies in Finland for the first survey and from the Bureau van Dijk Orbis database for the second survey. Firm websites, e-mails and telephone calls were used to select the most suitable firms, business units and highest ranked individuals to participate in the surveys. Two hundred and eighty top managers were contacted in Finland. 1,626 top managers were initially targeted in Sweden using the Webropol online survey website with two reminders but as 325 questionnaires bounced back, 125 generated automated replies and ten respondents declined to participate in the survey, it is estimated that 1,165 questionnaires reached the intended recipients.

The original survey was written in Finnish and translated into English by the first author and translated into Swedish by the second author. Dillman's (2007) tailored research design method for mail and Internet surveys was applied. We received 158 anonymous responses. Of these, 76 (76/280, 27%) responses were received from 54 (56%) business units (mostly incorporated as firms) in Finland and 82 (82/1165, 7.0%) from 79 (17%) firms in Sweden. That is, there was mostly one response per business unit or firm. Responses with missing values were removed from the statistical tests [4] as well as an outlier.

Sample randomness was tested based on available data (size of turnover and job title of the respondent). The two-sample *t*-tests conducted produced no statistically significant values for the size of turnover at the five percent level. However, they provided statistically significant values for the job titles of the respondent ($p = 0.002$ in the Finnish sample and $p = 0.040$ in the Swedish sample), indicating a bias in that most of the respondents represented the CFO function. No bias was found when the answers from early respondents (i.e. those responding before the second reminder) were compared with those of late respondents (i.e. those responding after the second reminder).

Overall, the typical respondent was a male, on average 49 years old, who held an academic degree and on average ca. 5.5 years' work experience in the current position. According to the responses, the Finnish business units/firms had an average of approximately 1,458 employees and a mean turnover of 439 million euros. The Swedish firms had an average of 1,260 employees and a mean turnover of 273 million euros. The firms investigated represent very diverse manufacturing industries. Further information on the respondents' functional areas, educational backgrounds and industry categories is presented in Table 1.

3.2 Measures

The survey questionnaire was designed, and validated [5], to collect information on the following variables: comprehensive focus on budgeting, education, tenure and seven control variables.

A *comprehensive focus on budgeting* index, an arithmetic average of the emphasis placed on the purposes of budgeting, is original to this paper and intended as a proxy. Respondents were asked to describe the importance of the purpose/role of budgeting in their own firm on a scale ranging from *not at all* (1) to *completely* (7). In this study we use 14 items covering different purposes of budgeting. Based on the earlier literature, the items were: a forecast, an estimate, a plan, communication of expectations, coordination of activities, resource allocation, performance evaluation of managers, performance evaluation of personnel,

	Finland		Sweden		In total	
	f	%	f	%	f	%
<i>Panel A: functional area</i>						
CFO, controller etc.	39	51.3	46	56.1	85	53.7
Production and operations	12	15.8	20	24.4	32	20.3
Research, development etc.	14	18.4	6	7.3	20	12.7
Multiple/other areas	11	14.5	10	12.2	21	13.3
<i>Panel B: educational background</i>						
Academic degree	60	78.9	62	75.6	122	75.3
Community college degree	18	23.7	14	17.1	32	19.8
Advanced degree	2	2.6	6	7.3	8	4.9
<i>Panel C: gender</i>						
Men	53	69.7	62	78.5	115	74.2
Women	23	30.3	20	25.3	43	27.7
<i>Panel D: industry category</i>						
Chemicals and plastics	15	19.7	16	20.0	31	
Multiple industries	14	18.4	15	18.8	29	
Foodstuffs and beverages	13	17.1	8	10.0	21	
Metal	13	17.1	12	15.0	25	
Forest	9	11.8	9	11.3	18	
Electronics	9	10.5	5	6.3	14	
Furniture	2	2.6	1	1.3	3	
Construction materials	1	1.3	5	6.3	6	
Energy	1	1.3	2	10.0	3	
Textile	1	1.3	–	–	1	
Other			7	8.8	7	

Source(s): Created by authors based on SPSS output

Table 1.
Respondents of
surveys conducted in
Finland and in Sweden
by functional area,
education, gender and
industry (n1 = 76
and n2 = 79)

performance evaluation of unit, rewarding management, rewarding personnel (Emmanuel *et al.*, 1991), a commitment (Haka and Krishnan, 2005; Merchant and Van der Stede, 2017, p. 298), a contract (Goold and Campbell, 1987, pp. 154–155; Libby and Lindsay, 2010) and benchmarking (Kihn, 2011) [6]. Finally, the 14 items were summed up and averaged to compute an index for the comprehensive focus on budgeting. Higher (closer to 7) average values indicate a more comprehensive focus on budgeting and very low (close to 1) values, on average, indicate a lack of it. In this way, the instrument reflects whether the overall emphasis on budgeting is high, low, or in between. This measurement instrument obtained a high Cronbach's Alpha of 0.866 indicating adequate internal consistency (Hair *et al.*, 2006, p. 779).

Business education was measured with a dummy variable. With regard to education, one of the survey questions asked the respondents about their educational background and to provide details of their subject area. The following alternatives were provided: senior high school degree, community college degree, undergraduate degree (which one?), graduate degree (which one?) and advanced degree (e.g. CFA/CPA, Lic. Sc., Ph.D., which?). Business education was measured in terms of whether the respondent held an M.Sc. degree or an advanced degree in business, or an MBA (coded 1). Other degrees (e.g. another M.Sc. degree, a bachelor's degree, a community college degree or a senior high school degree) were coded 0. Regarding tenure, the respondents were first asked about their work assignment and then how long they had been in their current job. Since the focus of this study is on position-specific work experience, *tenure* was measured as the length of work experience in months in the current job.

3.3 Control variables

The respondent's functional position (track) in the firm and age, which are also top management characteristics (Hambrick and Mason, 1984; Hambrick, 2007), were controlled for. One of the survey questions asked respondents to report their position (job title). CFOs (job titles of CFOs, controllers, etc.) were coded as 1 and non-CFOs (all other job titles such as R&D or production directors) as 0. Regarding *age*, respondents were asked about their year of birth, which was then deducted from the year of responding to the survey.

While some of the variation in budgeting may be explained by the effects of top management demographic characteristics, a significant share of the variation may be explained by company-specific measures (Merchant, 1981, p. 814; Chenhall, 2003). Therefore, this study controlled for five aspects of the corporate context which in earlier studies have been found to be closely related to the practice of budgeting – namely information quality, firm size, information technology, importance of profit and strategy – in the model used to test our hypotheses.

Information quality is an important predictor of a comprehensive focus on budgeting. For budgeting to fulfill its potential contribution to management control effectively, it is necessary for high quality budgetary information to be available (Johnson and Kaplan, 1987; Emmanuel *et al.*, 1991, pp. 114, 232). Several potential defects of budgetary information – such as incomplete, inaccurate and/or outdated information – may combine to make the overall quality of budgetary information poor. While it does not necessarily mean that budgeting would be abandoned, modifications to the way budgets are used is a possibility (Emmanuel *et al.*, 1991). For example, rather than having a comprehensive focus on budgeting, top management might include both quantitative but non-financial measures and qualitative information to supplement budgeting information (Hopwood, 1972; Otley, 1978; Johnson and Kaplan, 1987). Regarding information quality, the respondents were asked to rate the following characteristics of the information (Nelson *et al.*, 2005) produced by their budgetary information systems: (1) completeness, versatility, (2) accuracy, precision, (3) format, form, (4) topicality, validity and (5) cost on a 7-point Likert-type scale ranging from *unsatisfactory* (1) to *excellent* (7). Based on exploratory principal component analysis (untabulated), there was one component explaining 52.63% of variation. The five items were summed up and averaged to compute a measure of budgetary information quality. Low values indicate poor quality of budgetary information and high values indicate high quality of budgetary information. This measurement instrument has a Cronbach's Alpha of 0.768.

Firm size is a basic correlate of organizational design and control (Lawrence and Lorsch, 1967; Williamson, 1970). Increasing firm size is known to create problems in social control, communication and coordination. While in smaller, early-stage firms budgets are among the few formal controls used (Davila, 2005; Sandino, 2007; Armitage *et al.*, 2020), small, single-business organizations can often be controlled with largely informal, personally-oriented, control mechanisms such as direct supervision and frequent personal interactions. In contrast, larger organizations face an increasing number of channels requiring information flows for coordination purposes (Lawrence and Lorsch, 1967, p. 11), which makes communications more difficult. Consequently, larger, more diverse, firms tend to attach greater importance to achieving budget plans, having more formal patterns of communication and using more sophisticated budgeting supports (Bruns and Waterhouse, 1975; Merchant, 1981, pp. 825–826), which is likely to result in a more comprehensive focus on budgeting. Regarding firm size, one of the survey questions asked respondents to report the number of personnel (Merchant, 1981, p. 817; Chenhall, 2003, p. 149; Zor *et al.*, 2019, p. 666) at the end of the last financial year.

This study also controlled for *importance of profit*. [7] The maintenance of profitable performance is a prime concern of those who have invested in a company. Even if it is not necessarily the sole objective of the company, it is an important constraint as without

adequate profitability, the flow of funds would dry up and eventually lead to a cessation of activity (Emmanuel *et al.*, 1991, pp. 6–7). The importance of profit is likely to result in more attention being paid to activities from planning to monitoring and hence also in a more comprehensive focus on budgeting. Importance of profit was measured with an item borrowed from a measurement instrument developed by Govindarajan (1984) and Govindarajan and Fisher (1990). Respondents were asked to “rate the importance of profits for your business (unit) over the least year” on a seven-point scale ranging from *little importance* (1) to *extremely important* (7). Low values indicate low importance of profits and high values indicate high importance of profits.

Many aspects of information technology – including accounting information system design (Daft and Macintosh, 1978), automation of production process (Merchant, 1984), enterprise resource planning systems (Granlund and Malmi, 2002; Scapens and Jazayeri, 2003) and information system integration (Chapman and Kihn, 2009) – have been found to affect the practice of management accounting and control. This study controlled for the effects of *information system integration*. The integrated data architecture characteristics underlying information system integration supports sophisticated and flexible forms of analysis (Chapman and Kihn, 2009, p. 153). Thus, a higher degree of information system integration might be reflected in a comprehensive focus on budgeting. Following Chapman and Kihn (2009, p. 159), information system integration was measured using the following items: information in reports produced by our information system is based entirely on common sources of data (e.g. a common database) and we have fully integrated information systems that contain both financial and non-financial information. A seven-point Likert-type scale ranging from *disagree completely* (1) to *agree completely* (7) was used. Low (high) values indicate a low (high) level of information system integration. Based on exploratory principal component analysis (untabulated), this measure results in a one-factor solution explaining 72.406% of variation. Its Cronbach’s alpha is 0.619).

Finally, we also controlled for competitive strategy (Porter, 1980). Differing control styles have been found between companies that followed either a cost leadership strategy or a differentiation strategy (based on product innovation and quality) (Simons, 1990). Product differentiation strategy has been found to be associated with a low emphasis on keeping within budgets (Govindarajan, 1988). We controlled for the effect of a differentiation strategy on a comprehensive focus on budgeting expecting a negative association (due a higher emphasis on non-financial product innovation and quality measures than financial measures). Respondents were asked to assess the level of differentiation (versus cost leadership) strategy (Porter, 1980) in percentages (Libby and Lindsay, 2010). High (low) values indicate a high (low) degree of differentiation strategy and a low (high) degree of cost leadership strategy. In conclusion, positive associations were expected between a comprehensive focus on budgeting and all the independent and control variables except for differentiation strategy.

3.4 Independent samples t-tests

The mean value of country is 0.48, confirming that little over half of the participants come from Finland. To assess whether the samples from the two countries could be treated as one sample or if they should be treated as two separate samples, independent samples *t*-test were carried out for continuous variables (*comprehensive focus on budgeting, tenure, age, information quality, firm size, information system integration, importance of profit and strategy*) using a 95% confidence interval and chi-square test for categorical variables (*business education and/or functional position*). The results of these tests (untabulated) did not indicate differences between the countries at 5% level of significance. Hence, it was decided to analyze the responses from the two countries as one sample.

The mean value of functional position is 0.51, which indicates that about one-half of the participants are CFOs (or corresponding), while the rest work in production, R&D, etc. To assess whether the responses from CFOs versus non-CFOs could be treated as one sample or if they should be treated as two separate samples, independent samples *t*-test were carried out for above mentioned continuous variables and chi-square test for categorical variables. The tests (untabulated) indicated statistically significant differences in business education. Notably, the respondents have more business education in the sample of CFOs than in the sample of non-CFOs (51,798, $p = 0.001$). In light of these results, it was decided to analyze the responses from CFOs and non-CFOs as one sample but to control for the position of the respondent (CFO or not) in an additional test.

3.5 Descriptive statistics

Table 2 provides descriptive statistics for the variables investigated. First, it describes the *comprehensive focus on budgeting*. As Table 2 shows, this ranges from 2.64 to 6.43, with an average of 4.79. Next, Table 2 describes the independent and control variables. Slightly more than half (52%) of the survey participants have an academic business education. Additional analysis of survey responses indicates that engineering education is the second most common in this sample (44, 28.9% of all respondents). The mean duration of *tenure* is 65.34 months, i.e. 5.45 years. The functional position in the firm of respondents is 0.48 indicating that almost one-half of the participants are CFOs (or equivalent). On average, the respondents are about 49 years old, ranging from 27 to 66 years. Budgetary *information quality* ranges from 2 to 7 being 4.52 on average. The mean value for personnel (*firm size*) is 1,640, ranging from 5 to 45,000. *Importance of profit* ranges from 1 to 7, being 6.19 on average. *Information system integration* is 4.56, on average, ranging from 1 to 7. Finally, the degree of *differentiation strategy* ranges from 0 to 100%, being ca. 63% on average. Since tenure and size are not normally distributed, logarithmic variables are used for them in the analyses below.

3.6 Correlations

Table 3 presents a correlation matrix (Pearson's correlation coefficients) for the dependent, independent and control variables. There are statistically significant positive correlations between the *comprehensive focus on budgeting* and top management's *academic business education*, *information quality*, *importance of profit* and *information system integration*.

		Mean	Sd	Actual range		Skewness	Kurtosis
				Min	Max		
1	<i>Comprehensive focus on budgeting</i>	4.79	0.81	2.64	6.43	-0.33	-0.22
2	<i>Business education</i>	0.52	0.50	0	1	-0.07	-2.03
3	<i>Tenure</i>	65.34	62.92	2	336	2.22	5.96
4	<i>Tenure (ln)</i>	3.77	0.98	0.69	5.82	-0.57	0.73
5	<i>Position (dummy for CFO = 1)</i>	0.48	0.50	0	1	0.07	-2.03
6	<i>Age</i>	49.35	7.62	27	66	-0.25	-0.25
7	<i>Information quality</i>	4.52	1.09	2	7	-0.26	-0.14
8	<i>Size</i>	1,640	5,190	5	45,000	6.53	48.49
9	<i>Size (ln)</i>	5.88	1.63	1.61	10.71	0.31	0.44
10	<i>Importance of profit</i>	6.19	1.03	1	7	-2.06	6.18
11	<i>Information system integration</i>	4.56	1.52	1	7	-0.23	-0.60
12	<i>Differentiation strategy</i>	63.33	29.64	0	100	-0.44	-1.07

Table 2.
Descriptive
statistics ($N = 112$)

Source(s): Created by authors based on SPSS output

	1	2	3	4	5	6	7	8	9	10
1 <i>Comprehensive focus on budgeting</i>	1									
2 <i>Business education</i>	0.273**	1								
3 <i>Tenure (ln)</i>	0.169	-0.167	1							
4 <i>Position</i>	0.079	0.645**	-0.157	1						
5 <i>Age</i>	0.104	-0.041	0.376**	0.090	1					
6 <i>Information quality</i>	0.347**	0.137	0.207*	0.038	-0.022	1				
7 <i>Size (ln)</i>	0.164	0.121	-0.186*	0.205*	0.056	-0.185	1			
8 <i>Importance of profit</i>	0.301**	0.282**	-0.018	0.225*	0.098	-0.010	0.289**	1		
9 <i>Information system integration</i>	0.227*	-0.149	0.299**	-0.253**	0.123	0.400**	-0.122	-0.132	1	
10 <i>Differentiation strategy</i>	-0.129	-0.070	-0.018	-0.068	0.045	-0.052	-0.049	-0.026	-0.059	1

Note(s): **p < 0.01, *p < 0.05 (a two-tailed test)

Source(s): Created by authors based on SPSS output

Table 3. Correlations (N = 112)

Academic *business education* is positively correlated with *functional position* and *importance of profit*. *Tenure* is positively associated with *age*, *size* and *information system integration* and negatively associated with *information quality*. There are positive associations between *functional position* and *size*, *importance of profit* and *information system integration*. *Information quality* and *information system integration* are positively correlated. *Size* is positively correlated with *importance of profit*. Hence, there appear to be several statistically significant correlations between the variables but they are mostly rather weak. *Tenure* and *comprehensive focus on budgeting* or *business education* are not statistically significantly correlated.

4. Results

Hypothesis 1 explored whether there is a positive association between business education and a comprehensive focus on budgeting. **Hypothesis 2** explored whether there is a positive association between tenure and a comprehensive focus on budgeting. To test these hypotheses, a multiple regression analysis was run using the hierarchical regression technique. This is particularly useful when there is a need to control for other possible determinants (Becker *et al.*, 2016; Zor *et al.*, 2019). The company-specific control variables (X_1 - X_5) were introduced in the first model (1) to remove the effects of factors other than differences in company-specific variables and measurement error from the *comprehensive focus on budgeting*. Model (2) involved introducing the two top management characteristics – *business education* and *tenure* (X_6 and X_7) – into the model containing the control variables selected in Model (1), as well as functional position and age (X_8 - X_9).

The following multiple regression was run:

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + e$$

where

Y = *Comprehensive focus on budgeting*;

X_1 = *Budgetary information quality*;

X_2 = *Firm size (ln)*;

X_3 = *Importance of profit*;

X_4 = *Information system integration*;

X_5 = *Differentiation strategy*;

X_6 = *Business education*;

X_7 = *Tenure (ln)*;

X_8 = *Position (CFO)*;

X_9 = *Age (years)*;

b_{0-9} = Regression coefficients and

e = Error term.

Table 4 summarizes the results of the hierarchical regression analysis. Model (1) has an *R* Square value of 0.263, which can be interpreted as the five company-specific variables accounting for 26.3% of the variation in the *comprehensive focus on budgeting* (and 73.7% of the variation is explained by other factors). When *business education* and *tenure* were added in Model (2), the value for *R* Square increased to 0.320. Hence, Model (2) explains 32% of the

	Unstandardized Coef		Standardized Coef		Unstandardized Coef		Standardized Coef		
	B	Std. error	B	t	B	Std. error	B	t	
<i>Model 1</i>									
<i>Company-specific variables</i>									
Constant	1.356	0.639			1.085	0.733			1.480
Information quality	0.308	0.091	0.313	2.123	0.266	0.093	0.271	2.873	0.005
Firm size (ln)	0.077	0.044	0.156	1.761	0.089	0.044	0.180	2.015	0.047
Importance of profit	0.217	0.069	0.276	3.142	0.171	0.070	0.217	2.434	0.017
Information system integration	0.081	0.049	0.152	1.658	0.067	0.051	0.125	1.300	0.196
Differentiation strategy	-0.002	0.002	-0.088	-1.055	-0.002	0.002	-0.083	-1.011	0.315
<i>Model 2</i>									
<i>Top Management characteristics</i>									
Business education					0.473	0.179	0.295	2.640	0.010
Tenure (ln)					0.095	0.078	0.116	1.211	0.229
Position (1 = CFO, 0 = other)					-0.269	0.181	-0.168	-1.487	0.140
Age (years)					0.005	0.010	0.051	0.554	0.581
N	112				112				
R ²	0.263				0.320				
R ² adj	0.228				0.260				
ΔR ²	0.263				0.057				
ΔF	7.574				2.131				
Sign ΔF	<0.001				0.082				
Note(s): $Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + e$									
Source(s): Created by authors based on SPSS output									

Table 4. Hierarchical regression analysis of the effects of company-specific control variables and top management characteristics including functional position and age on a comprehensive focus on budgeting (N = 113)

variation in the *comprehensive focus on budgeting*. The *R* Square change of 0.057 indicates that the addition of *business education*, *tenure*, *functional position (CFO)* and *age* scores explained 5.7% additional variance in a *comprehensive focus on budgeting*. *F* changes are 7.574 ($p < 0.001$) and 2.131 ($p < 0.082$). These results imply that both company-specific and top management characteristics account for the variation in *comprehensive focus on budgeting* but the company-specific control variables clearly dominate the top management characteristics analyzed.

The results of Model 1 suggest that *information quality* is the most important predictor of comprehensive focus on budgeting ($t = 3.383$, $p < 0.01$), followed by *importance of profit* ($t = 3.142$, $p < 0.01$) and *firm size* ($t = 1.761$, $p < 0.10$). The associations between comprehensive focus on budgeting and *information system integration* and *differentiation strategy* are not statistically significant.

The results of Model 2 suggest that *information quality* is the most important predictor of a comprehensive focus on budgeting again ($t = 2.837$, $p < 0.01$) but is followed by *business education* ($t = 2.640$, $p < 0.05$) at this time. These two predictors are followed by the other company-specific predictors in the same order as above. Notably, there are statistically significant associations between a *comprehensive focus on budgeting* and *importance of profit* ($t = 2.434$, $p < 0.05$) and *firm size* ($t = 2.015$, $p < 0.05$). Once again, associations between the comprehensive focus on budgeting and the other company-specific variables are not statistically significant. The effects of tenure, functional position (CFO or not) or respondent's age are likewise not supported.

Conclusions from a regression analysis regarding the explanatory effects of individual independent variables or groups of independent variables relative to one another only can be made when the variables are uncorrelated. If the independent variables are correlated, the problem of multicollinearity exists. In the present research, correlations ranging from -0.010 to 0.645 were seen between the control variables and the individual variables, so the variables are not particularly highly correlated. Since all the variance inflation factors (VIFs) were low (1.020 – 1.908 , i.e. below 10), they did not indicate multicollinearity (Stevens, 2002, p. 92). The analysis of outliers confirmed that no outliers were influential in affecting the regression equation. All Cook's (1977) distances were low (0.000 – 0.096 , i.e. < 1) and, hence, did not identify influential data points (Stevens, 2002, pp. 134–135). The Durbin-Watson test statistic of 1.793 (i.e. quite close to 2) suggests that autocorrelation is not a cause for concern. Because the analysis of residual plots of standardized residuals versus predicted values indicated roughly a random scattering (i.e. not a systematic pattern of the residuals), the assumptions of the linear regression model are tenable.

In conclusion, the data fully support the **first hypothesis**: There seem to be a positive and statistically significant association between top management's *business education* and a *comprehensive focus on budgeting*. However, the effects of the other top management characteristics (tenure, functional position in the firm and age) are not empirically supported. Overall, the company-specific control variables clearly dominate the top management characteristics analyzed.

5. Concluding discussion

A major motivation for this study was that while some organizations have been found to place a strong emphasis on different purposes of budgeting at the same time (Simons, 1987a; Knight, 1992; Arnold and Gillenkirch, 2015), referring to a comprehensive focus on budgeting, our understanding of its determinants is still relatively underdeveloped. The study examined how a comprehensive focus on budgeting is related to top managers' business educations and tenures while controlling for their functional position in the firm, age and several company-specific predictors. Our study makes three contributions:

Firstly, this study was designed to explore a comprehensive focus on budgeting, rather than focus on one or more specific purposes of budgeting. Such a comprehensive focus is necessary to understand the practice of some companies. Our findings suggest that there is considerable variation in the budgeting styles of large manufacturing companies in terms of how comprehensive the use of budgeting is. Hence, it opens up a fruitful avenue for future budgeting research.

Secondly, this study is among the few to research relations between top management characteristics and budgeting. Behavioral budgeting research has tended to examine how budgeting impacts individuals rather than how individual-level variables affect budgeting (Covaleski *et al.*, 2007, 601). Recent upper echelons studies on budgeting have analyzed the effects of top management characteristics on the extent of budget use but have considered specific settings of small and middle-sized enterprises or festival organizations and obtained somewhat inconsistent results. While the studies by Reheul and Jorissen (2014), Zor *et al.* (2019) and Knardal and Bjørnenak (2020) found empirical support for the effects of business education, the findings of Reheul and Jorissen (2014) also supported the effects of tenure. We examined how a comprehensive focus on budgeting is related to top managers' education and tenure based on the scores of CFOs and other functional top managers in a broad sample of large manufacturing firms. Our findings suggest that academic business education is a predictor of a comprehensive focus on budgeting as anticipated in our hypothesis, but tenure in the current position is not. The effects of functional position in the firm (CFO or not) and age were not supported. Hence, it is academic business education that drives the results, not the other observable top management characteristics analyzed. These results provide some limited support for the upper echelons perspective in predicting strategic choices in general as well as administrative complexity (Hambrick and Mason, 1984, p. 193), such as budgeting practices, over and above the chief executive officer level. The practical implication of the findings is that education matters more than practical experience in explaining a comprehensive focus on budgeting. If organizations want managers who use budgets in a comprehensive way, they should employ academic business graduates.

Our third contribution stems from controlling for respondents' functional position in the firm, age and several important company-specific predictors (information quality, firm size, information technology, importance of profit and strategy) in the analysis of how budgeting is related to top management's business education and tenure. Neither functional position in the firm nor age was empirically supported. The latter finding on age corroborates the result of Knardal and Bjørnenak (2020) but not that of Zor *et al.* (2019). Contrary to previous findings (Zor *et al.*, 2019; Knardal and Bjørnenak, 2020), the company-specific control variables were shown to have a more significant explanatory impact than the observable top management characteristics and, hence, to dominate them (see also Reheul and Jorissen, 2014). Our results show that information quality is the most important predictor of the comprehensive focus on budgeting. This finding is in accordance with the literature (Johnson and Kaplan, 1987; Emmanuel *et al.*, 1991). It is important that top management receives high quality budgetary information. Business education comes next, and it is followed by the importance of profit and firm size. These results lend support to the importance of the organizational context of budgeting (Merchant, 1981; Chenhall, 2003; Reheul and Jorissen, 2014) suggesting that future research of a comprehensive focus on budgeting should not be limited to top management characteristics.

When interpreting our findings, some limitations should also be considered. Firstly, the findings of this cross-sectional study describe a sample of large Finnish and Swedish manufacturing firms, not an individual firm. Secondly, the sample of the study is limited to top managers (i.e. CFOs and other functional top managers) who represent some of the organizations' core activities (see Hambrick and Mason, 1984, p. 199). Hence, the findings are possibly not generalizable to the entire population of companies or all individuals in managerial positions. Thirdly, the theoretical direction of causality was derived from

Hambrick and Mason's (1984) framework. However, reverse causation is also possible; firms may also select executives based on their personal characteristics and expect them to behave in a certain way (Hambrick and Mason, 1984; Hambrick, 2007). Finally, while analysis of observable demographic characteristics, such as top management's education and tenure, is of importance in the upper echelons theory, they can be measured in various ways, and they are arguably limited or incomplete proxies of managers' cognitive basis (Hambrick, 2007; Ge *et al.*, 2011, p. 1145). Other measurement instruments and individual-level variables, such as top management's character traits and information-processing behaviors, could also be considered in future surveys. Further research could be extended to the potential effects of environment, artificial intelligence and machine forecasts.

Notes

1. However, when all the respondents had taken an executive MBA, no association was found between business economics background and the perceived value of budgeting (Bjørnenak and Valuckas, 2021, p. 93).
2. Some of the firms targeted used the English-speaking titles CFO, controller or business controller and others used equivalent Finnish and Swedish titles (talouspäällikkö, talousjohtaja, ekonomichef, etc.).
3. Some of the titles of the respondents included, for example, director of production or comparable (tuotantojohtaja, tuotantopäällikkö, tehdaspäällikkö, productionschef and fabrikschef), development manager (tuotekehitysjohtaja and T&K päällikkö) or vice president (varatoimitusjohtaja and verkställande direktör). Some of the targeted respondents were responsible for production or R&D only, others partly.
4. Alternatives, such as replacing missing values with a mean, were also explored. The findings were found to be in the same direction but the explanatory power was lower.
5. In the research design, data collection, data analysis and interpretation process, we sought to minimize potential threats to the validity of the quantitative research work (Ihantola and Kihn, 2011, pp. 56–57). For instance, we tried to improve the precision and accuracy of the information provided by the questionnaire by making sure the definitions and instruments used were grounded in the literature, and that as many relevant topics and items as possible were included in the survey.
6. According to Hair *et al.* (2006, p. 138), calculating a summated scale is a straightforward process whereby the items comprising the summated scale (i.e. the items with high loadings from the factor analysis) are summed or averaged. Six of the 20 budgeting items surveyed did not have high enough loadings (Hair *et al.*, 2006, p. 128) and were therefore not included in the summative scale.
7. An alternative measure, profit compared to competitors over the last year, was also checked into. Findings were found to be very similar although the explanatory power was somewhat lower.

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