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STATE-OF-THE-ART

Towards a contingency theory of corporate planning: a systematic literature review

P. Maik Hamann[1]

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Abstract A major research stream examines corporate planning in its context by drawing on the contingency approach, which forms a major theoretical basis for the fields of strategic management and management control. This research paper provides a comprehensive review of this research stream and identifies important contingency factors, recurring results, and commonalities with the theoretical basis of the contingency approach. It reviews 195 studies that investigate the context factors of corporate planning at the organizational level of analysis and were published in ranked academic journals since 1967. This review contributes three findings to a contingency theory of corporate planning. First, this research stream is highly fragmented, replication of findings is scarce, and the cumulative growth of knowledge is restricted. My review shows that 866 different causal models link 30 context factors and 54 design aspects of the corporate planning system, and yet 498 of these causal models are only addressed in one single study. Second, the majority of contingency studies employ the selection fit approach and cross-sectional data. The more rigorous tests of contingency hypotheses, interaction fit and system fit approaches based on longitudinal data, are relatively scarce. Third, this review highlights consistent results across divergent research settings and designs. Thus, it identifies four important context factors of a corporate planning system: (a) management and planning philosophy, (b) organizational size, (c) environmental uncertainty, and (d) task interdependence. This comprehensive set of context factors facilitates the development of a more pronounced contingency theory of corporate planning.

✉ P. Maik Hamann
Maik.Hamann@tu-dresden.de

[1] Faculty of Business Management and Economics, Chair of Business Management, esp. Management Accounting and Control, Technische Universität Dresden (TU Dresden), 01062 Dresden, Germany

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1 Introduction

Too much and not enough.

This statement summarizes the answer to the question: What do we know about the contingencies of corporate planning (CP)? *Too much* because a multitude of relationships between different contingencies and design aspects of corporate planning has been researched by numerous studies and due to the scarcity of replications it is challenging to reconcile the findings. *Not enough* because a structured overview of these studies to inform future research and a well-developed understanding of a contingency theory of corporate planning is still missing. This literature review aims to deliver on both these fronts because CP is important in organizational practice throughout the world and scientific interest in CP has been resurging in the past years.

CP is the attempt to develop formal, systematic, and integrated decision-making systems and encompasses strategic and operational planning (Denning and Lehr 1971). Thus, CP is a central mean to implement strategies, coordinate and integrate organizational activities, and direct the behavior of employees in organizations (Malmi and Brown 2008). Operational planning, especially financial planning and budgeting, is among the first management practices adopted in start-up companies, closely followed by strategic planning initiatives (Davila and Foster 2005, 2007). Action programs and budgeting are dominant means of strategy implementation and necessary to achieve strategic objectives (Bhimani and Langfield-Smith 2007; Grant 2003). Consequently, almost 80% of all organizations engage in CP regardless of their geographical region, organizational size, or industry (see for instance: Efendioglu and Karabulut 2010; Feldbauer-Durstmüller et al. 2012; Libby and Lindsay 2010; O'Regan and Ghobadian 2007; Rigby 2001).

Research on CP takes place at the intersection of the two major research fields of strategic management and management control (e.g., Anthony 1965; Anthony and Govindarajan 2007; Daft and Macintosh 1984; Huff and Reger 1987; Langfield-Smith 1997; Malmi and Brown 2008). Recently, researchers in both fields have argued for a revival of scientific interest in CP because of its popularity in management practice and to intensify (a) strategy implementation research (Hutzschenreuter and Kleindienst 2006), (b) research with regard to the organizational outcomes of CP (Wolf and Floyd 2013), and (c) research in management controls as a package that includes CP systems (Malmi and Brown 2008). In the past, researchers in both fields have extensively investigated CP. Therefore, any new effort should build on these past results and identify as yet unanswered research questions to foster growth of knowledge.

As posed above, a major research stream in the planning[1] literature investigates the design of CP systems in the context of their environments (Wolf and Floyd 2013). This research stream is influenced by the contingency approach, which is a major theoretical basis for empirical research in strategic management and management control (e.g., Cadez and Guilding 2008; Chenhall 2003; Fisher 1998; Hutzschenreuter and Kleindienst 2006). The contingency approach is based on the idea, that there is no *one best way* to design an organizational system (e.g., the organizational structure or the CP system). In contrast, the contingency approach asserts that the design of an organizational system (or a process[2]) is contingent on context factors. Context factors are defined as any aspect outside the organizational system that is examined.[3] Contingency factors are context factors that moderate the relationship between an organizational system and its performance. An organizational system that is in fit with its contingency factors yields superior organizational performance (OP) (Donaldson 2001). Consequently, CP systems should be adapted to the specific conditions faced by organizations (Wolf and Floyd 2013). For example, a highly sophisticated CP system may yield strong OP if an organization is large (Bracker et al. 1988).

Contingency studies on CP systems have investigated a plethora of context factors for a multitude of design aspects of CP and used different concepts of fit (i.e., selection fit, interaction fit, or systems fit). Moreover, many authors of contingency studies of CP do not explicitly state their theoretical basis (Wolf and Floyd 2013) and thus may disregard the rich theoretical rationale of the contingency approach. A finding also established by Chenhall (2006) and Otley (2016) in their reviews on contingency studies of management control systems (MCS). The resulting heterogeneity of contingency studies on CP systems may lead to inconclusive results (Drazin and van de Ven 1985; Gerdin and Greve 2004). The aim of my review is to identify commonalities among the studies and results in this research stream by addressing two questions: Which context factors shape the design of CP systems? How do findings of contingency studies of CP differ depending on the concepts of fit applied?

This review aims to address the complexity of this research stream and structure it with regard to (a) the context factors, (b) the design aspects of CP systems, and (c) the findings across a number of empirical studies. In addition, I compare the development of a contingency theory of CP with the theoretical rationales offered by the contingency approach.

Previous reviews of CP research take either a broad approach and integrate a diverse set of theories, perspectives, and methodologies (e.g., Hutzschenreuter and Kleindienst 2006; Noble 1999; Rajagopalan et al. 1993; Wolf and Floyd 2013) or focus on the relationship between CP and OP (e.g., Armstrong 1991; Brinckmann et al. 2010; Kürschner and Günther 2012; Miller and Cardinal 1994). On the one hand, these

[1] Throughout the research paper the terms *planning* and *corporate planning* are used synonymously.

[2] The distinction between *systems* and *processes* is important. Systems are complex units compounded from many diverse parts that are subject to a common purpose, whereas processes are facilitated by systems. That is, systems are the means by which processes occur (Anthony 1965).

[3] In addition, Miller et al. (1988) state: "Although the term 'context' is broad and ambiguous, we define it as the challenges and resources, economic as well as human, that surround an organization. Context usually represents a broad field of constraints, opportunities, and possibilities."

reviews highlight important commonalities between different theoretical explanations of CP practices, provide a comprehensive description of CP in organizations, and establish the performance effects of CP. On the other hand, the depth and richness of the particular theories are inevitably disregarded in these reviews. In contrast, a review focusing on one single theoretical perspective provides the opportunity to establish more traceable and cumulative results with regard to this particular theory as is the aim of this research paper. With regard to the contingency factors of CP previous reviews provide only presumably incomplete lists (e.g., Hutzschenreuter and Kleindienst 2006; Wolf and Floyd 2013) without appraising the comprehensive empirical findings regarding each of these factors. To the best of my knowledge no comprehensive review exists that evaluates the research stream focusing on CP in its context based on the contingency approach.

I review 195 empirical studies that (a) investigate the design of CP systems at the organizational level of analysis, (b) are (implicitly) influenced by the contingency approach, and (c) are published in ranked academic journals since 1967. In this year the last of the seminal works of the contingency approach, comprising Burns and Stalker (1961), Woodward (1965), and Lawrence and Lorsch (1967), had been published. Studies are identified by means of a systematic review protocol (Tranfield et al. 2003). My review is based on a quantitative content analysis for which the criteria are derived from the framework of Luft and Shields (2003). This content analysis allows the identification of the context factors, design aspects of CP, and the concept of fit in each study. I establish a ranking of context factors based on consistent findings across primary studies regarding the relationship of these context factors with design aspects of CP by applying the vote-counting method of Hedges and Olkin (1980).

Three important findings with regard to the theoretical development and empirical support of a contingency theory of corporate planning emerge from this review. First, this review identifies four important context factors of a CP system that show consistent results in selection fit studies across different design aspects of the CP system and across diverging research settings. These context factors are: (a) management and planning philosophy, (b) organizational size, (c) environmental uncertainty and its dimensions, especially environmental complexity, and (d) task interdependence and related constructs, such as strategy, technology, or organizational structure. This comprehensive set of context factors facilitates the development and empirical testing of a more pronounced contingency theory of corporate planning. Second, this research stream is highly fragmented, replication of findings is rare and thus the cumulative growth of knowledge is limited. Third, the majority of contingency studies present findings based on the selection fit concept and employ cross-sectional data. In contrast, the more rigorous tests of contingency hypotheses are interaction fit or system fit approaches based on longitudinal data. Such research designs were seldom employed by contingency studies of CP and offer important avenues for future research.

This review contributes to the research on the contingency theory of corporate planning in five ways. First, it facilitates further theoretical advancement because it identifies a parsimonious and comprehensive set of four context factors, which are associated with CP, and highlights empirical results corroborating the Structural Adaptation to Regain Fit (SARFIT) model of Donaldson (1987, 2001). Second, it stresses the importance of longitudinal, interaction fit and system fit studies that are

more rigorous tests of these context factors, as for example the studies by Capon et al. (1994), Fredrickson and Iaquinto (1989), and Lei et al. (1994). Third, it highlights past studies with innovative research designs and high scientific rigor (Chakravarthy 1987; Horváth et al. 1985; Ramanujam and Venkatraman 1987). Fourth, it recommends theoretical and empirical approaches to reduce the plethora of different context factors and design aspects of CP employed in contingency-based studies of CP, such as meta-analyses of relationships between context factors and CP, modelling CP as reflective first-order formative second-order construct, or empirically prioritizing context factors. Furthermore, I identify promising future research avenues and provide ideas for theory-consistent empirical studies on the contingency theory of corporate planning.

This research paper is divided into six sections. In Sect. 2 I map the research area of CP and discuss important aspects of the contingency approach. In Sect. 3 the methodological approach is discussed in three parts: (a) the identification and retrieval of relevant studies, (b) the framework of Luft and Shields (2003), and (c) the vote-counting method of Hedges and Olkin (1980). Section 4 presents descriptive statistics and the main results regarding the context factors researched. Implications for future research are discussed in Sect. 5. The research paper ends with a short conclusion.

2 Theoretical basis

2.1 The research area of corporate planning

Corporate planning is defined as a concern with decisions in organizations, alignment with the future, and changes in the behavior of an organization's members. Planning decisions are thus treated in a formal, explicit, and systematic process which considers the context of an organization. Hence, planning addresses both ends and means (de Smit and Rade 1980) and is addressed both in strategic management research and in management control research.

Strategic management research can be divided into content-related and process-related research. Content-related research focuses on the subject of the strategic decision itself (i.e., on the outcomes of specific strategies as well as on similarities and differences of strategic positions). Process-related research investigates contingencies and outcomes of strategy formulation as well as strategy implementation processes (Huff and Reger 1987).

Malmi and Brown (2008) provide a comprehensive framework of management control research. They define management control systems as systems that direct employee behavior. As a consequence, management controls are all the activities, rules, methods, tools, practices, and values that managers use to ensure that employees behave and make decisions consistent with the objectives and strategies of an organization. Corporate planning supports decisions and fosters goal congruence within an organization. Therefore, the conceptual framework of management control systems includes three planning-related systems: long-range planning, action planning, and budgeting. These planning systems are important means of implementing strategies (Bhimani and Langfield-Smith 2007). As shown in Fig. 1, the research area of CP is therefore located at the intersection of (a) process-related research in strategic management and

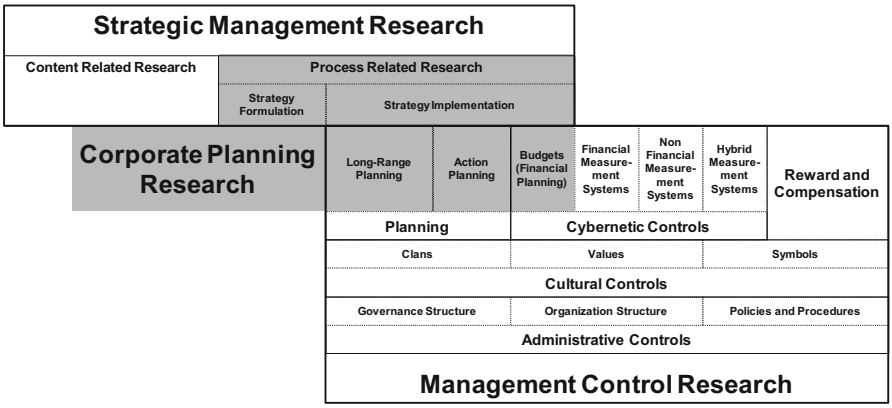

Fig. 1 *Corporate planning framework* illustration adapted from Huff and Reger (1987) and Malmi and Brown (2008)

(b) research on planning related systems that are a means of strategy implementation in the field of management control research.

Following from this framework, CP encompasses four different subsystems: strategy formulation, long-range planning, action planning, and budgeting. *Strategy formulation* is defined as the system (or process) determining both the ends of an organization (e.g., vision, objectives, or goals) and the means (i.e., the *grand strategies*) an organization intends to adopt to achieve these ends (Harrison 1976; Kraus et al. 2008). Thus, in strategy formulation the domain of an organization remains open for discussion and reformulation (Rhyne 1985). *Long-range planning* is qualitatively different from strategy formulation and animates the strategies which have been decided upon in the process of strategy formulation. This planning subsystem involves long-term projections (e.g., for 5 years) of industry development and of what is required to implement the strategies by extrapolation from the current business momentum. Thus, long-range planning, action planning, and budgeting assume the domain of an organization to be given (Harrison 1976; Rhyne 1985; Wright 1982). *Action planning* establishes a more granular level than long-range planning, is usually concerned with the next 12 months, and focuses mainly on the activities of an organization. *Budgeting* is defined as short-term financial planning to implement these activities (Hansen et al. 2003; Horváth et al. 1985).

A long-standing academic debate distinguishes between two orientations in planning: (a) the rational, formal, synoptic, and integrative approach and (b) the incremental, creative, and adaptive approach (e.g., Brews and Hunt 1999; Brews and Purohit 2007; Chakravarthy 1987; Fredrickson and Mitchell 1984; Hart and Banbury 1994; Mintzberg 1994). The rational approach argues for the specification of concrete goals which are based on a comprehensive analysis and decided upon in a formal manner. Following this specification, means are developed which strongly contribute to the achievement of goals previously specified. The implementation of these means involves tight controls (Fredrickson and Mitchell 1984; Hart 1992). In empirical studies the rational approach is associated with several design aspects of the CP system:

for example, (a) the level of formalization, (b) the involvement of the top management team, (c) the centralization of planning decisions, (d) the comprehensiveness of the planning process, (e) the control focus in CP, (f) the specificity of strategies, plans, or budgets, and (g) the written documentation of strategies, plans, or budgets (e.g., Andersen and Nielsen 2009; Brews and Hunt 1999; Covin et al. 2006; Pulendran et al. 2003). Most of the normative models of strategy formulation are based on the rational approach (Fredrickson 1984; Hart 1992).

The rational approach has been subject to frequent criticism. Its critics favor the incremental approach to planning. In this approach strategy development is a creative synthesis, involves the identification of opportunities, and may occur in an incremental way, leading to emergent strategies which are quite different from strategies previously envisioned (Brews and Purohit 2007; Fredrickson and Mitchell 1984; Mintzberg 1994). In management control research the incremental approach to planning is observed in the Beyond Budgeting discussion and the introduction of rolling budgets (e.g., Fraser and Hope 2001; Libby and Lindsay 2010). The incremental approach is associated in empirical studies with design aspects of the CP system, such as (a) the involvement of low and middle management, (b) the non-existence of written strategies or plans, (c) shorter planning horizons, and (d) shorter planning frequencies (e.g., Andersen and Nielsen 2009; Brews and Hunt 1999; Covin et al. 2006). Researchers have argued that these two approaches both occur in reality and have to be combined in order to generate meaningful planning typologies (Brews and Hunt 1999; Brews and Purohit 2007; Hart 1992).

Another distinction arises from the use of plans in general and budgets in particular as discussed in the management control literature (e.g., Abernethy and Brownell 1999; Chong and Mahama 2014; Luft and Shields 2003; Sponem and Lambert 2016).[4] Based on Simons (1995) Levers of Control framework budgets may be used diagnostically or interactively. On the one hand, the diagnostic use focuses on the explanations of deviations from budgetary targets that occurred during the implementation of specific actions (Mundy 2010; Tessier and Otley 2012). Consequently, budgets are regularly used to monitor organizational performance and initiate corrective actions. On the other hand, the interactive use of budgets promotes discussion and learning through intensive communication between managers at different hierarchy levels (Mundy 2010; Tessier and Otley 2012). Thus, the discussions of budgets are means for an active and personal involvement of superiors in the decision processes of their subordinates. While a predominant use of budgets in an organization may exist, it is possible to use budgets both diagnostically and interactively (Koufteros et al. 2014; Mundy 2010; Sponem and Lambert 2016).[5]

[4] I am indebted to an anonymous reviewer, who highlighted the importance of this topic in association with a contingency theory of corporate planning.

[5] In management accounting research the distinction between decision-influencing and the decision-facilitating accounting information is also discussed (see Luft and Shields 2003). Decision-influencing information is employed for organizational control purposes, whereas decision-facilitating information is employed for organizational coordination (Nicolaou 2000). Thus, the latter type of accounting information is a basis of corporate planning in general as well as budgets in particular as defined in this paper. I would like to thank an anonymous reviewer for drawing my attention to this interesting topic in the management accounting literature.

2.2 The contingency approach

The contingency approach originated in organizational science in the 1960s and has also gained importance in other areas of business administration. Consequently, a number of different contingency theories have been proposed which relate, for example, to organizations (e.g., Donaldson 2001), business strategy (e.g., Hofer 1975), corporate financial reporting systems (e.g., Thomas 1991), management accounting (e.g., Hayes 1978; Otley 1980), and corporate planning (e.g., Brock 1995; Grinyer et al. 1986).

The contingency approach assumes that an organizational system (e.g., the organizational structure or the CP system) must fit its context in order to be efficient. Consequently, a system that is in fit yields superior performance to systems that are in misfit (Drazin and van de Ven 1985). Following this postulate, the contingency approach is based on a core paradigm with three elements (Donaldson 2001). First, the contingency factor and the organizational system have to be associated. Second, a change in the contingency factor has to cause a change in the organizational system. Third, a fit between the contingency factor and the organizational system positively affects the performance of this system. Consequently, not every context factor is a contingency factor as defined by the core paradigm. Context factors are defined as any aspect outside the organizational system. Contingency factors are context factors that moderate the relationship between an organizational system and its performance as described by the three elements of the core paradigm.

The three elements mentioned above are related to the three different concepts of fit employed in empirical contingency studies: selection fit, interaction fit, and systems fit (e.g., Donaldson 2001; Drazin and van de Ven 1985; Gerdin and Greve 2004). Selection fit assumes that only the best-performing organizations survive. This implies an equilibrium assumption, as only organizations which are in fit may be observable. Consequently, empirical studies based on the selection fit only examine the relation between contingency factors and organizational systems without explicitly establishing a link to its performance (Drazin and van de Ven 1985). Selection fit studies only address the first element of the core paradigm and rule out the third element with an additional assumption. These studies have been criticized accordingly (e.g., Donaldson 2001; Pennings 1998). In contrast, studies based on the interaction fit assume that organizations in misfit exist. Thus, interaction fit studies drop the equilibrium assumption. These studies include in their research design an explicit assessment of the performance effects which emerge from the relationships of contingency factors and organizational systems (Drazin and van de Ven 1985). Thus, interaction fit studies address at least the first and third elements of the core paradigm. Selection fit and interaction fit studies usually consider only one or two contingency factors in relation to a small number of design aspects of organizations. Studies based on the system fit bypass this restriction by defining fit as the consistency of multiple contingency factors and multiple design aspects of organizations that leads to improved performance (Drazin and van de Ven 1985). Many contingency studies use cross-sectional data and are not able to address the causal relation mentioned in the second element of the core paradigm. Longitudinal data is required to do so (Dyson and Foster 1982; Pennings 1998).

The contingency theory of organizations (i.e., structural contingency theory) as refined in the work of Donaldson (1987, 2001) is the most sophisticated contingency

theory in the field of business administration to present. Structural contingency theory establishes the relationship between organizational structure, three contingency factors (i.e., uncertainty, task interdependence, and size), and organizational effectiveness. This theory addresses criticism of the contingency approach raised in the field of strategic management in the 1970s which is summarized in two major limitations by Miles and Snow (1978).

First, early contingency studies focus on individual and situational differences instead of similarities, which amount to the notion that *every situation is different*. These studies resulted in a maze of unrelated context factors and relationships with design aspects of organizations. Moreover, it may be impossible to derive prescriptions regarding the design of organizational systems from such an extended list of significant contingency factors, which may imply conflicting design recommendations (Otley 2016). Chenhall (2006) notes "… there is no 'contingency theory', rather a variety of theories may be used to explain and predict conditions under which particular MCS [management control systems] will be found or whether they will be associated with enhanced performance."

Second, early contingency studies ignored managerial choice as an important variable and involved a strong deterministic bias. This bias has masked underlying decision processes and led to a functional imperative of organizational structure (Miles and Snow 1978). Additionally, Otley (2016) highlights that contingencies have to be "considered in a much more dynamic context", which implies the use of process-based models examining mechanisms of the implementation and alteration of specific organizational systems such as corporate planning systems or management control systems.

With regard to the first limitation, Donaldson (2001) argues that many of the context factors can be meaningfully collapsed into three contingency factors: uncertainty, task interdependence, and size. For instance, context factors such as technology, technological change, environmental instability, and the differentiation between defender and prospector strategy all relate to uncertainty. These factors increase uncertainty regarding outcomes and implementation of different tasks in an organization. Empirical support for this idea comes from a factor analysis conducted by Dess and Beard (1984), in which 23 environmental variables were collapsed into the three factors of dynamism, complexity, and munificence.

The SARFIT model of Donaldson (1987) addresses the second limitation noted by Miles and Snow (1978). An organization is initially in fit regarding its structure and its contingency factors. This state of fit positively affects OP. If the level of the contingency factors of an organization change this change may either be caused by the decision of the organization itself or independently. It is notable that an organization (e.g., its top management) can decide to change its contingency (e.g., if the top management facilitates organizational growth the size contingency will change accordingly). This change in a contingency factor, albeit initially retaining its organizational structures, moves an organization into misfit and OP starts to decline. If performance drops below a satisfactory level, the organization starts to adapt its structure to the contingency factor. Thus, a decline in performance provides the feedback mechanism for managers in an organization, who decide to change the structure of their organization in order to regain fit and thus satisfactory performance levels. Since performance is also influenced by other variables, such as competition in an industry

or the competitive position of an organization, the drop in performance caused by structural misfit may be masked or even counterbalanced by these factors (Donaldson 1987, 2001). Consequently, organizations tend to stay a long time in misfit, essentially rendering selection fit approaches to studying theoretical propositions of the contingency approach inappropriate.

The SARFIT model provides also insights regarding the relationship between choice variables and contingency factors. Choice variables are subject to distinct design decisions by managers in organizations (Grabner and Moers 2013).[6] Following from the SARFIT model these design decisions may apply to both contingency factors as well as design aspects of CP systems as shown above. However, the decisions of a management may not directly set the contingency factor or design aspect and change may only be evident over time. For instance, the size contingency may be changed directly by a large acquisition or over time by facilitating organizational growth. Regarding the design of CP systems, the management may introduce yearly budgets into the CP system, directly changing the design aspect of "content of plans: budgets" as well as the design aspect "CP sophistication" in subsequent periods. Consequently, choice variables that are outside the CP system[7] are also subject to the above definition of contingency factors and not all design aspects of CP systems may be subject to conscious decisions by an organization's management.

Since structural contingency theory provides the most advanced contingency theory in business administration it is reasonable to compare advances towards a contingency theory of corporate planning with the core paradigm and theoretical structures emerging from the contingency approach and the works of Donaldson.

3 Methodology

3.1 Identification of relevant studies

Tranfield et al. (2003) recommend a systematic literature search as a basis for a comprehensive review in order to avoid widespread fallacies, such as researcher bias through subjective identification of studies and non-standardized reporting structures. Hence, I follow the protocol advocated by Tranfield et al. (2003) and describe my review motivation, research questions, search strategy, study sample, and related inclusion and exclusion criteria.[8]

[6] Grabner and Moers (2013) provide a distinction between management control as a system and as a package. In their definition the concept "system" is narrowly defined as a set of management control practices that is conscious decided upon in a design process upon by taking interdependencies between these practices into account. In contrast, management control as a package "represent the complete set of control practices in place" (Grabner and Moers 2013, p. 408). The system concept of the contingency approach is broader in its basic definition because systems are complex units compounded from many diverse parts that are subject to a common purpose (Anthony 1965).

[7] CP systems are thus defined as a complex unit in organizations compounded from many diverse parts subject to the common purpose of being concerned with decisions in organizations, alignment with the future, and changes in the behaviour of an organization's members.

[8] The review protocol and results of the structured, computerized search are available from the author upon request.

The study sample of this review consists of quantitative empirical studies that (a) investigate the structure of the CP system (or subsystems thereof, such as strategy formulation, long-range planning, action planning, or budgeting) at the organizational level of analysis, (b) are (implicitly) influenced by the contingency approach, and (c) were published in academic journals since 1967.

First, "contingency studies have come to be seen as large scale, cross sectional, postal questionnaires based research, …" (Chapman 1997). Consequently, I restrict my review to studies employing the survey method and quantitative methods of data analysis. Because of this restriction, my research design is able to control for methodological differences in primary studies which may provoke divergent study results. Second, I restrict my review to the organizational level of analysis because the contingency approach focuses on organizational systems and different levels of analysis may also cause conflicting results between primary studies (Elbanna 2006). Third, I concentrate on studies that investigate context factors of CP. Only a small number of contingency studies of CP explicitly mention the contingency approach as their theoretical basis. Accordingly, Wolf and Floyd (2013) observe: "… many authors do not make the theoretical basis of their arguments explicit. Coding the articles for this review revealed that many works take for granted a contingency framework in the context of planning research." Fourth, I concentrate on journal articles because they are considered as validated knowledge and are likely to have the highest impact on researchers and practitioners (Podsakoff et al. 2005). Moreover, journal articles are a sustainable way to share as well as store knowledge because most articles nowadays are available through databases (even older ones). Therefore, journal articles are easier to obtain than research reports, working papers, or dissertations published in limited numbers. To cover the research tradition of the United Kingdom, the United States, and continental Europe, I analyzed studies published both in English and German (the most widely spoken first language in the European Union).[9] Fifth, I limit my review to studies published since 1967. This is the year, in which the last of the seminal studies of the contingency approach (i.e., Burns and Stalker 1961; Lawrence and Lorsch 1967; Woodward 1965) was published.

Relevant studies are identified in a three-step process. I searched empirical studies of CP at the organizational level of analysis in the first two steps, before I further restricted my study sample to the inclusion criteria of this review. First, I conducted a structured, computerized search in 31 academic journals for the period starting at the year 1967.[10] The list of academic journals was compiled from four reviews of

[9] German scholars used to publish research mainly in the German language, forming a distinct market for scientific publication (Wagenhofer 2006). German language studies usually addressed corporate planning in a setting similar to the corporate planning framework shown in Fig. 1.

[10] The 31 journals, in alphabetical order, are *Academy of Management Journal*; *Academy of Management Perspectives/Academy of Management Executive*; *Academy of Management Review*; *Accounting, Organizations, and Society*; *Administrative Science Quarterly*; *Betriebswirtschaftliche Forschung und Praxis*; *California Management Review*; *Contemporary Accounting Research*; *Decision Sciences*; *Die Betriebswirtschaft*; *Die Unternehmung—Swiss Journal of Business Research and Practice*; *European Accounting Review*; *Harvard Business Review*; *Journal für Betriebswirtschaft*; *Journal of Accounting and Economics*; *Journal of Accounting Research*; *Journal of International Business Studies*; *Journal of Management*; *Journal of Management Accounting Research*; *Journal of Management Studies*; *Long Range Planning*; *Management Accounting Research*; *Management Science*; *Organization Science*; *Review of Accounting*

both fields (i.e., Hutzschenreuter and Kleindienst 2006; Schäffer and Binder 2008; Short et al. 2008; Wagenhofer 2006). The lowest ranking of journals identified from these reviews is D in the JOURQUAL2 Ranking.[11] Thus, I controlled for quality of articles by further restricting my review to articles published in academic journals ranking at least D in the JOURQUAL2 Ranking. In the structured, computerized search I employed the English language keyword string *((plan*) OR (budget*) OR (management control))* or the German language keyword string *((Plan*) OR (Budget*) OR (Controlling))* to search in titles and abstracts.[12] My keyword search was consistent with Wolf and Floyd (2013). Second, I acquired additional studies cited in articles, which were identified during the structured, computerized search. The structured, computerized search resulted in a list of 203 articles whose reference lists included additional 102 articles published in 55 additional journals ranked at least D in the JOURQUAL2 Ranking. Third, I examined these 305 articles with regard to their relevance for my review. I excluded 27 comparative case or event studies, six studies that upon closer inspection focused on decisions as level of analysis, and 89 articles that did not address context factors of CP.

I evaluated the validity of my search strategy by comparing this sample of 187 articles with reference lists from previous reviews of both fields. Because of this evaluation, five additional articles were identified that comply with my inclusion criteria. The meta-analytic review of Brinckmann et al. (2010) encompasses articles that address CP as one of the determinants of OP in small organizations. These articles do not explicitly mention the CP term in their title or abstract and therefore my previous literature search did not identify these articles. Altogether, I obtained 193 articles, which included 21 articles published in the German language.[13] One article reports on three studies in different African countries and thus my review covers 195 empirical studies.[14]

Footnote 10 continued
Studies; *Schmalenbach Business Review*; *Schmalenbachs Zeitschrift für betriebswirtschaftliche Forschung*; *Strategic Management Journal*; *The Accounting Review*; *Zeitschrift für Betriebswirtschaft*; and *Zeitschrift für Planung und Unternehmenssteuerung*.

[11] The JOURQUAL2-Ranking is prepared and published by the German Academic Association of Business Research and covers–unlike international rankings–all leading German-language business administration-related periodicals and all leading international journals in one comprehensive ranking (Schrader and Hennig-Thurau 2009). The JOURQUAL2 shows statistically significant, positive, and moderately high correlations with other international journal rankings, such as the 2008 ISI Journal Citation Impact Factors ($r = .57$, $p < .01$), the British Association of Business Schools Academic Journal Quality Guide from 2009 ($r = .64$, $p < .01$), the French Centre National de la Recherche Scientifique ranking from 2008 ($r = .70$, $p < .01$), and the Dutch Erasmus Research Institute of Management Journals Listing from 2006 ($r = .56$, $p < .01$).

[12] Because German-language journals are not entered systematically into literature databases, publication analysis in German-speaking countries involves scanning all selected periodicals and recording relevant articles by hand (Schäffer and Binder 2008).

[13] Upon revision I included the study of Song et al. (2015) in my sample of studies. This article in press had been made available online at the Strategic Management Journal after I had finished my initial literature search. I am grateful to an anonymous reviewer, who recommended this study to me.

[14] A table of all 195 studies with key characteristics of each study as well as a reference list of the 193 articles is available from the author upon request.

As shown in Table 1, only a minority of studies discussed in previous reviews comply with the inclusion criteria of my review, especially in the field of management control. Consequently, my review includes only 22 articles from accounting journals, which are the main publication outlets for management control researchers. A possible explanation is the main research focus of management control studies. The majority of studies included in the reviews of management control research concentrate on information characteristics, formality of management and budgeting controls, behavioral aspects, and performance measurement, as well as reward and compensation schemes (e.g., Chenhall 2003; Luft and Shields 2003. The structure of the CP system or budgeting system and their relationships with context factors at the organizational level of analysis are a neglected research area in management control research (Ezzamel 1990).[15] Moreover, the same two studies from Merchant (1981, 1984) are included in four reviews of management control research.[16]

3.2 Review approach

Two broadly defined review methods can be distinguished: narrative reviews and meta-analyses. The more traditional approach (i.e., the narrative review) is usually subjective in regard to the studies included and discussed in greater depth. Space limitations make it necessary to focus on rather broad themes in such reviews. Minor findings or robustness checks are mostly neglected in the discussion (Tranfield et al. 2003). The review by Hutzschenreuter and Kleindienst (2006) is a good example of the limitations involved in a narrative review. They identify 227 articles in the area of strategy process research but are not able to discuss the results of all of these studies in greater depth.

Meta-analyses, on the other hand, synthesize research findings quantitatively and include major as well as minor findings from each study in the review. Meta-analyses estimating the total effect size from a number of studies on the same relationship are constrained by several prerequisites (Geyskens et al. 2009). First, enough studies must have investigated the same causal-model form, thus allowing meaningful estimation of a common effect size. A causal-model form links variables and describes the restrictions under which a variable explains changes in another variable (Luft and Shields 2003). Second, all these studies must have reported the statistical data necessary for a meta-analysis. This encompasses at least complete correlation tables and data of artifacts, which bias the effect size reported, for example sampling error (Geyskens et al. 2009). Rare replication of studies and fragmentary reporting of necessary data

[15] This finding is also evident in the management control literature on the diagnostic or interactive use of budgets. I was unable to identify studies, which fully comply with the inclusion criteria of this review. These studies focus either on the individual level of analysis (e.g., Chong and Mahama 2014), do not include any context factors (e.g., Grafton et al. 2010; Koufteros et al. 2014; Sponem and Lambert 2016) or are case studies of a single organization (e.g., Kober et al. 2007; Mundy 2010).

[16] The literature review of Otley (2016) provides an up to date examination of the state of art of contingency thinking in management accounting and control. The conclusions drawn there and in this review of a contingency theory of corporate planning correspond at many levels. I'd like to thank an anonymous reviewer, who highlighted this current article in press to me.

Table 1 Characteristics of reviews in related research fields

Review	Content	Period	Number of journals reviewed	Number of studies reviewed	Studies complying with the criteria of this review
Strategic management research					
Hofer (1976)	Strategic planning research	–	–	62	2
Ginsberg and Venkatraman (1985)	Contingency perspectives of organizational strategy	1976–1984	–	25	2
Huff and Reger (1987)	Strategic process research	1980–1986	7	193	14
Boyd (1991)	Strategic planning	1980–1990	12	21	10
Eisenhardt and Zbaracki (1992)	Strategic decision-making	1963–1992	–	48	3
Rajagopalan et al. (1993)	Strategic process research	1981–1992	–	35	5
Schwenk and Shrader (1993)	Strategic planning in small organizations	1982–1990	11	14	8
Miller and Cardinal (1994)	Strategic planning	1970–1992	–	26	16
Elbanna (2006)	Strategic decision-making	1974–2005	–	41	4
Hutzschenreuter and Kleindienst (2006)	Strategic process research	1992–2005	21	122	15
Wooldridge et al. (2008)	Middle management perspective on strategy process	1986–2008	–	37	1
Brinckmann et al. (2010)	Business planning in small organizations	1982–2007	18	47	26
Wolf and Floyd (2013)	Strategic planning research	1980–2011	13	117	34

Table 1 continued

Review	Content	Period	Number of journals reviewed	Number of studies reviewed	Studies complying with the criteria of this review
Management control research					
Otley (1980)	Contingency theory of management accounting	1972–1978	–	8	1
Langfield-Smith (1997)	Management control systems and strategy	1972–1992	–	9	1
Chapman (1997)	Contingent view of accounting	–	–	27	3
Fisher 1998	Contingency theory and management control systems	1978–1994	–	11	1
Luft and Shields (2003)	Management accounting	Before 2002	6	275	6
Covaleski et al. (2003)	Budgeting research	–	–	68	4
Chenhall (2003)	Contingency-based management control systems research	1983–2002	19	76	6

This table lists related reviews in the fields of strategic management research and management control research. It reports the number of studies that have been previously reviewed and comply with the inclusion criteria of my review. A dash indicates that no information regarding this column is available in the corresponding review

may be why meta-analyses are rarely used in management science compared to the fields of education or medicine (Dalton and Dalton 2008). My sample of studies provides a good example of these problems. Of the 866 different causal models identified (relationships of different variables in specific causal-model forms) only 19 satisfy the minimum requirement of 10 primary studies for a meaningful meta-analytical estimation of total effect sizes without even taking proper reporting of necessary data into account.

In situations when standard meta-analyses cannot be applied vote-counting may be the appropriate method (Higgins and Green 2011). In this approach researchers answer the question *Is there any evidence of an effect?* by comparing the number of positive and negative findings. Because of the nature of my sample of studies and the limitations involved with narrative reviews, I employed the vote-counting approach. I also tested if the combined results of studies regarding a specific causal model could be obtained by chance or indeed provide evidence for an effect, as recommended by Hedges and Olkin (1980). To achieve this I applied a significance test based on a binomial distribution with n = number of studies investigating this specific causal model, k = number of studies providing consistent results, $p = .5$ and a significance level of .1. The direct effect of organizational size on the sophistication of the planning system, for example, is investigated in 33 studies, of which 22 studies provide evidence of a positive effect. The above significance test resulted in a p value of .02. Thus, these 33 studies in combination provide strong evidence of a positive effect of organizational size on planning sophistication that could not be obtained by chance. Causal models are omitted in this test, however, if they are only investigated by one study. Essentially, this vote-counting approach provides evidence with regard to the question of which context factors may be used as contingency factors in future studies because of their track record of consistent results in a number of research settings (Newbert et al. 2014). Nonsignificant findings may be caused by a wrong theoretical argument or research design issues such as sample characteristics or construct measurement. Thus, I examined the research design characteristics of studies including nonsignificant causal models for a context factor in addition to the test on consistency mentioned above. A similarity in research design characteristics may be a valid explanation of nonsignificant findings. Thus, these findings would not be qualified to falsify a theoretical argument or a hypothesis in the light of other corroborative studies. Altogether, this analysis allowed me to distinguish between contingency factors of the CP system and context factors, which do not influence the design of this system in a way that is congruent with the core contingency approach paradigm.

3.3 Content analysis approach

By following the vote-counting approach, I was able to draw replicable and valid inferences from texts (i.e., the journal articles reporting on empirical studies). I inferred that studies support or refute the relationship between a specific context factor and the design of the CP system. Quantitative content analysis is the appropriate research technique for this aim and was therefore applied to each study in this review (Krippendorff 2004). My quantitative content analysis applied the framework of Luft and Shields

(2003), which specifies the three criteria to be coded from each study: the constructs included, the causal-model form linking these constructs (e.g., unidirectional additive models, intervening variable models, or moderator-variable interaction models), and the direction and shape of the explanatory links (e.g., linear or curvilinear relations).[17] Causal-model forms and type of data (e.g., cross-sectional or longitudinal data) provide evidence for the different applied concepts of fit and the elements of the core paradigm considered in these studies (Covaleski et al. 2003). For instance, a unidirectional additive model linking a context factor and a design aspect of the CP system in a cross-sectional study is an example of a selection fit study based on the first element of the core contingency approach paradigm.

A rigorous application of the methodology of content analysis as advocated by Krippendorff (2004) allowed me to cut through the *language jungle* prevalent in CP research (Leontiades 1982; Mintzberg 1981). A randomized subsample of studies was used to develop a comprehensive coding manual which defines constructs (i.e., context factors and design aspects of CP systems). As a result, I was able to generalize from the label of constructs used in primary studies. In contrast, I focused on similarities in the definitions of constructs or in the measurement approach in studies, which lacked such definitions. This coding manual also helped to reduce the subjectivity inherent in the content analysis method.[18]

To ensure inter-coder reliability a senior researcher coded a random subsample of 30 studies independently of me. Agreement was generally high and divergent views were resolved through intensive discussion and resulted in slight adjustments of the coding manual, mainly with regard to the definitions of constructs. In addition, I recoded a random subsample of 100 studies some months after the first coding and intra-observer agreement was also at acceptable levels (i.e., a mean of Krippendorff's alpha of .93 with a standard deviation of .11).

4 Results

4.1 Descriptive results

Assigning the studies to the four subsystems of CP reveals an interesting pattern, as shown in Table 2. First, 103 studies are not assigned to a subsystem because they either address multiple subsystems or the overall CP system. This second category of studies includes many studies in which the construct of interest is labeled *strategic planning*. These studies, essentially, investigate the overall CP system and call this a strategic planning system if it involves the strategy formulation subsystem. The strategic planning scale developed by Boyd and Reuning-Elliott (1998) is a good example of this measurement approach in studies on CP systems. Most of the remaining studies clearly fall under the umbrella of strategy formulation research. A clear gap in

[17] Luft and Shields (2003) provide an extensive discussion of the different causal-model forms and shapes of the explanatory link.

[18] The coding manual including working definitions for all constructs and example definitions from sample studies is available from the author upon request.

Table 2 Descriptive statistics of studies reviewed

Characteristics	Corporate planning[a]	Studies of corporate planning subsystems			
		Strategy formulation	Long-range planning	Action planning	Budgeting
Year of publication					
1967–1969	2	0	2	0	0
1970–1979	25	3	6	0	1
1980–1989	67	11	7	0	6
1990–1999	48	25	0	0	2
Since 2000	53	20	0	4	5
Total	195	59	15	4	14
Sample region[b]					
Anglo-Saxon	124	46	10	0	10
Thereof North-America	96	37	10	0	7
Thereof United Kingdom	21	8	0	0	2
Thereof Australia	7	1	0	0	1
Continental Europe	42	9	1	1	2
Rest of the world	28	3	4	3	2
Sample industries					
Multiple industries	160	44	9	4	11
Thereof manufacturing only	32	12	2	0	2
Two industries	4	2	0	0	0
One industry	31	13	6	0	3
Sample size					
Min	10	14	35	70	19
Mean	200	173	218	149	112
Max	3554	886	660	215	558

This table provides descriptive statistics with regard to the research design of the 195 studies reviewed
[a] The different planning levels do not sum up because 103 studies could not be assigned to one of the four planning levels. These studies addressed multiple planning levels or the overall corporate planning system
[b] Information with regard to the sample region is missing in the study by Paine and Anderson (1977)

research exists with regard to the design of the long-range planning system, the action planning system, and the budgeting system at the organizational level of analysis. These results mirror the conclusions drawn in the discussion of reviews of management control research.

Research on CP systems, which is influenced by the contingency approach, peaked in the 1980s but is still progressing, as shown in Table 2. This research is mainly based on samples from regions with an Anglo-Saxon cultural background. Despite including studies published in the German language, studies from continental Europe only account for 21.5% of the studies reviewed. The majority of studies (i.e., 160 studies) examine samples which encompass multiple industries and thus increase their

generalizability, whereas a significant number of studies limit their investigation to either one industry or manufacturing companies. Four studies carefully select their sample to include two industries, which differ significantly regarding the context factor examined. The contingency studies of CP also encompass quite heterogeneous sample sizes, which range from ten organizations in the cross-valuation study by Herold (1972) to 3554 organizations in the mail-survey of small businesses in Australia conducted by Gibson and Cassar (2002). In summary, contingency-based CP research is heavily biased towards one single cultural setting and has mainly disregarded the different planning subsystems as distinct objectives of analysis.

Following the tendency to implement an efficient and resource-saving research design 177 studies employ a selection fit approach, whereas 67 studies examine the interaction fit and only seven studies test the system fit, as shown in Table 3. Two concepts of fit are jointly investigated by 56 studies. The majority of studies are based on cross-sectional data mirroring findings from other reviews of management research (e.g., Luft and Shields (2003). Only 13 studies measure both dependent and independent variables (i.e., the CP system, the context factors, and OP) with longitudinal data. The majority of studies employ organizational performance to test performance effects of interaction fit or system fit. Approximately 50% of these studies employed either objective financial data or subjective survey data to measure organizational performance. Consequently, a mismatch exists between the models investigated in these studies and the core paradigm of the contingency approach. The majority of studies may only be able to test the first element of the core paradigm (i.e., to investigate if a context factor is associated with a design aspect of the CP system). The lack of longitudinal studies and interaction fit studies does not seriously allow conclusions to be drawn about the second and third elements of the core paradigm with regard to a contingency theory of corporate planning. Over time no consistent pattern of improvement can be recognized with regard to the application of longitudinal data, different concepts of fit, and the three elements of the core contingency approach paradigm. In summary, the contingency studies of CP do not draw from the rich theoretical perspectives offered by the advanced concepts of fit (i.e., interaction fit or system fit) as well as the core paradigm of the contingency approach.

As shown in Table 4, the studies include tests of 1782 causal models. Of these causal models 866 models differ with regard to the variables involved. Altogether the 866 different causal models link 54 design aspects of CP systems (cf. Table 8 in the Appendix) and 30 context factors (cf. Table 9 in the Appendix). Only 368 of the 860 different causal models are investigated in two or more research settings. This finding highlights the fragmented nature of this research stream. The vast majority of the 1782 causal models are unidirectional linear additive models with design aspects of the CP system serving as dependent variables. Interaction models with performance as dependent variable are examined either as independent variable interaction or moderator variable interaction. They are investigated in 135 and 256 causal models, respectively. These two sets of interaction models are analyzed in the 67 studies that employ the interaction fit approach. Overall, the 195 studies include 1782 empirical tests of causal models of which 759 are statistically nonsignificant. In 451 models a positive relation between the involved constructs is confirmed and only 44 models include significant negative relationships. For 528 models the shape of the explanatory link is not iden-

Table 3 Contingency approach characteristics of studies reviewed

Characteristics	1967–1969	1970–1979	1980–1989	1990–1999	Since 2000	Total
Concept of fit[a]						
Selection fit	2	22	60	45	48	177
Interaction fit	0	7	19	21	20	67
System fit	0	1	2	4	0	7
Type of data[b]						
Cross-sectional data	2	20	61	42	48	173
Longitudinal data	0	4	6	6	5	21
Thereof only for performance	0	2	2	3	0	7
Thereof only for planning aspects	0	0	1	0	0	1
Performance measurement[c]						
Planning effectiveness	0	0	0	2	2	4
Organizational performance	0	7	21	22	18	68
Thereof objective financial data	0	6	12	12	5	35
Thereof subjective survey data	0	1	9	10	13	33
Consistency with the core paradigm						
Element 1	2	17	46	25	28	118
Elements 1 and 2	0	1	2	2	5	10
Elements 1 and 3	0	6	17	20	20	63
Elements 1, 2, and 3	0	1	2	1	0	4
Total number of studies	2	25	67	48	53	195

This table provides descriptive statistics with regard to contingency approach-related characteristics of the 195 studies reviewed

[a] The number of studies does not sum up to 195 because 56 studies addressed two concepts of fit in their research design

[b] Information with regard to the type of data is missing in the study by Ringbakk (1972)

[c] One single study employed planning and organizational performance in their research design and two studies used objective as well as subjective data to measure organizational performance

Table 4 Descriptive statistics of causal models

	Corporate planning[a]	Studies of corporate planning subsystems			
		Strategy formulation	Long-range planning	Action planning	Budgeting
Causal models					
Number of causal models	1782	580	129	20	221
Different causal models	866	391	108	9	186
Replicated models	368	230	17	4	22
Causal-model form					
Unidirectional linear	1782	580	129	20	221
Thereof additive	1357	411	103	17	139
Thereof intervening variable	34	12	0	3	14
Thereof independent- variable interaction	135	56	7	0	4
Thereof moderator- variable interaction	256	101	19	0	64
Bidirectional	0	0	0	0	0
Significance of findings					
Significant causal models	1023	329	63	14	100
Thereof positive relationship	451	171	22	5	47
Thereof negative relationship	44	15	3	1	4
Thereof unspecified direction[b]	528	143	38	8	49
Nonsignificant causal models	759	251	66	6	121

This table provides descriptive statistics with regard to the causal models that are examined in the 195 studies reviewed

[a] The different planning levels do not sum up, because 103 studies could not be assigned to one of the four planning levels. These studies addressed multiple planning levels or the overall corporate planning system

[b] The direction of relationship could not be specified or coded for one of two reasons. Either the constructs involved do not have naturally high or low values (e.g., industry, organizational structure, or planning responsibility) or the study established a relationship between two constructs and did not mention the direction of this relationship

tified because the constructs involved do not have naturally high or low values (e.g., industry or planning responsibility) or the study does not establish the direction of this specific relationship. Therefore, studies in this research stream show a clear tendency to model positive, linear relationships, and seem to present a rather simple picture of a complex world. The evaluation of the causal-model tests in these studies revealed a surprisingly high number of nonsignificant findings, which are usually reported as robustness tests or minor findings. Traditional narrative reviews habitually focus on the main findings of a study and neglect these results.

4.2 Main results: ranking of context factors

Of the 30 different context factors some really stand out in terms of their substantive relationship with the CP system, as shown in Table 5 (see also Tables 10 and 11 in the Appendix). Table 5 ranks context factors with regard to the number of significant causal-model tests. It also exhibits the number of design aspects of the CP system to which a context factor was linked, and shows the number of such relationships for which consistent evidence is provided by the studies reviewed. Especially for interaction fit studies, however, replication of findings is rare and these studies encompass only a small number of causal-model tests for each context factor. Thus, conclusions based on interaction fit studies are limited.

Following other reviews I have grouped the context factors into 18 internal and 12 external factors and discuss these categories in turn. Internal context factors are context factors that belong to the organization itself (e.g., organizational size, organizational age, or organizational complexity), whereas external context factors are context factors from outside the organization (e.g., industry, competition, or environmental uncertainty).

4.3 Internal context factors of the corporate planning system

Organizational size plays a dominant role in shaping the CP system and is investigated by the majority of studies (i.e., 122 studies). This finding mirrors similar results from organizational science, in which "size turned out to be a major contingency factor that affects many different aspects of structure" (Donaldson 2001). In this review 67.72% of the causal-model tests including organizational size as independent variable in selection fit studies show significant results. In addition, 40 from 50 studies with nonsignificant findings restrict their sample to a specific size category, such as small and medium-sized organizations or only the largest organizations in a country. Thus, nonsignificant results are mainly reported in studies without the required variability regarding organizational size in their sample.

Selection fit studies show that organizations change the design of the CP system to cope with the changing context factor of organizational size (cf. Table 10 in the Appendix). First, employment growth in organizations fosters the introduction of CP in small organizations (Gibson and Cassar 2005) and large organizations have a higher commitment to CP. Planning systems in large organizations tend to show characteristics associated with the rational approach to planning, such as (a) increased

Table 5 Ranking of context factors based on fraction of significant causal-models

Context factor		*N*	Selection fit				Interaction fit			
			Causal models		Planning design aspects		Causal models		Planning design aspects	
			Number	Significant (%)	Number[a]	Consistent[b]	Number	Significant	Number[a]	Consistent[b]
Management philosophy	I	11	16	93.75	9 (6)	3	2	50.00%	2 (2)	0
Planning philosophy	I	14	39	89.74	21 (12)	7	–	–	–	–
Strategy	I	33	55	76.36	21 (8)	8	19	73.68%	12 (9)	2
Top management team	I	28	31	74.19	10 (6)	3	–	–	–	–
Region	E	22	90	68.89	35 (13)	12	8	25.00%	4 (2)	0
Organizational size	I	122	285	67.72	47 (12)	14	39	61.54%	16 (8)	0
Environmental complexity	E	16	36	66.67	17 (10)	3	6	16.67%	6 (6)	0
Organizational structure	I	37	99	64.65	34 (14)	8	17	35.29%	12 (7)	1
Planning experience	I	19	35	62.86	22 (14)	2	5	40.00%	2 (0)	0
Ownership	I	27	83	53.01	32 (13)	2	–	–	–	–
Technology	I	21	63	52.38	29 (15)	3	9	33.33%	8 (7)	0
Environmental dynamism	E	50	91	50.55	32 (14)	2	39	56.41%	16 (7)	1
Competition	E	11	20	50.00	12 (8)	1	9	11.11%	9 (9)	0
Environmental uncertainty	E	19	26	50.00	12 (8)	0	7	71.43%	7 (7)	0
Industry	E	63	131	45.80	34 (12)	4	18	61.11%	8 (4)	0
Product portfolio	I	28	63	44.44	29 (13)	2	6	0.00%	2 (1)	0
Organizational complexity	I	12	29	41.38	17 (10)	1	4	75.00%	4 (4)	0

Table 5 continued

Context factor		*N*	Selection fit				Interaction fit			
			Causal models		Planning design aspects		Causal models		Planning design aspects	
			Number	Significant (%)	Number[a]	Consistent[b]	Number	Significant	Number[a]	Consistent[b]
Organizational age	I	25	44	31.82	19 (12)	1	4	25.00%	2 (1)	0
Environmental capacity	E	14	19	31.58	11 (6)	0	9	66.67%	7 (6)	0
Context factors which are addressed in fewer than 10 studies										
Functional dependence	I	1	3	100.00	3 (3)	0	–	–	–	–
Capital structure	I	6	11	81.82	8 (6)	1	–	–	–	–
Task interdependence	I	3	11	81.82	11 (11)	0	–	–	–	–
Organizational formalization	I	6	14	78.57	9 (5)	1	2	50.00%	2 (2)	0
Demand uncertainty	E	3	3	66.67	2 (1)	0	2	100.00%	1 (0)	1
Technology uncertainty	E	3	3	66.67	3 (3)	0	3	100.00%	2 (1)	1
Competitive position	E	6	20	55.00	14 (9)	1	5	0.00%	5 (5)	0
Organizational culture	I	4	13	53.85	13 (13)	0	–	–	–	–
National culture	E	2	3	33.33	3 (3)	0	5	60.00%	5 (5)	0
Environmental unpredictability	E	3	6	16.67	6 (6)	0	1	100.00%	1 (1)	0
Stage of life cycle	I	8	15	13.33	12 (9)	1	8	0.00%	7 (6)	0

This table reports context factors ranked after the proportion of significant causal models in selection fit studies. It also provides information with regard to the number of design aspects of the corporate planning system which were examined with regard to the potential influence of a specific context factor. N = number of studies; I = internal factor; E = external factor

[a] Number of design aspects of the corporate planning system that have been linked to a specific context factor in only one single study are given in parentheses

[b] Number of design aspects of the corporate planning system for which the results of studies are consistent with each other. Consistency was coded if the combined results of the studies linking a design aspect of the corporate planning system with a specific context factor could not be obtained by chance. This was tested by a binomial distribution with n = number of studies investigating this specific model, k = number of studies providing consistent results, $p = .5$ and a significance level of .1. Causal models are omitted from this test if they have been investigated only in one single study

sophistication of planning, (b) longer time horizons for planning in all functional areas, (c) planning in more functional areas, (d) a higher level of formalization of planning, (e) more and more quantified objectives, (f) more comprehensive and detailed plans, (g) increased use of planning methods, instruments, and techniques, and (h) higher likelihood of planning supported by electronic data processing, such as modern enterprise resource planning systems. There is also a relation between organizational size and responsibility for planning as well as the existence of a planning department. Surprisingly, the findings with regard to the involvement of low, middle, and top management in the planning process as well as the decentralization of CP are spurious and conflicting.[19] These conclusions are based on selection fit studies and their clarity vanishes if interaction fit studies are examined (cf. Table 11 in the Appendix). Although 61.54% of the causal-model tests are significant, none of the above design aspects seems to interact with organizational size in such a way as to influence OP. Overall, only 39 causal-model tests involve organizational size consistent with the interaction fit approach, and replication is rare.

In summary, the above findings correspond to the theoretical arguments supporting size as a contingency factor in structural contingency theory. Following Donaldson (2001), organizational size causes more specialization (i.e., more specialist staff functions such as a planning department), which cause more formalization and hence more decentralization in order to cope with the increased organizational complexity caused by the high number of employees.

Organizational complexity as reflected by larger size, diversification, and divisionalization is directly addressed in 12 studies. In selection fit studies, however, most of the causal-model tests are nonsignificant or encompass contradictory findings between studies. Only the existence and involvement of a planning department seems to be related to organizational complexity as measured by these studies. In interaction fit studies OP seems to be influenced if a fit exists between organizational complexity and (a) a greater involvement of top management into the planning process, (b) a greater length of the planning horizon, and (c) a more rational approach to planning. Two limitations apply to these conclusions. First, only two studies (i.e., Miller 1987; Paine and Anderson 1977) examine the interaction fit of organizational complexity and they link it to only four design aspects of the CP system. Second, these studies addressed only the strategy formulation system. Thus, organizational size seems to be an important context factor of CP system design, whereas the more encompassing construct of organizational complexity seems to be over-aggregated.

This conclusion is underpinned by findings of selection fit studies with regard to *organizational structure* (e.g., an organization's level of differentiation or decentralization). Organizations with a distinct organizational structure seem to decide in relation to this upon design aspects that are closely related to the rational approach to planning, such as (a) engagement in CP, (b) sophistication of CP, (c) establishment of planning departments, and (d) involvement of top management in the planning process. On the

[19] Derfuss (2009, 2015, 2016) has conducted three meta-analyses regarding (a) individual consequent variables, (b) context factors, and (c) the relationship with performance of participative budgeting. His results mirror the spurious and conflicting findings of the contingency studies regarding the involvement of low, middle, and top management in the planning process in my review.

one hand, the organizational structure also has a significant influence on the planning responsibilities and the decentralization of planning activities. On the other hand, findings with regard to (a) the intensity of planning, (b) the formalization of planning, and (c) the involvement of different management levels are contradictory.

Interaction fit studies show a positive performance effect, if the rational approach to planning is fitted to the organizational structure as contingency factor. For instance, Miller (1987) shows in a sample of 97 small and medium-sized organizations the strong relationship between decentralization of an organization and a rational approach to strategy formulation for successful companies, whereas unsuccessful companies do not show such a pattern. The majority of interaction fit studies involving organizational structure provide nonsignificant findings, however. In summary, these findings weaken the relevance of organizational structure as a contingency factor of the CP system.

Researchers frequently argue for a reintegration of content- and process-related research in strategic management (e.g., Huff and Reger 1987; Hutzschenreuter and Kleindienst 2006) and the integration of strategy as a determinant of the design of management control systems (e.g., Chenhall 2003; Dent 1990; Langfield-Smith 1997). Consequently, 33 selection fit studies examined the *strategy of an organization* as a context factor of the CP system. These studies show that (a) information used in planning, (b) planning horizon, (c) control focus of planning, and (d) involvement of top management are all influenced by an organization's strategy. For instance, in a study of 139 hospitals prospectors developed a significantly higher market research competence and used more and better information regarding their competitive environment. This competence essentially allows prospectors to look constantly for opportunities and to estimate the risks and the prospective profitability of these opportunities (Veliyath and Shortell 1993). Surprisingly, results regarding the involvement of several management levels below the top and the planning responsibilities of these management levels are spurious. Thus, who participates in formulating and implementing a strategy seems not to be determined by a specific strategy, at least in selection fit studies. This picture changes if the 19 causal-model tests of interaction fit studies are examined. Performance effects are visible if (a) the sophistication of CP, (b) the decentralization of planning activities, (c) the top management involvement, and (d) the control focus of a planning system fit the strategy of an organization. Thus, strategy seems to be an important context factor of CP. This conclusion is also implied by its ranking in Table 5 and the 76.36% of significant causal-model tests in selection fit studies.

Four context factors of the CP system may bridge the gap between the contingency approach, which is informed by organizational science, and behavioral approaches, which are informed by psychological theories: *planning philosophy*, *management philosophy*, *organizational culture*, and *top management team characteristics*. Psychological theory assumes that the behavior and decisions of individuals depend on their mental representations of their environment, such as beliefs, attitudes, and norms (Birnberg et al. 2007).

Consistently with this notion *planning philosophy* is defined as the attitudes and norms of organizations' members with regard to planning as a rational endeavor and refers to the "consciousness of planning and control" (Scholz 1984) in an organization. This context factor reveals a significant influence on many design aspects that are related to the rational approach to planning, such as (a) the planning engagement, (b)

the planning intensity, (c) the planning instruments, (d) the information used for planning, and (e) the length of the planning horizon. Overall, 89.74% of all causal models in selection fit studies involving planning philosophy are significant. For instance, Ramanujam and Venkatraman (1987) identify resistance to planning, meaning negative attitudes towards planning, as a major barrier to rational planning that significantly decreases planning intensity and planning efficiency.

In a similar vein *management philosophy*, which is the characteristic management model or the general management concept of an organization, has a substantive influence on the CP system. In summary, 93.75% of all causal models tested in selection fit studies are significant. Management philosophy is strongly related to aspects of the rational approach to planning, such as (a) the occurrence of planning in organizations, (b) planning sophistication, and (c) the existence of a planning department. For instance, a deliberate strategy management philosophy has been found to be related to the use of strategic management accounting techniques and the involvement of management accountants in the strategic decision-making process (Cadez and Guilding 2008). Töpfer (1978) noticed in a sample of large German manufacturing companies that management by objectives, management by exception, and management by delegation were all related to higher planning sophistication when these management philosophies were rigorously implemented.

The broader construct of *organizational culture* (i.e., "the collective programming of the mind" (Hofstede 2001, p. 9) that distinguishes between members of different firms) has been tested in four studies with regard to its influence on the design of the CP system and proved to have only marginal exploratory power (e.g., Chakravarthy 1987; Harris and Ogbonna 2006; Menon et al. 1999; Pulendran et al. 2003). In contrast, the composition and characteristics of the *top management team* shape the CP system because 74.19% of all causal models examined in selection fit studies are significant. This context factor is consistently related to (a) the engagement in planning, (b) the sophistication of planning, and (c) the rationality of planning in organizations.

The above conclusions are subject to three limitations, however. First, planning philosophy, management philosophy, organizational culture, and the top management team have been investigated only in 14, 11, 4, and 28 studies, respectively. As shown in Table 5, replication of causal-model tests in selection fit studies, which involve these four context factors, is again noticeably rare. Second, only management philosophy has been investigated by two interaction fit studies. In an exploratory study Bracker et al. (1988) demonstrated that planning sophistication and the entrepreneurial orientation of the management team interacted to explain significant performance differences in small organizations in a growth industry. Third, the high percentage of significant models in selection fit studies of planning and management philosophy may also be caused by endogeneity problems of the related empirical studies. Endogeneity may arise from the omission of possible confounding variables, for example if the planning philosophy and the design of the planning system are both based on the same conscious design decision of an organization's management. However, *planning philosophy*, *management philosophy*, *organizational culture* are strongly related to the norms, attitudes and beliefs of an organization's members, which develop over time and may not be set at one specific point of time by a conscious design decision. In contrast, the top management team characteristics may be subject to such a decision for instance by

the board of directors.[20] In summary, planning philosophy, management philosophy, and characteristics of the top management team are strongly associated with the CP system. It remains unclear, however, if these associations also include substantial performance effects when examined in interaction fit studies because almost no such studies exist.

With some limitations the internal context factors previously discussed showed distinctive patterns of relationships with many design aspects of the CP system and in different settings. I turn now to four context factors for which this is evidently not the case.

First, *planning experience*, defined as the number of years an organization has been engaged in planning, shows associations with the CP system because 62.86% and 40.00% of the causal models in selection fit studies and in interaction fit studies are significant, respectively. Consistent findings only emerge, however, regarding the association of planning experience with the rationality of CP and the existence of a mission or vision statement.

Second, the association between *technology* and the CP system remains vague. Technology is an important part of structural contingency literature and pioneered as a contingency factor by theorists such as Perrow, Thompson, and Woodward in the 1960s (Donaldson 2001). The studies in my sample followed Woodward (1965) and distinguished between different stages of technological advancement, such as small batch production, mass production, and process production. Production becomes more automated and capital-intensive when organizations move to more advanced stages. Consequently, the majority of studies employed capital intensity as an indicator for technology (e.g., Kukalis 1991). Capital-intensive and inflexible technology has been theorized to require intensive planning because of the long-term commitment involved in such investment decisions (e.g., Denning and Lehr 1972; Yasai-Ardekani and Haug 1997). Consequently, technology is associated with (a) engagement in CP, (b) the planning horizon, and (c) the use of specific planning instruments. This context factor has no relationship with many of the other design aspects of the CP system, however, and only 52.38% of the causal-model tests in selection fit studies are significant. Findings with regard to planning responsibility and involvement of different management levels are also contradictory. The picture becomes even more blurred in interaction fit studies, which are almost non-existent and include mainly nonsignificant tests of causal models. An exception is a study by Kukalis (1991), which showed the positive performance effects of a fit between high capital intensity and the extensiveness of CP.

Third, another context factor investigated is the *ownership* of an organization, which refers to the distinctions between private sector or public sector organizations, between private or public enterprises, and between independent organizations or subsidiaries. These seem to be different concepts, but they can be meaningfully grouped under the question of who owns an organization and whether it has an influence on the design of the CP system. Findings from empirical studies are vague because almost 47% of the selection fit models are nonsignificant, replication is rare, and no interaction fit study

[20] I would like to thank an anonymous reviewer for highlighting the limitation of endogeneity as well as providing ideas to address this limitation.

exists. However, ownership may be associated with the rationality of planning and the review and audit period of plans.

Fourth, the *product portfolio* (e.g., its diversity, size, and the markets served) also shows only weak associations with the CP system because the majority of causal-model tests show nonsignificant findings and no clear pattern of relationships emerges from selection fit studies. Exceptions are the responsibility for planning activities and the completeness of the functional plans prepared, which may be related to the product portfolio of an organization.

Although a number of selection fit studies examined the effects of planning experience, technology, ownership, and product portfolio, the number of related interaction fit studies is noticeably small for each of these context factors. Replication of causal models is also to a large extent missing. Thus, the conclusions previously drawn are seriously limited. In summary, these four context factors are related to some design aspects of the CP system but should be investigated in further interaction fit studies. Such studies would provide more evidence with regard to the performance effects of a fit between these context factors and the CP system.

Four internal context factors are investigated by a small number of studies but show a high percentage of significant findings in selection fit studies: *functional dependence*, *task interdependence*, *capital structure*, and *organizational formalization.* Replications of causal-model tests and interaction fit studies are almost non-existent. Consequently, further research investigating these context factors in selection and interaction fit studies is necessary. This is especially important with regard to task interdependence because it is a crucial contingency factor in the structural contingency theory (Donaldson 2001).

Two other internal context factors which have been tested are *stage of life cycle* and *organizational age*. These context factors show either contradictory findings across studies or nonsignificant causal-model tests. Thus, these context factors provide only marginally explanatory power with regard to a contingency theory of corporate planning.

4.4 External context factors of the corporate planning system

Most of the external context factors are closely related to the concept of uncertainty. Task uncertainty is a cornerstone of structural contingency theory and is largely caused by environmental uncertainty (Donaldson 2001). Consequently, studies in my review focus on *environmental uncertainty* and its dimensions, such as environmental dynamism or environmental complexity. Nineteen studies examine environmental uncertainty but only 50.00% of causal-model tests in selection fit studies are significant, as shown in Table 5. Surprisingly, no consistent relationships with the CP system emerge from these studies. Findings with regard to planning sophistication or planning intensity are contradictory and replication of causal-model tests involving other design aspects of the CP system is rare. Following structural contingency theory as task uncertainty increases formalization is reduced and decentralization increases, too (Donaldson 2001). Contingency studies of CP do not, however, examine relationships between environmental uncertainty and formalization or decentralization of CP.

These 19 studies examine both objective measures of environmental uncertainty and subjective measures, which are termed perceived environmental uncertainty. A possible explanation of my findings may be that these approaches are not only distinct measures of the same construct but also different constructs at the theoretical level.

Only seven causal-model tests examine the performance effects of a fit between environmental uncertainty and the CP system in interaction fit studies. Five of these causal-model tests are significant and show a performance-increasing fit between uncertainty and a rational approach to planning as implied by higher planning sophistication, increased top management involvement, and higher planning process capability.

Thanks to the seminal work of Duncan (1972) many authors focus on the two environmental dimensions that strongly influence perceived environmental uncertainty. In his study environmental dynamism contributed much more to perceived environmental uncertainty than environmental complexity (Duncan 1972). Consequently, 50 studies in my sample focused on *environmental dynamism* as context factor as opposed to only 16 studies which focused on *environmental complexity*. For environmental dynamism, however, no clear pattern of relationships emerges because only 50.55% of the causal-model tests in selection fit studies are significant. Only planning process comprehensiveness and plan completeness are shown to be related to environmental dynamism. Associations with many other design aspects of the CP system show inconsistent findings across studies. With regard to environmental complexity, selection fit studies exhibit a positive relation to a rational approach to planning, such as increased planning extensiveness, increased planning sophistication, and a clear relationship with planning responsibility. In addition, 66.67% of the causal-model tests in selection fit studies that involve environmental complexity are significant. Thus, in order to cope with environmental complexity organizations seem to adjust their CP system in congruence with the rational approach to planning.

Again, interaction fit studies show quite different findings. A performance-increasing fit seems to exist between higher environmental dynamism and increased decentralization in CP. Only 56.41% of the 39 causal-model tests in interaction fit studies that examine environmental dynamism are significant, however, and the majority of these causal-model tests show contradictory findings. Only six causal models involving environmental complexity have been tested and only findings with regard to planning extensiveness are in accordance with selection fit studies.

Other related concepts such as *environmental capacity*, which includes environmental munificence and environmental hostility as extremes of a continuum, *environmental unpredictability*, *technology uncertainty*, and *demand uncertainty* are tested in a small number of studies. Interestingly, these sub-constructs of uncertainty also mirror ideas from Duncan (1972), who distinguishes several components comprising the organizational environment, such as the customer component, the technology component, and the competitor component. He also discusses the capacity of the environment, which allows sustainable growth of an organization (environmental munificence), and its unpredictability.

Two observations are noteworthy with regard to these four external context factors. First, selection fit studies on environmental capacity show mainly nonsignificant findings whereas 66.67% of the causal-model tests of interaction fit studies are sig-

nificant. In three interaction fit studies sophisticated and highly rational CP systems fit a high level of environmental hostility in such a way as to increase OP (e.g., Miller and Friesen 1983; Rauch and Frese 1998; Slevin and Covin 1997). According to these three studies, however, no selection fit exists. Together, these two findings underscore the criticisms of pure selection fit studies. The fit-relationship may be masked by ineffective organizations and may only be revealed for effective organizations by direct examination of the performance effects of fit.

Second, a study by Atuahene-Gima and Li (2004) focused on the different effects of technology uncertainty and demand uncertainty on planning process comprehensiveness. This study provides evidence on the first element of the core contingency approach paradigm since it establishes an association between these constructs. In a second step the authors examine interaction fit models and show the different effects of demand uncertainty, which has to be counteracted by high process comprehensiveness to increase effectiveness, and technology uncertainty, which clearly reduces the performance effects of process comprehensiveness.

In summary, environmental complexity is strongly related to the design of the CP system. Results with regard to environmental uncertainty and other sub-dimensions of this higher-order construct are mixed. Thus, future studies should focus on environmental complexity as well as the higher-order construct in interaction fit studies. The different environmental components from which uncertainty may result (e.g., customers or product technology) seem also be related, however, to the design of the CP system. These conclusions require future research, which could also address the different sources of uncertainty in the environment of an organization.

Another potential source of uncertainty as advocated by Duncan (1972) is the competition which is faced by an organization. Consequently, 11 studies examine the influence of different levels of *competition* on the design of the CP system and six studies focus on the *competitive position* of an organization. Again, replication of causal-model tests is rare in these studies and findings in selection fit and interaction fit studies differ. Selection fit studies show that organizations use a rational approach to planning when the level of competition increases. For instance, competition influences (a) the planning intensity, (b) the use of budgets, and (c) top management involvement. Planning sophistication is not related to competition, however, as revealed by four studies (e.g., Hadaschik 1982; Kreikebaum 1992; Töpfer 1978; Yasai-Ardekani and Haug 1997). A performance-increasing fit between these design aspects and competition seems not to exist, because eight out of nine causal-model tests in interaction fit studies are nonsignificant. Competitive position also has no influence on the design of the CP system since the majority of causal-model tests in selection fit and interaction fit studies are nonsignificant.

Industry and *region* have been tested in a series of studies, 63 and 22 respectively. Unfortunately, findings regarding these context factors are rather mixed and dependent mostly on the specific sample of a study. Thus, which regions or industries are included and compared had more influence on the results than the underlying theoretical logic. The theoretical logic of these studies mostly draws from arguments that involved other context factors such as culture or environmental uncertainty. In addition, two studies directly examined the relationship of *national culture* and CP. These three external context factors seem to develop a significant influence only on some design aspects

of CP systems. Consequently, future research should focus directly on the specific context factors addressed in the theoretical argument and sample carefully with regard to regions and industries.

In summary, selection fit studies show a clear picture for some context factors which is often lost when interaction fit studies are examined. Interaction fit studies, which also address the third element of the core contingency approach paradigm, show a clear tendency to nonsignificant findings. My conclusions with regard to the nonsignificant findings in interaction fit studies do not change whether OP or planning effectiveness is chosen as a dependent variable by the researchers. Organizational performance may be influenced by many factors, which inevitably leads to spurious and nonsignificant findings. Therefore, Venkatraman and Ramanujam (1987) recommend the use of planning effectiveness as dependent variable in studies testing the performance effects of CP. However, as Table 3 shows only four studies have employed planning effectiveness. Replication of causal models and interaction fit studies involving context factors, which show strong relationships with CP in selection fit studies, are rare and thus provide fruitful avenues for future research on a contingency theory of corporate planning.

4.5 System fit studies

Table 6 shows seven studies that directly examined a system fit approach to the design of the CP system. Selection fit and interaction fit studies implicitly assume independence in two ways: first between context factors and second regarding the different effects of context factors on the CP system. System fit studies examine the combined effects of a number of context factors on several design aspects and also may try to determine a performance-enhancing fit between them.

Denning and Lehr (1972) provide the first empirical evidence with regard to the combined effects of context factors on CP system design. In addition, they demonstrate that the number of employees is the best discriminator with regard to organizational size, which is in accordance with the theoretical rationales of structural contingency theory. No performance effects are examined, however, and only one design aspect of the CP system is investigated.

Grinyer et al. (1986) employ factor analysis to generate five context and four planning system configurations. Only one out of 20 hypotheses linking these two sets of empirically derived configurations is corroborated in a correlation analysis of these factors. These findings challenge the idea of a system fit between context factors and the CP system. With hindsight, the mix between the empirical generation of configurations via factor analysis, the separation of context configurations and planning system configurations in combination with a priori reasoning for hypotheses relating these empirical generated configurations may have masked existing system fits. In addition, Grinyer et al. (1986) employ a small sample size (48 organizations) and do not test for the performance effects of the fits hypothesized.

Chakravarthy (1987) directly establishes a fit between the planning system and its external context (e.g., product portfolio and financial pressure from previous performance) or internal context (e.g., organizational culture). He examines the effects of internal fit and external fit on planning effectiveness in a regression analysis. Planning

Table 6 Overview of key characteristics of seven system fit studies

Criteria	Denning and Lehr (1972)	Grinyer et al. (1986)	Chakravarthy (1987)	Veliyath and Shortell (1993)	Greenley and Bayus (1994)	Lei et al. (1994)	Yasai-Ardekani and Haug (1997)
Context factors	• Technology	• Environmental dynamism	• Organizational culture	• Strategy	• Organizational size	• Strategy	• Competition
	• Organizational size	• Competitive position	• Product portfolio	• Environmental capacity	• Region		• Technology
	• Organizational growth	• Technology	• (Planning experience)		• Industry		• Strategy
	• Organizational structure	• Organizational complexity					• Organizational complexity
	• (Planning experience)						
Design aspects of the corporate planning system	• Planning engagement	• Existence of a planning unit	• Planning co-ordination flow	• Existence of a planning unit	• Planning sophistication	• Planning horizon	• Planning formalization
		• Planning formalization	• Link between different planning levels	• Level of implementation	• Planning instruments	• Decentralization in Planning	• Planning intensity
		• Planning responsibility	• Review/audit period of plans	• Content of plans: information	• Content of plans: information	• Planning formalization	• Planning sophistication
		• Planning instruments	• Planning responsibility	• Decentralization in Planning	• Planning frequency	•Planning integration	• Top management involvement
		• Plan completeness	• Control focus		• Top management involvement		• Line management involvement
			• Link with other management systems		• Planning supported by electronic data processing		• Planning horizon

Table 6 continued

Criteria	Denning and Lehr (1972)	Grinyer et al. (1986)	Chakravarthy (1987)	Veliyath and Shortell (1993)	Greenley and Bayus (1994)	Lei et al. (1994)	Yasai-Ardekani and Haug (1997)
Method	• Discriminant analysis	• Factor analysis	• Factor analysis	• Misalign-score obtained through Euclidian distance metric	• Cluster analysis	• Cluster analysis	• Regression with interaction terms for context factors
		• Correlation analysis	• Regression analysis	• Correlation analysis	• One-way analysis of variance	• One-way analysis of variance	
Results	58% of planning and 78% of non-planning companies could be classified correctly	One out of 20 hypothesized system fits is corroborated. A context of high inflexibility of the core technology in larger organizations with a weak competitive position is related to a corporate planning system with (a) many specialist planners, (b) highly sophisticated planning techniques, and (c) decentralized planning responsibility	Misfit does not reduce planning effectiveness. Planning effectiveness is not related to financial performance	Misfit clearly lowers performance for companies employing a prospector strategy but not for companies following a defender strategy. Performance of prospectors was significantly higher than performance of defenders	Four different clusters of marketing planning systems emerge, which differ with regard to organizational size and region but not by industry and planning effectiveness	Four different clusters of corporate planning systems and strategy. These clusters also differ with regard to organizational performance when organizational size and industry effects are controlled	A clear interaction between the four context factors exist and influences the planning intensity, the planning sophistication, and the planning horizon but not planning formalization, top and line management involvement

Table 6 continued

Criteria	Denning and Lehr (1972)	Grinyer et al. (1986)	Chakravarthy (1987)	Veliyath and Shortell (1993)	Greenley and Bayus (1994)	Lei et al. (1994)	Yasai-Ardekani and Haug (1997)
Limitations	• No examination of performance effects	• No examination of performance effects	• No direct examination of financial performance effects of misfit	• System fit was tailored to strategy type using the best performing companies of each type as benchmark	• Cluster analysis only encompass design aspects of the planning system and not also context factors	• Cluster analysis encompass only one context factor	• No examination of performance effects
	• Only one planning aspect investigated	• Empirical generation of context and planning system configurations combined with a priori reasoning based on these configurations					• Interaction of these four context factor on each of the six planning aspects separately

This table lists characteristics of seven contingency-based corporate planning studies that employ a system fit approach

effectiveness is measured as a rating assigned to a planning system by its users and thus is in concordance to the *satisfaction with planning systems* dimension of the planning effectiveness construct as developed by Ramanujam et al. (1986). Chakravarthy obtains three findings with regard to a contingency theory of corporate planning. First, the majority of companies in the sample are in misfit both with external context (70%) and with internal context (68%). Second, satisfaction with planning systems is unrelated to current OP. Third, his results show that neither characteristics of the planning system nor the internal fit nor the external fit are significantly related to satisfaction with planning systems, whereas planning experience (e.g., novelty of a planning system) is significantly related to this dimension of planning effectiveness. Thus, a planning system may just be rated based on its fad value (i.e., novelty) and not tailored to its context in an appropriate way (Chakravarthy 1987).

> This study suggests that the lack of fit between a planning system and its internal and external contexts is not a powerful determinant of how it is evaluated by the firm's managers. Consequently, corrective action to remedy any misfits may not be forthcoming. (Chakravarthy 1987).

This finding underscores the SARFIT model, in which adaptation follows serious declines in OP as a feedback mechanism and not through direct observation of internal and external context and recognition of misfits by managers (Donaldson 2001).

Another empirical method for examining systems fit in relation to OP is used by Veliyath and Shortell (1993). They identify 104 hospitals, which follow a prospector strategy, and 35 hospitals with a defender strategy. Of these two groups the highest-performing 20%-quantile is chosen as a calibration sample and thus establishes the ideal set of planning system characteristics. Following the profile deviation approach a misalign score for each remaining hospital in regard to this ideal profile is calculated and correlated with profitability. For prospectors a significant and negative correlation coefficient confirms the misfit hypotheses. For defenders the correlation coefficient was negative but nonsignificant. On the one hand, this finding may be explained by the small sample size for hospitals following a defender strategy (i.e., 27 hospitals without the calibration sample). On the other hand, the SARFIT model and Veliyath and Shortell (1993) provide a theoretical explanation. The sample of defenders has the lowest mean profitability of all subsamples and this mean is well below the average profitability of the whole sample. Since the feedback mechanism in the SARFIT model is provided by low OP and the authors employed a cross-sectional sample and did not control for previous performance, defender hospitals may have already begun to take remedial actions. Thus, the relationship between misfit and OP may be attenuated in this study.

Two studies employ cluster analysis to examine system fit between CP and its context (i.e., Greenley and Bayus 1994; Lei et al. 1994). Greenley and Bayus (1994) identify four clusters of marketing planning systems, which differ significantly with regard to organizational size (i.e., large organizations are sophisticated planners) and their country of origin (i.e., sophisticated planners are mainly located in the United Kingdom). These groups do not differ, however, with regard to their industrial affiliation and their planning effectiveness. Thus, the planning systems in these organizations seem to fit their context at a similar level of performance. In a comparable study Lei

et al. (1994) differentiate four clusters of organizations that differ not only with respect to their pursued strategy but also fit the design of their planning systems to this strategy. Moreover, their study also establishes significant performance differences (e.g., measured as return on assets) between these four clusters. This finding highlights the different performance levels of different system fits of strategy and CP systems.

Additional evidence on the multiple interaction effects of context factors is established by Yasai-Ardekani and Haug (1997), who regress two-way, three-way, and four-way interactions of context factors on each of six planning dimensions. In their study competition, technology, organizational complexity, and strategy interact in their relationship with the CP system. However, no performance effects of the different system fits are examined.

In summary, these seven studies use different methodological approaches to examine the joint effects of context factors on either single design aspects of the CP system or distinct configurations of this system. Their results provide empirical evidence that a system fit between the CP system design and context factors, especially the strategy of an organization, may exist.[21] One study implements a direct approach to measure misfit (i.e., Chakravarthy 1987). Only three out of seven studies directly examine the OP effects of such a fit (i.e., Greenley and Bayus 1994; Lei et al. 1994; Veliyath and Shortell 1993). System fit, however, may also influence OP as assumed in the core paradigm of the contingency approach. Moreover, the feedback mechanism of the SARFIT model provides a theoretical explanation for the nonsignificant findings of at least two of these studies. Consequently, further empirical research with regard to system fit and the SARFIT model in the context of a contingency theory of corporate planning is required.

5 Implications for future research

Researchers in the field of strategic management have highlighted recently the differences between theoretical and empirical contributions as well as the characteristics of high-quality research in both areas (Oxley et al. 2010). Consequently, I discuss possible theoretical advances and empirical frontiers of a contingency theory of corporate. This is not to say that these two types of research should not be linked. As philosophers of science argue: (implicit) theories build the foundation of empirical enquiry and empirical results may alter or even falsify a theory (Popper 2010).

5.1 Theoretical advances towards a contingency theory of corporate planning

A first step towards a comprehensive contingency theory of corporate planning may be the reduction of the bewildering array of potential contingency factors. A similar approach was advocated by Hofer (1975) more than 40 years ago in his discussion of

[21] Also it does not comply with the inclusion criteria of this review, the article of Chenhall and Langfield-Smith (1998) provides another outstanding example of a system fit study. In this study the system fit of an organization's strategy, six different management techniques (encompassing also strategic planning techniques) and six different management accounting practices are examined with a cluster analysis. Organizational performance is compared across the resulting six clusters to examine system fit.

a contingency theory of business strategy, which is part of the content-related research tradition in strategic management. He identified 54 context factors for business strategy, which compare rather well with the 30 context factors identified in this review.

Given the results of my review and supported by arguments in the structural contingency theory (Donaldson 2001) I suggest that the key contingency factors in a contingency theory of corporate planning are (a) management and planning philosophy, (b) task interdependence, (c) organizational size, and (d) environmental uncertainty. Thus, the outline of a contingency theory of corporate planning emerges from this review.

Management philosophy and planning philosophy are related to the design of the CP system in both selection fit and interaction fit studies and across a number of research settings. Their importance is underscored by studies which relate top management team characteristics to design aspects of the CP system. Thus, CP systems must fit the planning and management philosophy of an organization as created and advocated by its top management.

Task interdependence is also related to the design of the CP system. On the one hand, it may cause a higher level of coordination requirements and thus a rational approach to planning. On the other hand, it may also foster flexible and creative planning in order to allow fast adjustments in plans and the design of the CP system. Although this contingency factor is directly addressed in only two studies, these studies show relationships with different aspects of CP. Moreover, other important context factors such as strategy, organizational structure, or capital structure, as well as context factors with mainly inconsistent findings (e.g., product portfolio or ownership), may contribute to task interdependence in different ways and to different degrees (Donaldson 2001). An innovation strategy, for example, invokes reciprocal interdependencies among departments such as research and development, production, and marketing, which in term require a high level of integration that is provided by sophisticated CP systems (Miller et al. 1988).

Organizational size also taps the coordination requirement posed by large and complex organizations and demands an increased rationality in terms of CP (Brews and Purohit 2007). Yet directly introducing organizational complexity as a higher-order construct combining organizational size and organizational structure provides only marginally explanatory power in the studies reviewed. Organizational complexity taps both contingencies' organizational size and task interdependence. Thus, it may develop conflicting requirements with regard to the design of a CP system, which in turn may explain differences in findings.

Environmental uncertainty, as reflected by context factors such as environmental complexity, environmental dynamism, or environmental capacity, also seems to increase the rationality of CP (Brews and Purohit 2007).

A contingency theory of corporate planning should at least include two dimensions of planning that reflect the two distinct planning approaches of rational planning and incremental planning. As shown in the discussion above, these two planning dimensions are related to the key contingency factors and reflect many design aspects of the CP system, such as planning formalization, planning sophistication, planning responsibility, and planning decentralization. The solidity of this argument is increased by Pulendran et al. (2003), who combine planning comprehensiveness, planning for-

mality, planning interaction, and planning rationality in a highly valid and reliable one-dimensional measure of rational planning. As Brews and Hunt (1999) argue, however, rational and incremental planning are not extremes on a continuum but dimensions, which are equally important in organizations. Alternatively, contingency studies may employ typologies of planning systems, which also integrate many of the design aspects of CP, such as the distinction between command, symbolic, rational, transactive, and generative modes of strategy-making processes developed by Hart (1992).

This sketch of a contingency theory of corporate planning needs much more theoretical work based on a priori reasoning if it is to satisfy the requirements of a high-quality theory. In order to render it "(1) unambiguous, (2) rigorously derived, (3) measurable and (4) plausible" (Oxley et al. 2010) the relations briefly outlined above need to be developed further. Moreover, a comprehensive model of the CP system needs to be developed which links the 54 design aspects of CP to the rational approach and the incremental approach of planning. Taking the different subsystems of the CP system into account, more theoretical work on the relations between these subsystems is required (e.g., information flow or changing planning responsibilities across these subsystems).

More theoretical work is also required on the characteristics of OP as an empirical construct because it is the major dependent variable in a contingency theory of corporate planning. Such theoretical work should be based on the core paradigm of the contingency approach. Organizational performance is a second-order construct consisting of at least four equally important dimensions, that is, profitability, liquidity, growth, and stock market performance (Hamann et al. 2013). A fit between the four contingency factors and both planning approaches may have different effects on these four OP dimensions or planning effectiveness and thus may partially explain diverse findings in interaction fit studies.

In addition, the SARFIT model includes OP as a feedback mechanism. Studies in the wider sample of 305 studies provide preliminary evidence that this model is consistent with a contingency theory of corporate planning. First, two studies found a negative relationship between the former performance of an organization and the probability to initiate planning, that is, a poorer performance increased the occurrence of CP in organizations (i.e., Harris and Ogbonna 2006; Kudla 1976). Second, Bantel (1993) demonstrated a positive relationship between performance volatility, which is associated with organizational risk and crisis, and planning formality. Third, a performance crisis and replacement of the top management, which typically follows a performance crisis, were among the top reasons to initiate planning in a number of studies (e.g., Eppink et al. 1976; Gupta 1987; Taylor and Irving 1971). These findings correspond with the rationale of the SARFIT model. More theoretical and empirical research is required with regard to the application of the SARFIT model in the context of CP.

5.2 Enriching a contingency theory of corporate planning with related theories

A contingency theory of corporate planning may also greatly benefit from incorporating ideas from related theories, such as (a) upper-echelon theory, (b) the levers of

control framework and the concept of dynamic tension, as well as (c) the concept of complementarities.[22] Upper-echelon theory proposes a relationship between top management characteristics and strategic choices, such as production innovation or acquisitions, and ultimately organizational performance (Hambrick and Mason 1984). Strategic choices are complex and of major significance for an organization. In such decisions the bounded rationality, the previous knowledge, and the opinions of managers become important because the complexity prohibits a purely techno-economic optimization. The implementation and the development of a highly sophisticated planning system is such a strategic choice. Consequently, management and planning philosophy, which represent specific values of the top management regarding leadership and planning, are identified as important contingency factors of corporate planning in this review. Whereas opinions and values are relatively hard to measure objectively, the characteristics of top management teams (e.g., age, education and functional background) are directly observable. Thus, consistent with the reasoning of upper-echelon theory, top management characteristics exhibit a significant relationship with the design of corporate planning systems. However, these characteristics are only readily available proxies for the harder to measure managerial values (Carpenter et al. 2004). Additionally, dynamic and recursive models of upper-echelon theory may be relevant for future research. The planning and management philosophy may shape the design of corporate planning systems and this design in turn may influence the values of managers regarding leadership and planning in an organization (Carpenter et al. 2004). Exploring these links between upper-echelon and contingency theory provides a fruitful avenue for future research.

The Levers of Control framework of Simons (1995) is based on the opposing forces of negative and positive management controls. However, newer research focuses on constraining and enabling roles of these controls (Tessier and Otley 2012). These two roles are also related to the diagnostic and interactive use of budgets. Constraining roles of management controls reduce options and thus increase the predictability of outcomes. Similarly, a diagnostic use of budgets is constraining because it focuses on the deviations from previously defined targets. Budgets in itself reduce options for specific actions because they limit the available resources. In contrast, enabling roles of management controls foster creativity and flexibility. Creativity and flexibility are also promoted by an interactive use of budgets focusing on discussion and learning during the process of budget formulation as well as in the implementation phase. Additionally, the joint application of (a) constraining and enabling uses of plans (as a specific management control system), of (b) diagnostic and interactive uses of budgets as well as (c) the rational and incremental planning approaches may create dynamic tensions. Dynamic tensions relate to the balance between predictable goal outcome and creative innovation (Henri 2006). The above dichotomies of roles, uses, and planning approaches mirror this balance, especially if employed simultaneously in organizations. Interesting research questions arise from discussions of the fit between these dynamic tensions in corporate planning processes as well as contingency factors. The dynamic tensions and the resulting dialectically styled interactions during

[22] I would like to thank an anonymous reviewer for these suggestions.

planning processes provides important information that increases innovation and flexibility (Henri 2006) and may be beneficial in highly uncertain environments. Thus, applying conceptual ideas of the levers of control framework as well as findings from related contingency based management control studies to corporate planning provides another interesting approach for future research.[23]

The concept of complementarities has gained increased attention in organizational research and management control research (Ennen and Richter 2010; Grabner and Moers 2013). Complementarities exist if two elements of a system reinforce each other whereas increasing the use of one element increases the value of an increased use of the other element (Ennen and Richter 2010). The concept of fit in contingency theory provides insights into the relationship between context and the design of a system. Complementarities, in contrast, provide valuable insights into the meaning of a system (Grabner and Moers 2013). Thus, this concept may enrich the contingency theory of corporate planning by providing theoretical insights and inferences to develop a better understanding of what is a CP system and how the different elements of this system complement each other and ultimately fit with the context of this system. Especially, transferring the ideas of Grabner and Moers (2013) with regard to complementarities and management control systems may provide a valuable starting point of similar approaches towards a better understanding of the CP system as well as the incremental and rational approaches of planning.

5.3 Empirical frontiers towards a contingency theory of corporate planning

This review is the first step in synthesizing empirical research on a contingency theory of corporate planning. Other steps must follow. A logical advancement of this review are meta-analyses estimating the total effect size of different context factors based on findings from selection fit and/or interaction fit studies. Natural candidates for such enquiries are the context factors that have been investigated in a large number of studies, such as organizational size, organizational structure, and strategy. Meta-analyses can correct for sampling error and artifacts as well as compare different research design characteristics regarding their influence on the total effect size (Hunter and Schmidt 2004). Thus, findings from meta-analyses may supplement and strengthen the conclusions drawn in this review.

I identified a scarcity of studies addressing distinct subsystems of the CP system (e.g., long-range planning, action planning, and budgeting) at the organizational level of analysis besides the strategy formulation system. For example, management control researchers have focused on the individual and the group level of analysis (see for instance Luft and Shields 2003, maps A and B). Empirical studies focusing on underexplored subsystems of the CP system may thus inform researchers and practitioners alike about relationships between the context factors and design characteristics

[23] Whereas the early contingency approach highlights the balance and selection of competing roles, uses or approaches, the paradox literature examines conditions in which these roles, uses or approaches can be attended to simultaneously (Gibson and Birkinshaw 2004; Smith and Lewis 2011). Thus, research examining planning or management control systems through a paradox lens may also enrich a contingency theory of corporate planning.

of these subsystems. Additionally, studies explicitly linking two different subsystems of CP in their research design are also rare. A notable exception is the study conducted by Horváth et al. (1985), in which they directly measured the link between action planning and budgeting. Consequently, they narrowed two gaps in the literature, which are still open for further empirical enquiry. Unfortunately, this study is published only in German, which limits its impact on the CP research done elsewhere.

Another lack is apparent in relation to interaction fit and system fit studies as well as longitudinal studies. Only such studies are able to address all three elements of the core contingency approach paradigm. Thus, rigorous tests of the core paradigm in a comprehensive study provide a potential area for empirical enquiry on a contingency theory of planning. Another potential research area may address the feedback mechanism of the SARFIT model, which also requires longitudinal data. In order to gain new momentum and address these issues, future studies could replicate existing studies and render them longitudinal by asking the original researchers to provide the datasets of their studies. The studies done by Frederickson and colleagues in the 1980s provide an example of such a research approach (i.e., Fredrickson 1984; Fredrickson and Iaquinto 1989; Fredrickson and Mitchell 1984). In this regard also longitudinal in-depth case studies may provide important contributions towards a contingency theory of corporate planning.

Empirical studies on a contingency theory of corporate planning could also benefit from methodological advancements regarding measurement of OP and CP as important variables in this theory and the opportunity to empirically compare models of interaction fit and systems fit. Devinney et al. (2010) developed a distinct approach to measuring OP based on the logic of frontier analysis and using the technique of data envelopment analysis. Moreover, Hamann et al. (2013) developed a OP model with four reflectively measured dimensions: Profitability, Liquidity, Growth, and Stock Market Performance. In a similar line of thought, modelling corporate planning as reflective first-order formative second-order construct offers a possible way to improve measurement of this construct and allows to better capture the conceptual richness of corporate planning as is evident in the 54 design aspects identified in this review.[24] Thus, empirical studies merging the multitude of design aspects into meaningful first order constructs and using these constructs as defining constitutive dimensions of corporate planning are warranted. A majority of studies in my review rely on the same data-source for dependent and independent variables and measured CP as well as OP based on perceptual survey data. These studies may suffer from common method bias and endogeneity problems, which seriously limits the robustness of their results. Thus, the more superior research strategy encompasses the combination of perceptual survey data regarding CP and its contingency factors with objective OP data from annual reports. Additionally, Parker and Av (2010) developed a general framework to estimate multidimensional fit. Their approach can estimate and capture the underlying fit structure in a dataset by comparing interaction fit structures of two-way interactions with system fit structures in a systematic and statistically rigorous way.

[24] Jarvis et al. (2003) offers guidelines with regard to and an encompassing discussion of different types of first order and second order constructs. In management accounting research a similar reasoning is applied to the construct of interactive control systems (Bisbe et al. 2007).

In the early 1990s Kukalis (1991) stated:

> Contingency theorists claim that attempts to link … planning with performance will increase understanding of the effects of … planning on organizational performance under different situations, and will foster a consistent conceptualization of … planning characteristics and their relationships to varying firm and environmental characteristics. One must investigate the possible interrelationships among many variables to address this issue adequately. It is a formidable research task to explore large sets of situational and design variables in different types of settings. The difficulty of this task and an insufficient underlying theoretical base regarding … planning systems design, necessitated the selection of a number of contextual (independent) variables and several planning (dependent) variables.

In my review primary studies link 30 context factors with 54 design aspects of the CP system, which confirms the conclusion on the breadth of this research stream drawn by Kukalis 25 years ago. Of the potential 3240 different causal models combining the 30 context factors and the 54 design aspects of CP (1620 causal models for each selection fit and interaction fit studies) only 860 have already been examined. Merely closing the gaps does not adequately address the difficulties of empirical research on a contingency theory of corporate planning and may even not be theoretically justifiable. Thus, the question remains how this *formidable research task* can be approached by empirical studies in the future. Four potential answers emerge from this review and the literature.

First, some specific context factors call for future research. Environmental complexity, environmental uncertainty as a higher-order construct, and the latter's different sources in the environment of an organization should be examined in interaction fit studies. Similar studies are also required for strategy, technology, organizational structure, and task interdependence. Such research may clarify the influence of these context factors on the relationship between the design of the CP system and OP.

Second, a possible avenue is to empirically prioritize the context factors. This review provides the first step by examining the track record of context factors to show consistent results in a number of different research settings. In addition, meta-analytical studies may focus on specific design aspects of a CP system (e.g., the planning horizon, planning sophistication, or the existence of a planning unit) and estimate the total effect sizes of different context factors with regard to these aspects. Such studies may provide additional prioritizations of context factors based on their substantial effect on single design aspects of the CP system. Alternatively, more traditional studies may follow the approach of Hambrick and Lei (1985), who compare 10 potential contingency variables of business strategy with regard to their significance. This approach is part of the content-related research stream of strategic management and was based on the work done by Hofer (1975). Similar studies based on this review may also help to reduce the number of potential contingency factors and thus inform theoretical researchers which context factors are needed to build a more comprehensive contingency theory of corporate planning.

Third, consolidation of context factors and design aspects of the CP system may address the issue raised by Kukalis (1991). Complementary to theoretical approaches using a priori reasoning as advocated before, empirical studies may use factor analyses

or cluster analyses to identify more encompassing context factors. These analyses may be based on (a) data from new surveys using existing scales and indicators, (b) existing datasets, or (c) correlation matrices, which include meta-analytical generated and corrected correlation coefficients for total effects from the studies identified in this review. This last approach was used by Combs et al. (2005) in an attempt to analyze the dimensionality of the OP construct based on results from 374 primary studies.

Fourth, a combination of the constructive replication of studies and randomization of context factors included therein is another way to address the difficulties recognized by Kukalis (1991). Replication of studies is advanced by strategic management researchers as an alternative to significance testing (e.g., Lindsay 1995) or as a way to foster accumulation of knowledge (e.g., Singh et al. 2003). As shown in my sample of studies, however, even constructive replication is rare in management science (Dalton and Dalton 2008) and thus impedes synthesizing research methods such as meta-analysis. Replication is a means of determining if identical models hold over different settings. Consequently, replication of studies shows characteristics which facilitate growth of knowledge. It focuses on obtaining reproducible results and generalizing them to specific theories in research programs (Lindsay 1995), such as the contingency theory of corporate planning. Results and conclusions from this review are based on this rationale because I provide evidence on which causal models are shown to produce repeatedly significant and consistent results in different research settings.

Given the plethora of context factors and design aspects of the CP system for potential inclusion in such replication studies, the randomization of these factors can replace the subjective decision of researchers about which context factors and design aspects should be included. This argument is one of 10 guidelines for the empirical classification of organizations which have been advocated by McKelvey (1975). In the face of newer developments in statistical methods (e.g., structural equation modeling or cluster analysis) some of his guidelines seem rather obvious. Three core messages remain valid, nonetheless: define a proper population and employ an adequate sampling plan; reduce subjectivity in choosing factors to be included in a study by employing a probability sampling plan; and pay attention to the requirements of the statistical method applied. Additionally, the choice of contingency factors to be included in a study could also be theory-based when researchers combine the contingency approach with other theories as discussed above and these theories address specific contingency factors.

McKelvey's (1975) recommendations are also valid for empirical studies in this research program. Studies included in this review mainly addressed populations from the United States. They also relied on samples which often did not have enough variability regarding the context factors researched (e.g., organizational size). Researchers tended to decide subjectively on the factors to be included, ignoring other potential contingencies as well as important design aspects of the CP system. Taking into account the 30 context factors and 54 aspects of the planning system identified in this review, the randomization and probability sampling of factors to be included could guide additional inductive studies on a contingency theory of corporate planning. Results from these studies on the other hand could inform theorists and their work.

Construct measurement is another potential area for advancement, which would not only contribute to this research program but to management science as a whole. This review focuses on the conceptual level (i.e., the constructs involved in causal

models). Following the predictive validity framework the conceptual level is mirrored by the operational level representing the measurement approaches towards a construct (Bisbe et al. 2007). In this review 30 context factors and 54 aspects of the CP system were identified. Moving to the measurement level would have inflated these numbers even more because the measurement of theoretical constructs frequently changes from study to study. Empirical tests of theories and the identification of new empirical relations between constructs both require systematical validation of construct measurement (Venkatraman and Grant 1986). Consequently, establishing the validity of the constructs discussed in this review provides another potential avenue for empirical research.

6 Conclusion

Crossing the border between management control research and strategic management research I identified 195 studies on CP at the organizational level of analysis which were (implicitly) influenced by the contingency approach. The main findings and recommendations are summarized in Table 7. Three important conclusions with regard to a comprehensive contingency theory of corporate planning emerge from this review.

First, the cumulative growth of knowledge towards a contingency theory of corporate planning is limited because this research stream is highly fragmented and replication of findings is rare. In summary, 866 different causal models linked 30 context factors and 54 design aspects of the CP system and only 368 of these causal models were investigated at least twice. Consequently, I highlighted the importance of studies which reduce the plethora of context factors and design aspects of CP system.

Second, the selection fit approach and cross-sectional data form the basis of a clear majority of the 195 studies. In contrast, interaction fit or system fit approaches with longitudinal data are the more rigorous tests of a contingency theory of corporate planning. Consequently, empirical studies employing such research designs are important for the development of a contingency theory of corporate planning.

Third, four context factors of a CP system are highlighted by this review because selection fit studies show consistent results of these context factors across different research settings. These context factors are: (a) management and planning philosophy, (b) organizational size, (c) environmental uncertainty and its dimensions especially environmental complexity, and (d) task interdependence and related constructs such as strategy, technology, or organizational structure. This set of context factors facilitates the development of a comprehensive contingency theory of corporate planning. I also facilitated more rigorous empirical tests of such a theory by highlighting innovative research designs and providing ideas for theory consistent empirical studies in this research stream.

A comprehensive contingency theory of corporate planning incorporating the SARFIT model of Donaldson (2001) focuses on the manager as decision-maker, influencing both contingency factors and the CP system. As my review shows, the management and planning philosophy as well as the characteristics of the top management team are among the most important context factors of the CP system. Thus, such a theory is able to address the concern of strategic management researchers about

Table 7 Summary of main findings and recommendations

	Main findings	Recommendations
Theoretical level	• The five top ranked internal context factors are: (a) management philosophy, (b) planning philosophy, (c) strategy, (d) top management team, and (e) organizational size	• A comprehensive contingency theory of corporate planning requires a reduction of the bewildering array of potential contingency factors
	• The five top ranked external context factors are: (a) region, (b) environmental dynamism, (c) competition, (d) environmental uncertainty, and (e) industry	• Key contingency factors may be (a) management and planning philosophy, (b) task interdependence, (c) organizational size, and (d) environmental uncertainty
	• The theoretical logic of studies employing region and industry as context factors mostly draws from arguments involving other context factors such as culture or environmental uncertainty	• Dimensions of planning in a contingency theory of corporate planning may be the approaches of rational and incremental planning
	• Selection fit studies show a clear picture for the above context factors which is often not supported in interaction fit studies	• A comprehensive model of the CP system needs to be developed linking the design aspects of CP to the rational and the incremental approach
	• Interaction fit studies show a clear tendency to nonsignificant findings	• More theoretical work is required regarding the characteristics of OP and the application of the SARFIT model in the context of CP
	• Interaction fit studies involving context factors, which show strong relationships with CP in selection fit studies, are rare	• Contingency theory could be enriched with perspectives from upper-echelon theory, the levers of control framework and the related concept of dynamic tension, and complementarity research

Table 7 continued

	Main findings	Recommendations
Empirical level	• Studies focus on corporate planning in general and strategy formulation—long range planning, action planning and budgeting are underrepresented	• Meta-analyses estimating the total effect size of different context factors may supplement and strengthen the conclusions of this review
	• Samples are mainly drawn from Anglo-Saxon cultural background	• Studies addressing distinct subsystems of the CP system (e.g., long-range planning, action planning, and budgeting) at the organizational level of analysis as well as linking these different subsystems of CP
	• A majority of studies employs the selection fit approach and interaction as well as system fit studies are rare	• Studies employing interaction fit and system fit studies as well as longitudinal studies and in-depth case studies
	• Studies focus on cross-sectional data and employ either subjective or objective performance data	• Studies should employ methodological advancements regarding the measurement of OP (e.g. data envelopment analysis) and CP (e.g. reflective first-order formative second-order measurement models)
	• 866 different causal models linking 54 design aspects of CP systems and 30 context factors are examined in the 195 studies	• Studies should combine perceptual survey data regarding CP and its contingency factors with objective OP data from annual reports
	• Replication of causal models is rare because only 368 models are investigated in two or more research settings	• Studies could empirically prioritize or consolidate the 30 context factors
	• Of 1782 causal model tests 759 are statistically non-significant, whereas 451 tests confirm a positive relationship	• Studies may conduct constructive replication of important results

This table summarizes main findings and related recommendations of the literature review of contingency studies of corporate planning

the demise of the manager as decision-maker in the early contingency studies in this field (e.g., Miles and Snow 1978).

Corporate planning is among the most widespread management techniques. Nowadays almost 80% of all organizations are planning to some extent (see for instance: Efendioglu and Karabulut 2010; Feldbauer-Durstmüller et al. 2012; Libby and Lindsay 2010; O'Regan and Ghobadian 2007; Rigby 2001) and planning is among the first management techniques introduced in new ventures (e.g., Davila and Foster 2007). Theoretical research as well as empirical studies on a contingency theory of corporate planning which build on this review will, I hope, provide superior answers to the research question raised 30 years ago by Boal and Bryson (1987): which are the most effective planning systems and processes in which situations and more importantly why? In summary, "although our research has several implications for practice, obviously more work is needed. The reward, I believe, will be significant improvements in public and private planning practice" (Boal and Bryson 1987). Much work remains to be done.

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Appendix

See Tables 8, 9, 10 and 11.

Table 8 Design aspects of the corporate planning system

Code	Design aspects of corporate planning	Studies on which the definition is based
BCI	Involvement of business consultants	Thakur (1985), Reid (1989)
BDI	Involvement of board of directors	Kaissi and Begun (2008)
CPD	Documentation of the corporate planning system	Bhatty (1981), Yasai-Ardekani and Haug (1997)
EPU	Existence of a planning unit	Al-Bazzaz and Grinyer (1981)
ESP	Planning supported by electronic data processing	Ringbakk (1972), Merchant (1981)
LDP	Link between different plans	Töpfer (1978), Capon et al. (1994)
LFH	Link: planned functions and planning horizon	Brown et al. (1969), Bhatty (1981)
LFI	Link: planned functions and planning instruments	Küpper et al. (1990)
LLH	Link: planning levels and planning horizon	Brown et al. (1969), Küpper et al. (1990)

Table 8 continued

Code	Design aspects of corporate planning	Studies on which the definition is based
LMI	Involvement of low and middle management	Yasai-Ardekani and Haug (1997)
LOI	Level of implementation in planning	Covin and Slevin (1998), Kaissi and Begun (2008)
LOM	Link: planning to other management systems	Merchant (1981), Thakur (1985)
LPC	Link: planning and control	Schäffer and Willauer (2002)
LPL	Link between different planning levels	Horváth et al. (1985)
LPN	Link: planned functions and PC: information	Küpper et al. (1990)
PAC	Planning activities	Merchant (1984), Dincer et al. (2006)
PCA	Content of plans: assumptions	Yasai-Ardekani and Haug (1997)
PCB	Content of plans: budgets	Töpfer (1978), Lindsay and Rue (1980)
PCF	Control focus of planning	Merchant (1981), Ramanujam et al. (1986), Papke-Shields et al. (2006)
PCH	Planning process comprehensiveness	Fredrickson (1984), Piëst (1994), Pulendran et al. (2003)
PCL	Planning cycle length	Hadaschik (1982), Libby and Lindsay (2010)
PCM	Plan completeness	Töpfer (1978), Grinyer et al. (1986), Papke-Shields et al. (2002)
PCO	Planning co-ordination flow	Töpfer (1978), Lindsay and Rue (1980), Grover and Segars (2005)
PCP	Content of plans: programs	Töpfer (1978), Brews and Hunt (1999)
PCR	Content of plans: resources	Kono (1976), Töpfer (1978)
PCS	Content of plans: schedules	Töpfer (1978)
PDE	Decentralization of planning	Merchant (1981), Miller (1987), Andersen (2004)
PEX	Planning extensiveness	Kukalis (1989)
PFO	Formalization of planning	Pulendran et al. (2003), Grover and Segars (2005)
PFR	Planning frequency	Capon et al. (1984), Greenley and Bayus (1994)
PIG	Integration of planning	Lei et al. (1994), Rogers et al. (1999)
PIN	Content of plans: information	Lindsay and Rue (1980), Bhatty (1981)
PIT	Intensity of planning	Yasai-Ardekani and Haug (1997), Papke-Shields et al. (2006)

Table 8 continued

Code	Design aspects of corporate planning	Studies on which the definition is based
PLA	Planning engagement	Brown et al. (1969), Capon et al. (1994)
PLF	Planned functions	Brown et al. (1969), Lindsay and Rue (1980)
PLH	Planning horizon	Töpfer (1978), Papke-Shields et al. (2006)
PLI	Planning instruments	Töpfer (1978), Capon et al. (1984), Yasai-Ardekani and Haug (1997)
PLL	Planning levels	Hammer (1980), Woodburn (1984)
PMV	Content of plans: mission/vision	Brews and Purohit (2007)
POB	Content of plans: objectives	Lindsay and Rue (1980), Bhatty (1981), Brews and Hunt (1999)
POF	Link: planning organization and planned functions	Töpfer (1978)
POP	Openness of planning	Rhyne (1985)
PPD	Plan differentiation	Poensgen and Hort (1981), Rauch et al. (2000)
PPQ	Perceived quality of planning	Rauch and Frese (1998), Homburg et al. (2008)
PPR	Planning process	Glaister and Falshaw (1999)
PRA	Rationality of planning	Miller (1987), Jenner (2001), Pulendran et al. (2003)
PRC	Planning process capability	Hart and Banbury (1994)
PRE	Planning responsibility	Bhatty (1981), Yasai-Ardekani and Haug (1997)
PSO	Sophistication of planning	Merchant (1981), Capon et al. (1994), Yasai-Ardekani and Haug (1997)
PSP	Plan specificity	Brews and Hunt (1999)
RAP	Review/audit of plans	Lindsay and Rue (1980), Kono (1984)
RPE	Review/audit period	Lindsay and Rue (1980), Kukalis (1991)
SPL	Sequence of planning levels	Horváth et al. (1985)
TMI	Top management involvement	Yasai-Ardekani and Haug (1997)

This table lists the 54 design aspects of the corporate planning system which are addressed in the 195 studies

Table 9 Context factors of the corporate planning system

Code	Context factors	Studies on which the definition is based
AGE	Organizational age	Lindsay and Rue (1980)
COM	Competition	Töpfer (1978), Ghobadian et al. (2008)
COP	Competitive position	Töpfer (1978), Grinyer et al. (1986)
CST	Capital structure	Töpfer (1978), Davila and Foster (2005)
CUL	Organizational culture	Chakravarthy (1987), Harris and Ogbonna (2006)
DUN	Demand uncertainty	Atuahene-Gima and Li (2004)
ECA	Environmental capacity	Hart and Banbury (1994), Ghobadian et al. (2008)
ECX	Environmental complexity	Kukalis (1991), Hopkins and Hopkins (1997)
EDY	Environmental dynamism	Hart and Banbury (1994), Hopkins and Hopkins (1997), Sharma (2002)
EUN	Environmental uncertainty	Fredrickson (1984), Javidan (1984), Hart and Banbury (1994)
EUP	Environmental unpredictability	Sharma (2002)
FDE	Functional dependence	Wang and Tai (2003)
IND	Industry	Al-Bazzaz and Grinyer (1980), Bonn and Christodoulou (1996)
MAP	Management philosophy	Töpfer (1978), Cadez and Guilding (2008)
NCL	National culture	Hoffman (2007)
OCX	Organizational complexity	Yasai-Ardekani and Haug (1997)
OFO	Organizational formalization	Wang and Tai (2003)
OST	Organizational structure	Töpfer (1978)
OWS	Ownership	Al-Bazzaz and Grinyer (1981), Dincer et al. (2006)
PHI	Planning philosophy	Scholz (1984), Miller (1987)
PLE	Planning experience	Chakravarthy (1987)
PRO	Product portfolio	Kallman and Shapiro (1978), Töpfer (1978), Chakravarthy (1987)
REG	Region	Kallman and Shapiro (1978), Kono (1984)
SIZ	Organizational size	Lindsay and Rue (1980), Merchant (1984)
SLC	Stage of life cycle	Merchant (1984)
STG	Strategy	Pearce II et al. (1987), Yasai-Ardekani and Haug (1997), Cadez and Guilding (2008)
TEC	Technology	Yasai-Ardekani and Haug (1997), Merchant (1984)
TID	Task interdependence	Hendrick (2003)
TMT	Top management team	Berry (1998)
TUN	Technology uncertainty	Covin and Slevin (1998), Atuahene-Gima and Li (2004)

This table lists the 30 context factors which are researched in the 195 studies

Table 10 Direction and consistency of causal models tested in selection fit studies

Context factor	Planning aspects with consistent results[a]	Planning aspects with inconclusive results	Planning aspects researched only in one study
Organizational age	PRA (+)	PSO, PLA, PLF, POB, PCP, PFO	PLH, PIN, PLI, PDE, PCF, RPE, PCH, PMV, LDP, POP, LOI, PPQ
Capital structure	PLA (us)	PSO	PLH, PFO, PLF, PCB, PCM, PPD
Competition	PIT (+)	PSO, PLA, PFO	PLH, TMI, PCF, LMI, LOM, PCB, PPD, PFR
Competitive position	PRE (+)	PSO, PFO, PIT, PCM	PLH, EPU, PLI, PDE, PCF, LOM, PCB, PPD, CPD
Demand uncertainty	–	PFO	PCH
Environmental capacity	–	PSO, POB, PDE, PRA, PFO	PLA, PIN, PRE, PEX, LOI, PPQ
Environmental complexity	PSO (+), PRE (us), PEX (+)	PLH, PFO, POB, RPE	PIN, PLI, TMI, PCF, PCB, PCM, PPD, PMV, PCP, POP
Environmental dynamism	PCH (+), PCM (+)	PSO, PLH, PLA, PFO, EPU, PLI, PIT, PDE, PRE, PCF, LMI, PRA, PCB, PCO, PPD, POP	PIN, PLF, POB, TMI, RPE, LOM, RAP, PFR, PMV, PLL, BCI, CPD, PIG, PSP
Environmental uncertainty	–	PSO, PIT, POB, LMI	PLA, EPU, PLF, PDE, PCF, PRA, PCO, PPQ
Environmental unpredictability	–	–	PSO, PIT, PCF, LOM, PCB, PFR
Functional dependence	–	–	PIN, PIT, PEX
Industry	PLF (us), PIT (us), PRE (us), ESP (us)	PSO, PLH, PLA, PFO, PIN, EPU, PLI, POB, TMI, RPE, PCH, PCB, PCM, PPD, PMV, BCI, LFH, CPD	PDE, PCF, LMI, PCO, PLL, PAC, LDP, PIG, PCL, PPR, PPQ, LPN
Management philosophy	PSO (us), PLA (us), EPU (us)	–	PLI, PFO, POB, PRE, TMI, BCI

Table 10 continued

Context factor	Planning aspects with consistent results[a]	Planning aspects with inconclusive results	Planning aspects researched only in one study
National culture	–	–	PLA; POB, PPD
Organizational complexity	EPU (+)	PSO, PLH, PFO, POB, PDE, PRE	PLA, PIN, PLI, PIT, TMI, LMI, PRA, RPE, PEX, POP
Organizational culture	–	–	PSO, PLA, PIN, PIT, PRE, PCF, LMI, RPE, PCH, LOM, PCO, LPL, PIG
Organizational formalization	PRA (+)	PIN, PIT, PDE	LMI, PCH, PFO, PEX, PIG
Organizational structure	PSO (us), PLA (us), EPU (us), PDE (us), PRE (us), TMI (us), LOM (us), PCB (us)	PLH, PFO, PIN, PLI, PIT, POB, PCF, LMI, PRA, PCM, CPD, PEX	PLF, RPE, PCH, PCO, PPD, ESP, RAP, PFR, PLL, BCI, LFH, PIG, LPN, POF
Ownership	PRA (us), RPE (us)	PSO, PLH, PLA, PFO, PIN, EPU, PLI, PLF, POB, PDE, PRE, PCF, PCB, PCM, PPD, RAP, PLL	TMI, LMI, PCH, LOM, PCO, PFR, PMV, PAC, BCI, LFH, CPD, BDI, PSP
Planning experience	PRA (+), PMV (+)	PSO, PFO, EPU, PLI, PRE, PCF	PLH, PIN, PIT, POB, PDE, RPE, LOM, PCM, PCO, LPL, CPD, LDP, PCP, PSP
Planning philosophy	PLH (us), PLA (us), PIN (us), PLI (us), PLF (us), PIT (us), PCF (us)	POB, PRE	PSO, EPU, PDE, TMI, PCM, RAP, PFR, PMV, PLL, BCI, PEX, PCP
Product portfolio	PRE (us), PCM (us)	PSO, PLH, PLA, PFO, PIN, EPU, PLI, PIT, POB, PDE, PCF, LOM, PPD, CPD	PLF, TMI, LMI, RPE, PCB, PCO, ESP, LPL, PMV, PAC, PEX, PCP, PIG
Region	PLH (us), PFO (us), PIN (us), EPU (us), PLI (us), POB (us), PRE (us), TMI (us), LMI (us), RPE (us), PCO (us), PLL (us)	PSO, PLA, PLF, PIT, LOM, PCB, RAP, LPL, LDP, PCP	ESP, PFR, PMV, PAC, BCI, LFH, CPD, BCI, PCL, SPL, PCA, PCR, PCS

Table 10 continued

Context factor	Planning aspects with consistent results[a]	Planning aspects with inconclusive results	Planning aspects researched only in one study
Organizational size	PSO (+), PLH (+), PLA (+), PFO (+), EPU (+), PLI (+), PLF (+), POB (+), PRE (us), LOM (us), PCB (+), PCM (+), ESP (+), LFH (+)	PIN, PIT, PDE, TMI, PCF, LMI, PRA, RPE, PCH, PCO, PPD, RAP, LPL, PFR, PMV, PLL, BCI, CPD, PEX, PCP, POP	PAC, LDP, BDI, PIG, LOI, PCL, SPL, PCA, PPQ, LFI, LLH, LPN
Stage of life cycle	PFO (us)	PRE, PEX	PSO, PLH, PIT, PDE, PCF, RPE, LOM, PAC, PLL
Strategy	PSO (us), PLH (us), PLA (us), PIN (us), PIT (us), TMI (us), PCF (us), PRA (us)	PFO, PDE, PRE, LMI, PIG	EPU, PLI, POB, PCH, LOM, LDP, PSP, LOI,
Task interdependence	–	–	PIN, POB, PDE, PFO, PRE, TMI, PCF, LMI, PFR, PEX, PIG
Technology	PLH (us), PLA (us), PLI (us)	PSO, PFO, EPU, PLF, PIT, POB, PDE, PRE, TMI, PCM, PEX	PIN, PCF, LMI, RPE, LOM, PCB, PCO, PPD, RAP, PLL, BCI, CPD, PCP, PCA, LFI
Technology uncertainty	–	–	PCH, PFO, LOI
Top management team	PSO (us), PLA (us), PRA (us)	PCH	PFO, EPU, PLF, POB, PDE, PPD

Selection fit studies imply context factors as independent variables and planning aspects as dependent variables in an unidirectional linear causal-model form. Direction of relationship is given in parentheses: + = positive relationship; − = negative relationship; us = direction not specified

[a] Consistency was coded if the combined results of the studies linking a planning aspect with the specific context factor could not be obtained by chance. This was tested by a binomial distribution with n = number of studies investigating this specific model, k = number of studies providing consistent results, $p = .5$ and a significance level of .1. Causal models are omitted from this test if they have been investigated only in one study

Table 11 Direction and consistency of causal models tested in interaction fit studies

Context factor	Planning aspects with consistent results[a]	Planning aspects with inconclusive results	Planning aspects researched in only one study
Organizational age	–	PSO	PFO
Capital structure	–	–	–
Competition	–	–	PSO, PLA, PFO, PIN, PIT, LMI, LOM, ESP, LPL
Competitive position	–	–	PFO, PIT, PDE, PCF, LOM
Demand uncertainty	PCH (+)	–	–
Environmental capacity	–	PRA	PSO, PLA, POB, LOI, PPQ, PRC
Environmental complexity	–	–	PSO, PLI, PIT, PRA, PEX, LPC
Environmental dynamism	PDE (+)	PSO, PFO, PIN, PIT, LMI, PRA, PCH, PSP	PLA, PCF, LOM, ESP, LPL, POP, LPC
Environmental uncertainty	–	–	PSO, PLA, POB, TMI, PRA, PPQ, PRC
Environmental unpredictability	–	–	PLI
Functional dependence	–	–	–
Industry	–	PSO, PLA, PFO, PRA	PIN, PLF, POB, LMI
Management philosophy	–	–	PSO, PFO
National culture	–	–	PSO, PLH, PLA, POB, PPD
Organizational complexity	–	–	PLH, PDE, TMI, PRA
Organizational culture	–	–	–
Organizational formalization	–	–	PDE, PRA

Table 11 continued

Context factor	Planning aspects with consistent results[a]	Planning aspects with inconclusive results	Planning aspects researched in only one study
Organizational structure	PRA (+)	PFO, PIT, PDE, LOM	PIN, PCF, LMI, ESP, LPL, PEX, BDI
Ownership	–	–	–
Planning experience	–	PSO, PSP	–
Planning philosophy	–	–	–
Product portfolio	–	PSO	PDE
Region	–	PSO, PSP	PLH, LMI
Organizational size	–	PSO, PLA, PFO, PIT, PDE, PCF, LOM, CPD	PLI, PRE, LMI, PCH, ESP, PEX, LPC, PRC
Stage of life cycle	–	PIT	PSO, PFO, PDE, PCF, LOM, PEX
Strategy	PSO (+), PDE (+)	PCF	PLA, PFO, PIN, PLI, POB, TMI, PRA, PCH, PIG, PSP
Task interdependence	–	–	–
Technology	–	PSO	PFO, PIT, PDE, PCF, LMI, LOM, PEX
Technology uncertainty	PCH (mixed)	–	LOI
Top management team	–	–	–

Interaction fit studies imply planning aspects as independent variable and context factors as independent or moderator variable in interaction causal-model forms. Dependent variable in these model is a performance variable, either organizational performance or planning effectiveness. Direction of relationship as indicated by these studies is given in parentheses: + = positive relationship for both variables; mixed = the signs of the relationships are different for the two variables

[a] Consistency was coded if the combined results of the studies linking a planning aspect with the specific context factor could not be obtained by chance. This was tested by a binomial distribution with n = number of studies investigating this specific model, k = number of studies providing consistent results, $p = 0.5$ and a significance level of .1. Causal models are omitted from this test if they have been investigated in one study only

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