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Application of metric conjoint analysis in family business research

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ABSTRACT

Strategic decisions are important because they influence the strategic direction, competitive positioning and performance of firms. However, these decisions are difficult to research, especially in family firms, as their top managers are even less forthcoming than those of their non-family counterparts. With the metric conjoint analysis method, researchers are able to analyze management decisions at the time when they are made. This method is based on an experimental technique in which the manager has to make a series of judgments based on a number of decision scenarios containing a set of decision attributes. Based on the experiment, the underlying structure of the manager's decision-making process can be investigated. This article conducts a literature review of management studies using metric conjoint analysis, presents an exemplary study in the family business field and suggests potential future applications for this method in family business research.

One of the most central research areas in management and family business research is the assessment of firm performance (e.g., Davies, Chun, & Kamins, 2010; Surroca, Tribó, & Waddock, 2010; Yu, Lumpkin, Sorenson, & Brigham, 2012). Strategic decision making is one factor that influences firm performance (Hambrick, 1989; Priem & Harrison, 1994), and strategic decisions are thus an important source of competitive advantage (Penrose, 1959). Management and family business research studies strategic decisions by investigating research questions such as where are the organizational boundaries of a business (Alvesson & Lindkvist, 1993; Coase, 1937; Memili, Chrisman, Chua, Chang, & Kellermanns, 2011; Williamson, 1975) and what combination of resources do managers prefer to generate a sustainable competitive advantage (Barney, 1991; Chrisman, Chua, & Kellermanns, 2009; Penrose, 1959; Rumelt, 1987; Sirmon, Arregle, Hitt, & Webb, 2008; Wernerfelt, 1984). Thus, the decisions of top managers are a cornerstone on which management research is built (Hutzschenreuter & Kleindienst, 2006).

However, the cognitive processes underlying strategic decisions are neither directly measurable nor directly observable (Priem, Ndofor, & Voges, 2004). Thus, the analysis of these decisions often relies on post hoc research methods, such as questionnaires, surveys and interviews. However, these methods suffer from a number of shortcomings: Respondents may be affected by retrospective bias from misinterpreting what was responsible for an event or action (Golden, 1992). Biases and errors associated with self-reporting might occur (Podsakoff & Organ, 1986). Further, crucial information might be missing when respondents answer research questions after the event of interest has occurred (Phillips, 1981). Thus, research would benefit from additional research methods that overcome these limitations (Shepherd, 2011; Snow & Thomas, 1994).

One of these methods is metric conjoint analysis (Louviere, 1988). This method asks respondents to rate combinations of different levels of strategy variables in a hypothetical decision situation (Priem & Harrison, 1994) and thus allows researchers to study decisions and/or the results of decisions at the time when they are made (Lohrke, Holloway, & Woolley, 2010). Metric conjoint analysis is one of the various techniques that fall under the label 'conjoint analysis'. Conjoint analysis techniques in general are widely used in research and practical applications, especially in marketing research and in commercial applications (Green & Srinivasan, 1990).

Researchers in previous studies have advocated for the use of metric conjoint analysis in management research (Priem & Harrison, 1994; Priem et al., 2004; Shepherd, 2011; Shepherd & Zacharakis, 1997). With this article, we aim to continue this call for research using metric conjoint analysis, especially in family business research, by pursuing two objectives. On the one hand, we conduct a literature review of existing empirical studies that have answered this call for research by using metric conjoint analysis. On the other hand, we reinforce this call for research by presenting an exemplary family business study illustrating how this method can be applied in family business research.

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This article contributes to the body of methodological literature in a number of ways. First, we review the areas of management research in which metric conjoint analysis has been applied. Second, we review the ways in which researchers have applied this method. This review provides researchers with helpful reference points for future studies. Third, we outline potential new areas for the application of metric conjoint analysis. This list of potential applications will support family business researchers in the development of new empirical studies.

After a brief introduction to the metric conjoint analysis method, we review relevant metric conjoint analysis studies that have been published following the call for management research using this method (Priem & Harrison, 1994; Priem et al., 2004; Shepherd & Zacharakis, 1997). To illustrate how researchers can apply the methodology, we present an exemplary study that uses metric conjoint analysis to analyze the boundary decisions of large family firms. We conclude with potential future research applications for metric conjoint analysis in family business research.

Metric conjoint analysis

Background

One can distinguish two distinct but complementary research approaches for analyzing decision making based on cognitive processes: decomposition methods and composition methods (Priem et al., 2004). Decomposition methods break down or decompose a series of decisions by experimentally changing the levels of decision attributes and by observing changes in the outcome of the decision. By statistically modeling the individual's decision model, researchers can draw inferences about the underlying cognitive-process structure (Svenson, 1979). Composition methods, on the other hand, are based on decision makers' description of a decision situation, the decision process and the decision attributes that are used (Priem & Harrison, 1994). Thus, composition methods are useful in theory building, whereas decomposition methods require predefined decision attributes and are therefore particularly useful in theory testing. Further, in contrast to composition methods, decomposition methods focus on the content of the decision itself rather than on the process of decision making (Priem et al., 2004). Thus, decomposition methods are particularly useful in family business research, as they directly assess the judgments of decision makers rather than indirectly observing them (Priem & Harrison, 1994). In this article, we focus on decomposition methods.

One can distinguish between different decomposition methods with different usefulness for management research (Priem & Harrison, 1994). Axiomatic and nonmetric conjoint analysis methods require respondents to rank combinations of different decision attributes. These methods are widely used in marketing research and in commercial applications (Green & Srinivasan, 1990). As these methods test for main effects only and not for interaction effects, these methods are not particularly appropriate for strategic management research (Priem et al., 2004). Metric conjoint analysis, as well as policy capturing, requires respondents to rate rather than rank different combinations of decision attributes (Shepherd & Zacharakis, 1997). These ratings allow researchers to test for not only main effects but also interaction effects. Although both methods are similar to each other (Aiman-Smith, Scullen, & Barr, 2002), they differ in some respects (Priem et al., 2004). The number of decision attributes in the policy-capturing method is usually much higher than that in metric conjoint analysis, making data collection among top managers more difficult. Further, metric conjoint analysis allows hypotheses to be tested at different level of analysis (Shepherd, 2011), whereas typical policy-capturing studies ignore within group differences (Priem et al., 2004). In addition, policy capturing does not allow for complete replication (Priem et al., 2004). For these reasons, we focus on metric conjoint analysis in our article.

Metric conjoint analysis is based on information integration theory (Anderson, 1981; Louviere, 1988). "Information integration theory is a theory about the behavior of [individuals providing] category-rating responses to combinations of different decision variables (attributes). Complex decision making involves searching for, acquiring, and processing information; hence one can use information integration theory to study information processing revealed by consumers' responses to multi-attribute options." (Louviere, 1988: 14–15).

We define metric conjoint analysis according to Shepherd and Zacharakis' definition as a "technique that requires respondents to make a series of judgments based on a set of attributes (cues) from which the underlying structure of their cognitive system can be investigated" (1997: 211). Metric conjoint analysis examines the content of a decision-making process through a decision that respondents are actually making and, by this, captures the 'theory-in-use' rather than a retrospective account that decision makers might provide through post hoc methods. In family business research, the experimental design is helpful, as decision makers of family firms often refrain from making their actual decisions transparent to researchers because of confidentiality (Strike, 2012). With the experimental design in focus in this study, decision makers of family firms may feel more comfortable reporting their actual judgments and decisions because they do not reflect real-world decisions. Further, because it is based on ratings rather than ranking, metric conjoint analysis has an advantage over other conjoint techniques, as it enables researchers to analyze contingent relationships (i.e., interactions) between variables (Shepherd & Zacharakis, 1997). We will explain the design and analysis of metric conjoint experiments in detail in the next section.

Design and analysis of metric conjoint experiments

We introduce the metric conjoint analysis method along with the process that researchers should follow to develop a metric conjoint experiment (Shepherd & Zacharakis, 1997). First, researchers have to select decision attributes and a dependent variable. Second, decision scenarios and an appropriate decision environment need to be developed. Third, one has to select an appropriate sample with sufficient size. Finally, researchers must choose the appropriate statistical analysis method.

In any metric conjoint experiment, the first step is to select a decision to research—the dependent variable—and corresponding decision attributes, in order to enable respondents to rate combinations of different levels of these decision attributes in a hypothetical decision situation (Priem & Harrison, 1994). Because decision attributes are predefined in the experiment, they have to be heavily grounded in theory and existing empirical work (Priem et al., 2004). Any theory that explains decision making, such as the resource-based view (Barney, 1991; Penrose, 1959; Wernerfelt, 1984), transaction cost economics (Williamson, 1975), or psychological theory (e.g., Bandura, 1986), would be appropriate to develop these attributes. Further, the attributes and their levels have to be pilot tested with potential respondents (Shepherd & Zacharakis, 1997). When conducting the pilot test, researchers should check whether the attributes and their levels show face validity.

The number of different attributes in a conjoint experiment is limited in order to keep the number of potential scenarios to a reasonable level (Holland & Shephard, 2013). Existing studies (e.g., Brundin, Patzelt, & Shepherd, 2008) suggest using three to eight decision attributes in the experiment. Regarding the dependent

variable, studies often ask for the likelihood/probability that a certain decision is made (e.g., Mitchell & Shepherd, 2010). Often, the answer is measured with a Likert scale anchored by 'high' and 'low' probability.

In the next step, different conjoint scenarios are created out of different combinations of decision attribute levels (Shepherd & Zacharakis, 1997). A factorial experimental design would include every possible combination. For example, an experiment with eight attributes at two levels each would include $2^8 = 256$ scenarios. To keep the number of scenarios at a manageable level, a fractional factorial design assuming orthogonality (zero correlation of dimensions) of the decision attributes is often used. A factorial design of 256 scenarios, for example, could be reduced to 16 scenarios (Hahn & Shapiro, 1966). However, with the use of such a design, certain interaction effects cannot be tested. In most studies, the number of scenarios does not exceed 32, including a full replication of the scenarios to assess the test–retest reliability (e.g., Holland & Shephard, 2013; Patzelt & Shepherd, 2009). In addition, the order of scenarios and the order of attributes within scenarios should vary to avoid order effects (Shepherd & Zacharakis, 1997).

The different conjoint scenarios have to be embedded in a decision environment (e.g., Holland & Shephard, 2013; Patzelt & Shepherd, 2009). A description of the environment should be given to respondents before they start the conjoint experiment. This ensures that every respondent makes his or her decision in the same environment. It should be further stated that every other factor that affects the decision but that is not part of the decision attributes should be held constant in order to parcel out any effects arising from these factors.

The sample size needed in conjoint analysis is considerably smaller than that needed for standard questionnaires because the maximum amount of information can be drawn from a relatively small sample by using this method owing to the analysis of the decision. In an experiment in which the decision maker is confronted with 16 scenarios, 100 respondents will generate 1600 decisions and thus 1600 data points to be analyzed. Shepherd and Zacharakiris (1997) establish the rule of thumb that a sample size of 50 is sufficient. However, when additional data on a level of analysis other than the decision level are collected, e.g., through a post-experiment questionnaire, existing studies use a sample size of about 100 instead (e.g., Brundin et al., 2008: 91; Bruns, Holland, Shepherd, & Wiklund, 2008: 121; Mitchell & Shepherd, 2010: 121).

Different methods exist to analyze data collected in a metric conjoint experiment. However, most existing studies use hierarchical linear modeling (HLM) as a data analysis approach (e.g., Holland & Shephard, 2013; McMullen & Shepherd, 2006). As the data points that are collected are not independent of each other—they are, e.g., nested in different individuals—the analysis method has to account for this nested nature. HLM can distinguish between variances at different analysis levels and is thus particularly appropriate for metric conjoint analysis.

Limitations

Researchers have to deal with a number of limitations when using metric conjoint analysis. First, they have to ensure that the experiment has external validity (Karren & Woodard Barringer, 2002; Shepherd & Zacharakis, 1997). The danger of the experimental design is that respondents may attach importance to attributes merely because they are presented with a decision scenario (Murphy, Herr, Lockhart, & Maguire, 1986). Therefore, decision attributes should be well ground in theory and sufficiently pilot tested. Further, respondents should have the opportunity in a post-experiment questionnaire to separately rate the importance of each decision attribute and to indicate whether additional attributes were missing in the conjoint experiment.

Second, metric conjoint analysis assumes (in the case of a frictional factorial design) that decision attributes are orthogonal, meaning that the correlation between attributes is zero. Thus, unrealistic combinations of decision attributes that are correlated in reality might occur (Priem et al., 2004). Researchers can deal with this limitation by checking with experts to make sure that their scenarios do not include unrealistic cases. Further, a composite attribute can be used for highly correlated attributes.

Third, as respondents might not be used to paper-based experiments and as a metric conjoint experiment might sometimes be repetitive, the reliability of the conjoint measurement is an issue (Priem et al., 2004). For this reason, in most studies, the scenarios are fully replicated to allow for the test–retest reliability to be tested (e.g., McMullen & Shepherd, 2006). The average correlation between the test and the retest is about 0.7 in most published studies (e.g., Shepherd, 1999a: 0.69). Some studies even exclude all responses from the sample in which the correlation between the test and the retest is not statistically significant (e.g., Patzelt & Shepherd, 2008).

Fourth, the decision tested in a metric conjoint experiment is examined in isolation, whereas in reality, a large number of factors might influence a decision (Shepherd & Zacharakis, 1997). Researchers can deal with this potential limitation by embedding the decision in a (constant) decision environment. This environment should be explained at the beginning of the conjoint experiment.

Application in management research – A literature review

Conducting conjoint analysis in family business research might be a promising way to overcome some of the problems caused by private business managers, especially in family businesses. Furthermore, applying this methodology, which only recently has been used in management and especially in entrepreneurship research, might open research opportunities in the family business field. In order to obtain an overview of the current use of metric conjoint analysis in management research, we conducted a literature review of studies that use this method. We focused our literature review on top journals within the Financial Times Top 40 ranking (Financial Times, 1997). From this list, we included all journals related to management research publishing empirical studies.[2] Since one of the first articles advocating for the use of metric conjoint analysis in management research was published in 1994 (Priem & Harrison, 1994), we included articles that were published from 1994 to 2013. The two authors independently used EBSCO Business Source Complete as well as the journals' websites to conduct a full text search for the keyword 'conjoint' in the first step. We then compared our lists and reviewed all the results and excluded all articles in which the keyword was used in another context or in which a conjoint method based on a ranking technique was used. Table 1 shows the articles resulting from this literature review.

Through our literature search, we found 26 studies that were published in top management journals during the period from 1994 to 2013 that used metric conjoint analysis as an empirical methodology. Although this number seems relatively low compared to the potential large number of studies that were published in this period, we found that the acceptance of and interest in this

[2] The following journals were reviewed for metric conjoint studies: *Strategic Management Journal, Academy of Management Journal, Journal of Management, Journal of Management Studies, Management Science, Organization Science, Administrative Science Quarterly, Management International Review, Entrepreneurship Theory & Practice, Journal of Small Business Management, Journal of Business Venturing, Journal of International Business Studies, Human Resource Management, International Journal of Human Resource Management, Journal of Applied Psychology, MIS Quarterly, Organizational Behavior and Human Decision Processes.*

Table 1
Literature review of management articles using metric conjoint analysis.

Author(s)	Year	Content	Sample	Analysis method	Level of analysis	Theory used	Dependent variable	# of decision attributes	# of levels	# of scenarios
Richard L. Priem	1994	Comparison of CEO judgements on strategy-structure-environment matches and contingency theory	105 CEOs	Multivariate regression, analysis of variance and hierarchical regression	Decision, individual, firm	Contingency theory	Likelihood of success for a manufacturing firm in presented combinations	3	2	2 × 8
Dean A. Shepherd	1999	Gap between venture capitalists' in use" and espoused" decision policies	66 VC managers in 47 firms	Analysis of variance	Decision	n/a	Profitability of ventures within 10 year	8	2	2 × 16
Dean A. Shepherd	1999	VC assessment of new venture survival probability based on industry, firm, and management attributes	66 VC managers in 47 firms	Multivariate regression and analysis of variance	Decision	Industrial organization and population ecology	Probability of survival within 10 years	8	2	2 × 16
Dean A. Shepherd; Andrew Zacharakis	2000	Family business succession decisions based on financial and behavioral sunk costs	53 potential successors in a family businesses	Multivariate regression	Decision	Behavioral economics	Willingness to sell & invest in the business	3	2	2 × 2 × 4
Richard L. Priem; Joseph Rosenstein	2000	Beliefs regarding high-performance alignments of business level strategy, structure, and environment	92 MBA students, CEOs and non-business students	Analysis of variance	Decision, groups	Organization theory, esp. contingency theory	Likelihood of success	3	2	2 × 8
Evan J. Douglas; Dean A. Shepherd	2002	Relationship between career choice and people's attitudes toward income, independence, risk, and work effort	94 Australian university alumni	Multivariate regression	Decision	Utility maximization theory	Assess the utility (or usefulness) of the job offer	4	2	2 × 8
Michael Song; Roger J. Calantone; C. Anthony Di Benedetto	2002	Strategic choice decision-making process in firms located in the United States and Japan	775 managers	Multivariate regression	Decision, country	Theory of competitive	Chance to recommend strategy pursuing the overall cost leadership strategy in this market	4	2	1×16
Dean A. Shepherd; Andrew Zacharakis; Robert A. Baron	2003	Comparison of decision-making processes employed by venture capitalists varying in experience	66 VC managers in 47 firms	Multivariate regression	Decision	Decision-making	Likelihood of profitability theory	8	2	2 × 16
Dean A. Shepherd; Andrew Zacharakis	2003	Customer assessment of new venture legitimacy	53 customers	Multivariate regression and analysis of variance	Decision	Cognitive legitimacy theory	Probability to purchase a product	4	2	2 × 8
Young Rok Choi; Dean A. Shepherd	2004	Decisions of entrepreneurs to begin exploiting business opportunities	55 entrepreneurs	HLM	Decision	Resource-based view	Likelihood to begin opportunity exploitation	7	2	2 × 16
Young Rok Choi; Dean A. Shepherd	2005	Stakeholders assessment whether to provide their support to organizations	163 stakeholder in 4	HLM different groups	Decision, groups	Stakeholder theory and resource dependence theory	Likelihood of providing stakeholder support	6	2	2 × 16
Jeffery S. McMullen; Dean A. Shepherd	2006	Decision policies that assistant professors use to choose a research strategy	54 professors	HLM	Decision	Self-efficacy theory	Intention to pursue consensus challenging research	5	2	2 × 16
Volker Bruns; Daniel V. Holland; Dean A. Shepherd; Johan Wiklund	2008	Role of general and specific human capital in assessments of small-business loan requests	114 Swedish loan officers	HLM	Decision, individual	Human capital	Probability to support business' credit request	8	2	2 × 16
Dawn R. DeTienne; Dean A. Shepherd; Julio O. De Castro	2008	Factors that lead entrepreneurs to persist with under performing firms	89 entrepreneurs	HLM	Decision, individual	Staw's commitment	Decision to persist with an theory underperforming firm	7	2	2 × 16
Holger Patzelt; Dean A. Shepherd; David Deeds; Steven W. Bradley	2008	Role of financial slack in the decisions of technology venture managers to seek strategic alliances	51 managers of entrepreneurial firms	HLM	Decision	Capability based view	Attractiveness of seeking an alliance partner	8	2	2 × 16
Ethel Brundin; Holger Patzelt; Dean A. Shepherd	2008	Influence of emotional displays of managers on the willingness of employees to act entrepreneurially	91 employees from 31 small entrepreneurially oriented firms	HLM	Decision, individual, firm	Emotions and	Willingness to act entrepreneurial entrepreneurially at work motivation literature	6	2	2 × 16
Holger Patzelt; Dean A. Shepherd	2008	Model of alliance managers' decisions toward persisting in underperforming alliances based on their concomitant consideration of the control and trust	88 alliance managers	HLM	Decision, individual	Persistence theories	Likelihood to allocate further resources to an underperforming alliance	5	2	2 × 16

Table 1 (*Continued*)

Author(s)	Year	Content	Sample	Analysis method	Level of analysis	Theory used	Dependent variable	# of decision attributes	# of levels	# of scenarios
Holger Patzelt; Dean A. Shepherd	2009	Entrepreneurs' perception of the usefulness of policy programs aimed at facilitating the development of academic ventures	98 academic entrepreneurs	HLM	Decision	Goal-setting theory	Usefulness of the described policy programs for the development of their firm	6	2	2 × 16
Alexander McKelvie; J. Michael Haynie; Veronica Gustavsson	2009	Entrepreneurial decisions and behaviors based on uncertainty	90 decision-makers working in entrepreneurial software firms	HLM	Decision, individual	Uncertainty literature	Willingness to engage in entrepreneurial action	7	2	2 × 16
Alexandra Dawson	2009	Decision making criteria that are employed by private equity investors selecting family firms	41 private equity professionals	HLM	Decision	Resource-based view and agency theory	Likelihood of investing in a family business	7	2	2 × 16
J. Michael Haynie; Dean A. Shepherd; Jeffery S. McMullen	2009	Model of entrepreneurial opportunity evaluation based on resource-based perspective	73 entrepreneurs	HLM	Decision	Resource-based view	Entrepreneurs' evaluation of opportunity attractiveness	5	2	2 × 16
Erik Monsen; Holger Patzelt; Todd Saxton	2010	Impact of incentive system design on employee participation in new corporate ventures	61 corporate employees	HLM	Decision	Utility maximization	Participation in new Theory corporate ventures	5	2	2 × 16
J. Robert Mitchell; Dean A. Shepherd	2010	Opportunity decisions based on the fit between decision alternatives and representational image for the decision	121 executives of technology firms	HLM	Decision, individual	Self-representation	Likelihood to act on and decision-making entrepreneurial opportunity literature	4	2	2 × 8
Daniel V. Holland; Dean A. Shepherd	2013	Decision of persisting under high/low adversity moderated by values of the entrepreneur	100 entrepreneurs	HLM	Decision, individual	Decision-making	Likelihood to persist literature and theory of values	4	2	2 × 16

Source: Own.

Note: Includes articles using metric conjoint analysis since 1994 out of the following journals: Strategic Management Journal, Journal of Management, Journal of Management Studies, Management Science, Organization Science, Entrepreneurship Theory & Practice, Journal of Small Business Management, Journal of Business Venturing.

method has been growing over time. In recent years, the number of publications per year has been steadily increasing. Nearly half of these studies have been published during the period from 2008 to 2013, with none in 2011 and 2012 and only one in 2013. Fig. 1 shows the number of published metric conjoint studies over the time period from 1994 to 2013.

When looking at the content of the studies in our literature review, we found that nearly all studies researched managers' decision making. This research focus seems intuitive, as the analysis of decision making is central to conjoint analysis. The majority of the studies (17 of 26) are within the area of entrepreneurship. One central research theme of this area is research on founders or managers in entrepreneur-related firms, such as venture capital firms (e.g., Heneman, Tansky, & Camp, 2000). Thus, their decision making, which can be studied with metric conjoint analysis, is of interest.

The literature review shows that two different theoretical approaches among a variety of different theoretical approaches are particular common when forming the theoretical basis for the metric conjoint studies. First, the resource-based view (RBV) and related theories are used in several studies (Bruns et al., 2008; Choi & Shepherd, 2004; Dawson, 2011; Haynie, Shepherd, & McMullen, 2009; Patzelt, Shepherd, Deeds, & Bradley, 2008). In its origins, RBV explains how organizations can develop (sustained) competitive advantages by using a certain resource-combination (Barney, 1991; Penrose, 1959; Wernerfelt, 1984). For example, decisions to use, to acquire or to develop resources or decisions based on a certain resource position such as organizational boundary decisions are at the core of this theory (Santos & Eisenhardt, 2005) and can be empirically tested by using metric conjoint analysis. Second, economics-based decision theories are used in several of the studies in our literature review (Douglas & Shepherd, 2002; Monsen, Patzelt, & Saxton, 2009; Shepherd & Zacharakis, 2000; Shepherd, Zacharakis, & Baron, 2003).

In addition, we can learn from the literature review on metric conjoint analysis about how the methodology has been applied in management studies. The literature review confirms the rule of thumb for the required sample size of 50 respondents for a single-level study and 100 for a multi-level study using this method. The average sample size is higher in multi-level studies than in single-level studies, and most studies have a sample size that is about the required size. The number of decision attributes is between three and eight for all the studies, and most of the decision attributes are explained at two levels. Further, with one exception, all the studies present either 16 or 32 scenarios to respondents (including replicated scenarios). This number seems to be an appropriate level for empirical research conducted with managers. The full replication of the scenarios is standard for this type of study (24 of 26). Finally, the majority of the studies (16 of 26) use HLM as an analysis method.

Field study example

In this section, we show the advantages of metric conjoint analysis with an exemplary study that examines how the organizational context influences the organizational boundary decision to use management consultants in family businesses. We limit ourselves to a short description of the study background in this article, as the purpose is to highlight the methodology rather than the theoretical background.

Theoretical decision model

One way of exploiting the advantages that metric conjoint analysis offers is to look at decisions that are nested in a particular organizational context. A decision that has not been adequately

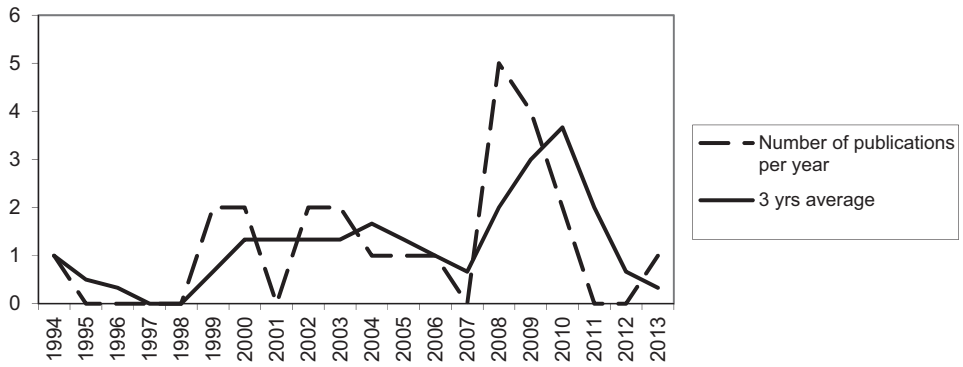

Fig. 1. Metric conjoint studies over time.
Source: Own.

contextualized is the decision of organizations regarding whether to use strategic management consultants to support management projects. Strategic management consulting is "an advisory service contracted for and provided by specially trained and qualified persons who assist, in an objective manner, the ... [client's top management] to identify and analyze management problems, recommend solutions and help in the implementation of those solutions" (Greiner & Metzger, 1983: 7). In the family firm context, strategic management consultants belong to the group of formal advisors concentrating on content: "Content experts operate within one of the specific systems found in the three circle model and provide expertise on a particular area, such as tax law or investments." (Strike, 2012: 157).

The central research question that this study builds on is how organizational context influences the organizational boundary decision to use management consultants. This study thus answers the call of Memili et al. (2011) for research examining variations in the make-or-buy decisions of family firms according to the specific organizational context. The theoretical framework enabling research on such an organizational boundary decision is the resource-based view (Barney, 1992; Leiblein, 2003). We place this study in the organizational context of family businesses, as family businesses provide a rather stable but also distinct organizational context (Klein, Astrachan, & Smyrnios, 2005), which enables us to build subgroups of family businesses that are internally inclusive and externally exclusive. In a family business, a family exerts power over the organization and its strategic direction through ownership, top management, or board positions (Klein et al., 2005). As "it is the needs of the family that make family firm advising significantly different from advising nonfamily firms" (Reay, Pearson, & Dyer, 2013: 212), we take the family firm context into consideration when we examine the decision to use a strategy consultant. Fig. 2 shows the research model that we use.

Our model sheds light on organizational boundary decisions to use management consultants to support management projects in family businesses (see Fig. 2). In order to successfully conduct a management project, particular capabilities are necessary (Bryson & Bromiley, 1993; Ethiraj, Kale, Krishnan, & Jitendra, 2005), some of which can be provided by management consultants (Nippa & Petzold, 2002). According to the literature, consultants provide three "critical management resources": knowledge and experience, support in decision implementation, and capacity and time (Nippa & Petzold, 2002; Richter, 2004). The availability of these capabilities influences the decision regarding whether to use external management consultants (Harste, 2008). From this basis, we build our first set of hypotheses:

Hypothesis 1. The higher the perceived need is in a management project for capabilities that consultants can provide (H1a: knowledge & experience; H1b: support in decision implementation; H1c: capacity and time), the higher the likelihood will be that management consultants are used.

The decision to use management consultants is nested in a particular organizational context. The context comprises those "stimuli and phenomena that surround and thus exist in the environment external to the [object under research], most often at a different level of analysis" (Mowday & Sutton, 1993: 198). Family businesses provide the organizational context for our research. We

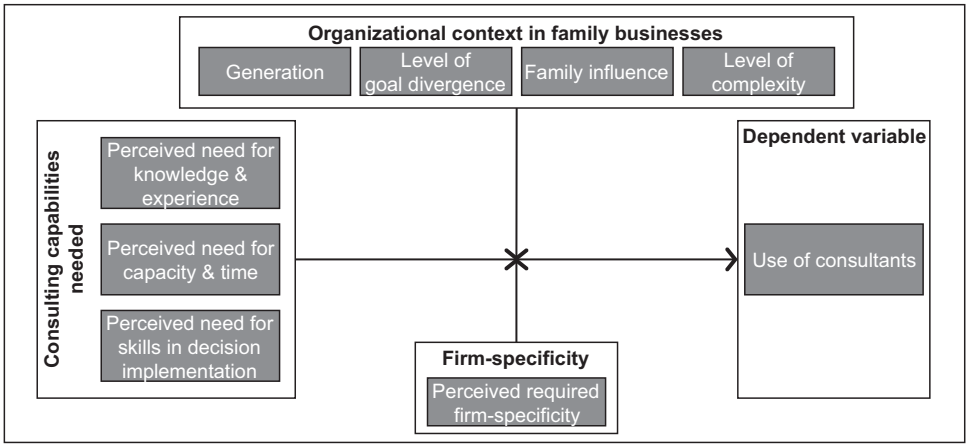

Fig. 2. Multilevel research model of make/buy decisions of consulting in family firms.
Source: Own.

define the family business organizational context along four dimensions (Klein, 2009; Klein et al., 2005): generation of the family involved (Miller, Le Breton-Miller, Lester, & Cannella, 2007), level of goal alignment between family owners and managers (Jaskiewicz & Klein, 2007), level of family influence (Barnett & Kellermanns, 2006), and degree of business complexity (Klein, 2009). We propose the following hypotheses:

Hypothesis 2. The perceived need for consulting capabilities (H2a: knowledge & experience; H2b: support in decision implementation; H2c: capacity and time) will increasingly lead to the use of management consultants the further away the generation owning the business is from the founding generation.

Hypothesis 3. The perceived need for consulting capabilities (H3a: knowledge & experience; H3b: support in decision implementation; H3c: capacity and time) will increasingly lead to the use of management consultants the lower the level of goal alignment is between family firm owners and managers.

Hypothesis 4. The perceived need for consulting capabilities (H4a: knowledge & experience; H4b: support in decision implementation; H4c: capacity and time) will increasingly lead to the use of management consultants the lower the family influence is.

Hypothesis 5. The perceived need for consulting capabilities (H5a: knowledge & experience; H5b: support in decision implementation; H5c: capacity and time) will increasingly lead to the use of management consultants the higher the level of complexity is.

Empirical research shows that management projects that have a high need for firm-specific resources are more likely to use internal staff than to use management consultants for project support (Harste, 2008; Niewiem, 2005). A project is high in firm specificity when it requires resources that are linked, that is, specific, to the organization's other resources (Conner, 1991). Hence, we argue that the perceived requirement for firm specificity in a management project moderates the relationship between consulting capabilities and use of consultants. We thus propose the following hypothesis:

Hypothesis 6. The higher the perceived required firm specificity is, the weaker the relationship between needed consulting capabilities (H6a: knowledge & experience; H6b: support in decision implementation; H6c: capacity and time) and the use of consultants will be.

After the abridged development of the various hypotheses underlying our research, the following section presents the methodology that we used to test these hypotheses through metric conjoint analysis.

Methodology

Sample and data collection

Our sample frame consists of top managers of large family businesses in Germany. We operationalized Klein et al.'s (2005) definition of family businesses by looking at businesses with at least 50% of the ownership rights in the hands of one family. At or above this level, the family has enough voting rights to exert power over the organization and its strategic direction. This threshold is in line with existing empirical research within the family business context (e.g., Westhead, Cowling, & Howorth, 2001). We focused on large businesses as top management consultants mainly target businesses that have the financial resources to purchase these consultancy services. Based on an expert interview with a practicing consultant from a large top management consultancy, we included only companies with an annual turnover above €100 million and with more than 200 full-time employees in our sampling frame.

We looked at the German economy for three reasons: First, Germany is the second largest consulting market in Europe (Mohe, 2005a). Second, family businesses play a major role in the German economy (Klein, 2000). Third, as both authors are located in Germany, looking at the German economy saved resources during the empirical part of this study. Finally, we focused on top first-level managers, as these individuals decide on the use of management consultants in most companies (Werr & Pemer, 2005).

In order to identify top managers of large German family businesses, we used the commercial MARKUS database, which is published by the German company Creditreform. The MARKUS database contains detailed company profiles of about 900,000 German companies, which represents about 95% of Germany's GDP. We used the MARKUS database because it is the only large German database that includes data on ownership structure, which was necessary to separate family- from non-family businesses. We accessed the database in July 2009 and extracted a list of 1626 companies that matched our criteria. From this list, we took a random sample by randomly sorting the list using the RAND function in Excel, which we matched with the names of top managers and contact details from companies' homepages.

We collected the data during the period from August to November 2009. In order to increase the response rate (Diamantopoulos & Schlegelmilch, 1996), we contacted potential participants or their assistants by telephone, explained the purpose of our study, and asked the top executive to participate in the experiment or the assistant to forward relevant materials. We offered participants three potential ways to respond to the survey: first, a paper-based booklet, which we sent by postal mail together with a prepaid return envelope; second, a PDF document, which we sent by email, enabling the participant to print the materials and return them by fax; third, a web-based survey. In order to save resources, we sent out a paper-based booklet only when we directly were able to talk to the top executive and he or she promised to participate in the study. In cases in which we talked to an assistant and the assistant promised to forward the materials to the top manager, we generally emailed PDF documents. We renounced to use the web-based survey early in the data collection period, as we did not receive a single response through this channel. If the top managers did not respond within three weeks, we contacted them again by email or phone to remind them of the importance of their participation and again to provide them with the experiment materials.

In total, we contacted the top executives of 909 large German family businesses out of the list of 1626 companies. Of these, 68.8% (625 contacts) agreed to participate (or at least to look at the materials) or agreed to forward the materials to the relevant person in the company. We, therefore, sent the experiment materials to these 625 contacts. We ultimately received 120 responses, representing a 19.2% response rate in terms of individuals invited. Since we had to eliminate 13 of these responses because of missing data or unreliable answers (see below), we were left with 107 participants. The response rate and sample size are in line with existing studies using the metric conjoint analysis method (e.g., McKelvie, Haynie, & Gustavsson, 2011). When we compared the assessments of early (first third) and late respondents (last third), there were no significant differences ($p > 0.10$). Thus, there is unlikely to be a nonresponse bias in our sample.

The family businesses in our sample were of different sizes and from different industries. The mean number of employees was 1781, with the largest company having over 24,000 employees and the smallest having 200 employees (SD 2761). The mean annual

turnover was €402 M, ranging from €100 M to €6300 M (SD €674 M). We compared the revenue structure of the participating companies to the revenue structure of the non-participating companies in our database and found no significant differences ($p > 0.10$). The businesses operated in different industries based on the first digit of the firms' SIC code. We found no significant influence of industry on the results of our experiment ($p > 0.10$).

When selecting the respondents within the randomly selected firm, we ensured that the position and experience of the respondents were of high relevance to our experiment. In all, 86.8% were part of the management team, 8.8% were part of the first or second management level, and 4.4% were part of the firm's advisory board. We only included responses in our sample that did not come form the top management team when the respondents had sufficient oversight over projects within the company, which 97.4% of the respondents in our sample had. Moreover, 97.4% already had experience with consultants in some form. In all, 46.5% of the respondents were family members, and 53.5% were non-family managers; 94.9% of the respondents were male, and 5.1% were female. The respondents had a mean age of 48.3 years (SD 9.8) and worked, on average, 13.7 years for their current company (SD 11.0). Regarding educational background, 95.7% hold a degree of higher education (MBA, PhD, degree of university, degree of university of applied sciences).

Conjoint methodology

Metric conjoint analysis is particularly useful for the purpose of our research for various reasons. Most notably, some of the shortcomings of post hoc methodologies are especially relevant in our research setting. Retrospective assessments of consultants often suffer from attribution bias, as decision makers often overstate the criteria that are actually used (Mohe, 2005b). In addition, with a post hoc methodology, we would have to rely on past projects, and thus, crucial information about an event might not be available, and comparability between the projects of different respondents might be lacking. Metric conjoint analysis avoids these shortcomings by looking at current decisions in a hypothetical setup. Further, metric conjoint analysis allows us to analyze contingent relationships among variables (Shepherd, 2011), which we have hypothesized in our study.

We tried to minimize the potential limitation of the low external validity of the conjoint method in our research setting. We developed our decision attributes based on existing theoretical work and heavily pilot tested these attributes in an empirical setting. We received comments from the participants that the study had face validity, namely, that we had included the most important attributes (e.g., "These are exactly the decision criteria that we think of when we engage consultants!") and that we described a hypothetical but real-life situation (e.g., "I am very interested about the results of your study. We often face the decision that you describe in your experiment."). We further asked the respondents in the post-experiment questionnaire whether the mentioned criteria are important and whether they could mention any missing criteria they use in making decisions regarding the use of management consultants. We received positive results, as none of the respondents mentioned additional criteria; thus, the answers supported the results of our conjoint experiment. Therefore, we conclude that our experiment has high external validity.

Decision situation

In our conjoint experiment, the respondents were first provided with a description of the decision situation. Subsequently, they were presented with hypothetical decision profiles representing the decision to use management consultants. The decision attributes that are provided in the decision profile were described within two different predetermined levels.

In the description of the decision situation, we asked respondents to assume that they are responsible to conduct a strategic project. We aimed to create high levels of responsibility in the decision situations owing to strong involvement of respondents. We defined a strategic project as a project of high importance to the company, the results of which significantly influence the company's success/failure (Niewiem, 2005). In this situation, the respondents were instructed to think about engaging a strategic management consultant. We defined strategic management consultants according to the definition of Greiner and Metzger (1983). We explained to the respondents that they should assess in 17 hypothetical decision situations (see below) whether they would engage external strategic management consultants on a seven-point Likert-type scale anchored by the end points 'YES, definitely engage management consultants' and 'NO, definitely not engage management consultants'. Finally, we asked the managers to assume that they are acting in today's economic environment in Germany and in their particular organizational context. We further stated that any attributes and environmental variables are not specified in the decision profiles but that possibly influence their judgment should be considered to be constant across all profiles.

Decision attributes

Our decision profiles consisted of four decision attributes. Consistent with other research studies using metric conjoint analysis (e.g., Song, Calantone, & Di Benedetto, 2002), we described each decision attribute at two levels. Descriptions of the attributes were provided to respondents in the instruction section of our experiment booklet.

Need for knowledge and experience refers to those capabilities that are very important to conduct a successful management project (Bryson & Bromiley, 1993; Castanis & Helfat, 1991; Ethiraj et al., 2005; Holcomb, Holmes, & Connelly, 2009; Kogut & Zander, 1992). Knowledge can be either information that is specific to some area or know-how (possessing skills or ingenuity) (Kogut & Zander, 1992). We describe this attribute at two levels: *High*, indicating that a high degree of knowledge (e.g., on industries or project management) and experience is necessary to conduct a successful project, and *Low*, indicating that a low degree of knowledge (e.g., on industries or project management) and experience is necessary to conduct a successful project.

Need for support in decision implementation is based on the ability to implement decisions, which is a prerequisite for developing a competitive advantage out of the organization's resource position (Barney, 2007; Barney & Zajac, 1994). During a management project, a number of decisions need to be made and implemented; often, support from various parts of the organization is necessary (Pinto & Prescott, 1990). Consultants can support project management in implementing decisions (Nippa & Petzold, 2002). This attribute is described at two levels: *High*, indicating that a high degree of support in decision implementation is necessary to conduct a successful project, and *Low*, indicating that a low degree of support in decision implementation is necessary to conduct a successful project.

Need for capacity and time is a resource that is necessary to carry out management projects (Bluedorn & Denhardt, 1988; Bryson & Bromiley, 1993). Although being a generic resource that is a commodity in the long-term (Bluedorn & Denhardt, 1988; Danneels, 2007), a sufficient level of (management) capacity and time can become a valuable short-term resource (Bryson & Bromiley, 1993). Management consultants can provide additional capacity to support a management project for a certain period of time (Nippa & Petzold, 2002). We, again, describe this attribute at

two levels: *High*, indicating that high capacity and substantial time are necessary to conduct a successful project, and *Low*, indicating that low capacity and little time are necessary to conduct a successful project.

Finally, form of project support refers to the level of firm specificity that a project requires. A project is high in firm specificity when it requires resources that are linked, that is, specific, to the organization's other resources (Conner, 1991). As we have shown, this relevant decision attribute is likely to moderate the relationship between the other decision attributes and the dependent variable—use of management consultants. We describe the form of project support at two levels: *Firm-specific*, indicating that project support needs to be firm specific to conduct a successful project (e.g., knowledge about firm-specific capabilities, processes and activities is necessary), and *Nonfirm-specific*, indicating that project support does not need to be firm specific to conduct a successful project (e.g., knowledge about firm-specific capabilities, processes and activities is not necessary).

Post-experiment questionnaire

We measured our four organizational context variables of family businesses by using a three-page post-experiment questionnaire, which we attached to our conjoint experiment booklet. We used existing and validated measures for all variables. The variables for family influence, generation and goal alignment were measured by using the F-PEC construct from Klein et al. (2005). We measured family influence by voting shares owned by the family using a reduced measure of the original construct. Generation was measured as the mean of the owning generation, the business leading generation and the generation on an advisory board. Goal alignment was measured by using a validated 13-item, 7-point Likert-type scale. We operationalized complexity by following the approach of Yasai-Ardekani and Haug (1997) by developing a measure out of size, divisionalization and diversification. Size was measured as the logarithm of the number of employees within the company. Divisionalization was measured by the number of business units of the respondent's company. Diversification was measured by the number of different single-digit SIC code industries in which a company operates. The measure of complexity was developed as an average of the standardized scores on these scales. Finally, the post-experiment questionnaire also contained a one-page section to collect the demographic data of participants and their respective firms, which are reported above.

Experimental design

Each decision situation of our study is described by four attributes, each of which is represented at two levels, yielding $2^4 = 16$ possible combinations. In conjoint studies, reliability is accounted for by replicating profiles in order to perform test–retest checks (Shepherd & Zacharakis, 1997). In this case, our final design would have consisted of 32 profiles. We chose an orthogonal, fractional factorial design, which reduced the attribute combinations to 8 in order to increase the response rate. Our design allowed us to test all the main effects and all the hypothesized two-way interactions (Hahn & Shapiro, 1966). Including retests, the assessment task thus consisted of 16 profiles. We provided respondents with one additional profile that was used to familiarize them with the task but that was excluded from the analysis. Because of the orthogonal design, the correlation between all attributes is zero. We thus do not provide a correlation table. We controlled for ordering effects by randomly assigning the 16 profiles and four attributes in two ways, yielding four versions of our study. We did not find significant differences across the versions ($p > 0.10$).

Statistical method

Our data consisted of 16 assessments for each of the reliably answering 107 participants, yielding 1712 data points. However, these data points are not independent of each other: the different decisions are made in different organizations. Thus, the variance in the assessment of responses arises from two sources, namely, the organizational level and the individual decision level. The appropriate method to account for this nested nature of the data is HLM. HLM parcels out variance at each level: the individual decision level and the organizational level.

Results

We received 120 responses from our paper-based experiment. We assessed the reliability of these responses by calculating Pearson correlations between the original and the repeated profiles. In all, 13 of these 120 responses (10.8%) were not reliable. These responses were thus omitted from further analysis. The reliability criterion of previous studies (e.g., Patzelt & Shepherd, 2009) for an orthogonal, fractional factorial design of 32 scenarios was applied ($p < 0.05$). The mean test–retest correlation was .81, which is above the test–retest correlation reported in other conjoint studies (Shepherd, 1999a: 0.69). In all, 87.9% (94 of 107) of the individual assessments were statistically significant ($p < 0.05$), and the mean R^2 of these models was 0.88. Both of these criteria are in line with existing metric conjoint research (e.g., Douglas & Shepherd, 2002: 0.83). In Table 2, we report the results of our analysis.

The findings show significant main effects for all decision attributes ($p < 0.01$). This finding indicates that a need for the capabilities that consultants can provide actually increases the use of management consultants in family businesses. Hypothesis 1a (need for knowledge and experience increases the use of consultants), Hypothesis 1b (need for support in decision implementation increases the use of consultants) and Hypothesis 1c (need for capacity and time increases the use of consultants) are thus fully supported by our data.

The focus of our study, however, was on the interacting role of the four different dimensions of the family business organizational context. Three of these four dimensions show interactions effects with the main decision attributes: family influence, generation and complexity. As shown in Fig. 3, there are interaction effects among some but not all of the attributes.

To interpret the nature of the significant interactions, we plot each relationship in Fig. 3. On the *x*-axis is the decision attribute, on the *y*-axis is the assessed use of management consultants, and we plot separate lines for low and high levels of the context dimensions. Fig. 3A and B shows that the positive effect of need for knowledge and experience as well as that for need for capacity and time on the use of management consultants is stronger when the leading generation of the business is further away from the founding generation. The interaction involving the need for knowledge and experience is only marginally significant, providing moderate support for Hypothesis 2a ($p < 0.10$), whereas the interaction involving the need for capacity and time is significant and thus supports Hypothesis 2c ($p < 0.05$). Fig. 3C shows that the lower the family influence in a family business is, the stronger the effect of need for capacity and time on the use of management consultants is. The data show a marginal significant interaction effect ($p < 0.10$), moderately supporting Hypothesis 4c. Fig. 3D shows that high complexity enhances the positive effect of need for support in decision implementation on the use of management consultants. This relationship proposed in Hypothesis 5b is moderately supported by the data ($p < 0.10$).

Further, required firm specificity moderates the relationship between decision attributes and the dependent variable. Here,

Table 2
Top executive's assessment of the willingness to use strategic management consultants.

Evaluation criteria	Hypothesis	Coefficient	Standard error	*t*-Ratio
Intercept		3.199	0.072	44.169***
Main effects				
Need for knowledge and experience	H1	1.289	0.098	13.139***
Need for support in decision implementation	H2	0.296	0.092	3.211***
Need for capacity and time	H3	1.368	0.983	13.918***
Firm-specificity		−0.894	0.102	−8.772***
Interaction effects decision level				
Specificity × need for knowledge and experience	H16	−0.287	0.088	−3.251***
Specificity × need for support in decision implementation	H17	0.035	0.110	0.319
Specificity × need for capacity and time	H18	0.012	0.107	0.109
Interaction effects organizational level				
Generation × need for knowledge and experience	H4	0.141	0.076	1.855*
Generation × need for support in decision implementation	H5	−0.015	0.064	−0.233
Generation × need for capacity and time	H6	0.108	0.049	2.203**
Goal alignment × need for knowledge and experience	H7	−0.003	0.094	−0.031
Goal alignment × need for support in decision implementation	H8	0.015	0.095	0.157
Goal alignment × need for capacity and time	H9	−0.079	0.136	−0.584
Family influence × need for knowledge and experience	H10	0.110	0.523	0.211
Family influence × need for support in decision implementation	H11	0.254	0.429	0.593
Family influence × need for capacity and time	H12	−1.174	0.660	−1.778*
Complexity × need for knowledge and experience	H13	0.817	0.553	1.479
Complexity × need for support in decision implementation	H14	1.115	0.604	1.846*
Complexity × need for capacity and time	H15	0.623	0.735	0.848

Source: Own.
$n = 1712$ decisions nested within 107 top executives.
* $p < 0.10$.
** $p < 0.05$.
*** $p < 0.01$.

however, only the interaction effect between firm specificity and need for knowledge and experience is significant ($p < 0.01$). Thus, Hypothesis 6a is supported, whereas Hypotheses 6b and 6c are rejected. The interaction between firm specificity and need for knowledge and experience is plotted in Fig. 3E. The graph shows that top executives of family businesses are more likely to use management consultants in the case of a need for knowledge and experience when the required firm specificity is low.

The main findings of this study indicate that the organizational context in general influences boundary decisions. In our empirical setting of family businesses, all three context dimensions showed interaction effects with some but not all of the decision attributes. Thus, the organizational context comprises a bundle of variables that need to be acknowledged in research on organizational boundaries. However, the context dimensions are not equally relevant when determining the importance of a decision attribute in a boundary decision. In our setting, the relationships involving two decision attributes (need for knowledge and experience; need for capacity and time) in the decision to use management consultants were influenced by two of the three context

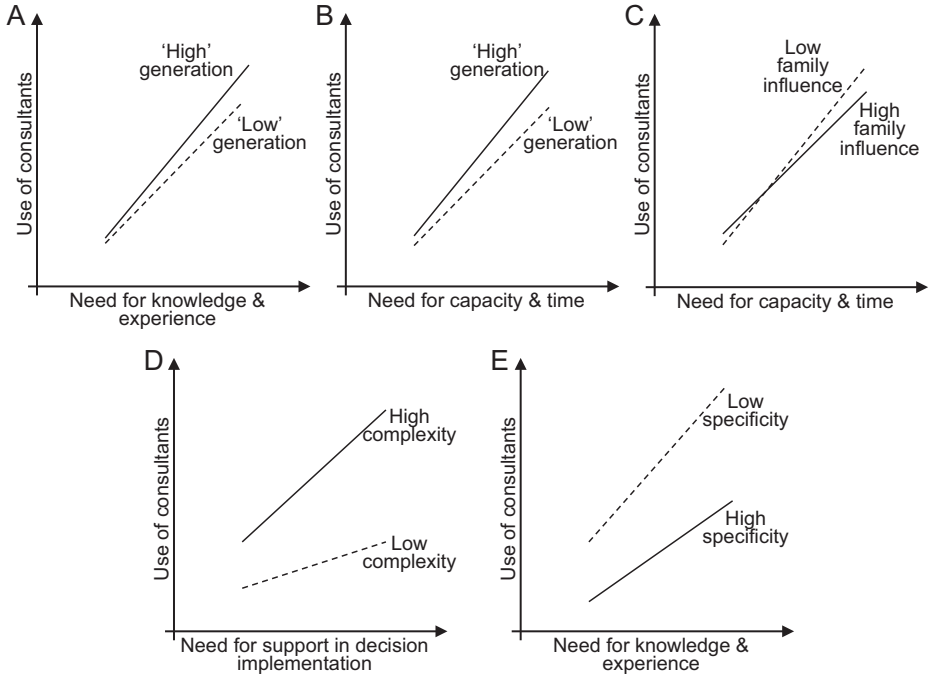

Fig. 3. Interaction effects.
Source: Own.

dimensions. Further, one can observe that the influence of the context on a boundary decision is specific to the decision attribute. The importance of one decision attribute (need for support in decision implementation) was independent from the context.

Potential applications in family business research

In this article, we have presented an exemplary application of the metric conjoint analysis of an organizational boundary decision. However, as our literature review has already indicated, further areas in management research exist in which this method can be applied. In this paragraph, we present some suggestions for promising research areas in the family business field, without claiming to provide an exhaustive list.

Metric conjoint analysis, in general, is of interest to strategy researchers. Strategists' judgments or decisions in a certain environmental and organizational context lead to strategic choices, which, in turn, affect company outcomes or performance (Priem et al., 2004). Thus, strategic management and family firm researchers generally focus on analyzing the influence of various variables on family firm outcomes/performance (e.g., Davies et al., 2010; Surroca et al., 2010; Yu et al., 2012). Metric conjoint analysis is a powerful tool to analyze owners' and managers' judgments or decision making. For example, researchers could analyze the influence of (the family's) resources on strategic decisions or decisions regarding the company's resource position, which addresses a key question within the resource-based view (Barney, 1991; Penrose, 1959; Rau, 2014; Rumelt, 1987; Wernerfelt, 1984).

In addition to its general applicability, metric conjoint analysis is also useful for a number of specific areas of family business research, involving contingent judgments of owners and/or managers (Sharma, 2006). The management of external relationships, such as alliances or joint-ventures, requires managers to choose partners, to maintain or establish a relationship and to exit out of a relationship (Memili et al., 2011; Street & Cameron, 2007). Although—or perhaps because—family firms often operate under financial restrictions, they internationalize less and, if they do so, slower. Their desire for independence restricts alliances, a common requirement for internationalization (Fernández & Nieto, 2013). Only when business risk increases do family firms tend to internationalize more (Gómez-Mejía, Makri, & Larraza-Kintana, 2010) and invest more in R&D (Chrisman & Patel, 2012). The context under which variables these decisions by family business leaders are made is another promising research area in which conjoint analysis could help to better understand firm decision making.

Family business research has shown that family firms rather often chose a niche strategy, which is applicable to small and medium-sized firms (Hitt, Ireland, & Hoskisson, 2009). A related question, thus, concerns how these niche players (a) account for external threats, such as the loss of interest by customers owing to a radical shift in their consumption patterns or the considerable growth of the market triggering the interest of huge corporations, and (b) make sure that they have, despite their narrow focus, considerable growth opportunities (Salvato & Corbetta, 2013). To investigate how family business managers make decisions under these specific threats, conjoint analysis offers a useful approach. Further, the area of strategy process research might also benefit from metric conjoint analysis. Process research, for example, asks questions related to variables of diagnosing strategic issues (Dutton & Duncan, 1987; Dutton, Fahey, & Narayanan, 1983) or information comprehensiveness in particular situations (Eisenhardt, 1989).

In addition, research on the antecedents and perceived consequences of unethical or illegal behavior is an area in which metric conjoint analysis would be useful (Hosmer, 1994). The heterogeneity of family firms (Chua, Chrisman, Steier, & Rau, 2012) stems from the heterogeneity of the influencing families, among other things. These families make decisions based on the values that are embedded in the family's fabric, stemming from their upbringing and education (Klein, 1991): "...what they [the family] tell us is our first syntax, our first grammar..." (Litz & Turner, 2013: 297). What is normatively appropriate and thus regarded as ethical is transmitted from one generation to the next through socialization and by role models (Bandura, 1986). How these deeply embedded values and beliefs influence strategic decision making in family firms can be highlighted by conjoint analysis.

Metric conjoint analysis enables family business researchers to analyze research questions across different levels of analysis. Existing family business research often uses a single level of analysis, whereas most management problems involve multilevel phenomena (Hitt, Beamish, Jackson, & Mathieu, 2007). In particular, the role of the organizational context, which often lies on a different level of analysis, is not sufficiently recognized by researchers (Johns, 2006). Research on hybrid identities (Albert & Whetten, 1985) has recently gained some attention from family business scholars (Shepherd & Haynie, 2009; Sundaramurthy & Kreiner, 2008; Whetten, Foreman, & Dyer, 2013). The organizational identity of family firms can be viewed as an organizational-level phenomenon influencing group-level (e.g., top management team or subsidiary level) or individual-level decisions. The decision regarding who should be the successor and how the process of succession should be organized is, among other factors, influenced by the family's and the family business' identity (Jaskiewicz, Heinrichs, & Rau. 2012). Conjoint analysis offers future research opportunities to test for relationships that have thus far been developed through qualitative research (e.g., Dunn, 1999). Family firms are a heterogeneous group of businesses (Chua et al., 2012), and conjoint analysis offers interesting possibilities to extend our knowledge concerning the role of different cultures (Hofstede, 1980), different levels of uncertainty (McKelvie et al., 2011), or different time horizons (Chrisman & Patel, 2012) on family firm business.

Conclusion

In this article, we reviewed existing empirical studies applying metric conjoint analysis as an empirical method and presented an exemplary study using this method. Metric conjoint analysis is a "technique that requires respondents to make a series of judgments based on a set of attributes (cues) from which the underlying structure of their cognitive system can be investigated" (Shepherd & Zacharakis, 1997: 211). Compared to post hoc methods, such as questionnaires and surveys, this method has the advantage of examining the content of a decision-making process through a decision that respondents are actually making and thus of capturing 'theory-in-use'. However, researchers have to deal with certain limitations of this method. The limited external validity of this method in particular has been mentioned in the literature (Shepherd & Zacharakis, 1997). Any metric conjoint experiment, therefore, has to be grounded in theory and heavily pilot tested.

The literature review showed that the use of metric conjoint analysis has increased in recent years. The methodology is primarily used in entrepreneurship research, but other areas are increasingly adopting the technique as well. The resource-based view is most often used as a theoretical basis for studies using metric conjoint analysis, indicating that this method is relatively well suited for general management research. The literature review, further, provided valuable reference points for future research.

We also presented an exemplary study to show how metric conjoint analysis can be applied in family business research. We

investigated the organizational boundary decision of family firms to engage management consultants in a multi-level research setting. We found that all the hypothesized main decision attributes influenced the boundary decision on the decision level of analysis. We operationalized the organizational context by using different dimensions at an organizational level of analysis and found marginal support for the influence of three of the four dimensions.

Our article shows that metric conjoint analysis is a promising and emerging method for family business research. It can be applied in strategy as well as process research, especially for multi-level analysis. As metric conjoint analysis directly assesses decisions when they are made and as significant results can be drawn from relative small samples, this method might be more appropriate for research on family business owners and managers than commonly applied post hoc methods.

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