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Paper Title: THE INTERPLAY OF CEO SELF-EFFICACY, A FIRM'S EFFECTUAL ORIENTATION AND PERFORMANCE

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THE INTERPLAY OF SELF-EFFICACY, A FIRM'S EFFECTUAL ORIENTATION AND FIRM PERFORMANCE

ABSTRACT

This paper examines the relationship among CEO self-efficacy, effectual orientation and firm performance using survey data from 421 small- and medium sized companies in Germany. We use structural equation modeling to test the direct and indirect effects of general self-efficacy on perceptual measures of firm performance. In order to understand which mechanisms underlie this relationship, we develop a framework integrating effectual orientation – an entrepreneurial business strategy, which is reflected in the effectual activities and behaviors of a firm – as mediator between the self-efficacy-performance relationship. The results confirm a full mediation effect. With our research we add to the ongoing debate if and how dispositional traits affect organizational outcomes. Further, we add insights into the interplay between self-efficacy and effectual behavior.

1. INTRODUCTION

During the past decades there has been a growing debate on the role of psychological traits in management research. Central to this debate has been the question whether or not specific dispositions can be interpreted as useful predictors of organizational outcomes. Whereas some scholars heavily criticize dispositional research (cf. Davis-Blake et al., 1989), others have shown that specific dispositions may predict organizational behavior (cf. Barrick & Mount, 1991; Tett, et al., 1991). Addressing several points of the presented critique on dispositional research by Davis-Blake et al. (1989), House et al. (1996) conclude that “evidence presents a compelling argument for incorporating dispositional theory into explanations of behavior in organizations” (House et al., 1996: 203). Thus, the authors underpin the necessity to intensify research on psychological traits as these are of central relevance to studies on behavior of organizations.

This ongoing debate has also found its way into the entrepreneurship literature. Here, much research has been conducted with the aim to find out why certain persons (defined by specific traits) start firms, whereas others, under the same conditions, do not. This research question has attracted various scholars (cf. Markman & Baron, 2003). Contrary to this approach, Gartner (1989) states in his article “Who is an Entrepreneur? Is the wrong Question” that research on the entrepreneur should rather focus on what the entrepreneur *does* and not who she *is*. Hence, Gartner chooses the behavioral approach over the traits approach arguing that “we need to focus on the process by which new organizations are created” in order to understand how organization come into being (Gartner 1989: 62).

This particular question has been picked up by Sarasvathy in 2001, who argues in her seminal work (cf. 2001) that in order to understand how firms come into being, we need to note the logic of effectuation. She introduces and explains effectuation as specific entrepreneurial heuristics, which expert entrepreneurs have applied in the uncertain contexts of new product creation. In more detail, these principals encompass “the exploitation of means available, the focus on co-creating the future together with partners, the consideration of affordable loss as central decision-criterion, the focus on exploitation of contingencies and the general perception that the

environment is controllable” (Brettel & Werhahn 2012, p: 1). According to Sarasvathy and Dew (2008: 727) all of these principles are “[...] based on alternative behavioral assumptions”, which everyone can learn and use. They briefly state that “effectuation is not a theory about entrepreneurs per se; it is a theory of entrepreneurial expertise” (Sarasvathy and Dew 2008: 732).

In contrast, Goel and Karri (2006) attempt to combine effectual logic with a traits approach. They debate that “entrepreneurial traits interact with the elements of effectuation”. This, for example, makes the “entrepreneur more susceptible to over-trust” (Goel & Karri, 2006: 477). Thus, they initiated an interesting debate on whether or not and if psychological traits affect effectual behavior. In a first response to their article, Sarasvathy and Dew (2008) claim that “out of a wide range of psychological measures, the only one that cannot be ruled out ... is self-efficacy.” (Sarasvathy and Dew 2008: 732).

With our research we want to contribute in three major ways to both topics presented. Firstly, we want to clarify how self-efficacy and effectual orientation are related – hereby contributing to the debate between Sarasvathy & Dew (2008) and Goel & Karri (2006). Second, we want to add insights into disposition research by examining CEO self-efficacy as possible predictor of firm performance. Thirdly, as only few studies address the mechanisms through which dispositional effects impact organizational outcomes, we present and explore effectual orientation as possible mediating variable.

2. CONCEPTUAL FRAMEWORK AND HYPOTHESES

2.1. Self-Efficacy and Performance

In 1977 Bandura introduced the concept of self-efficacy with his seminal publication entitled “Self-efficacy: Toward a Unifying Theory of Behavioral Change”. Bandura describes perceived self-efficacy as the ability to pursue specific actions that may become necessary in order to cope with prospective situations. According to him, it is not only the knowledge, specific skills or operations that are necessary for reaching a desirable level of performance, but the judgment of one’s own capabilities and the corresponding motivation and behavior to reach such a pre-defined level of performance. In other words, “perceived self-efficacy is concerned with judgments of how well one can execute courses of action required to deal with prospective situations”. (Bandura, 1982: 122). People therefore only undertake those activities which they believe they are capable of performing and avoid those activities which they think they are not capable of managing (Bandura, 1977). Bandura (1982) argues that the degree of self-efficacy also determines the level of effort people put into specific tasks and the level of persistence people demonstrate when coping with problems or obstacles. Whereas people with low self-efficacy are more likely to have doubts about their own capabilities and are thus likely to give up early, people with high self-efficacy will exert greater effort to cope with challenges (Bandura & Schunk, 1981; Brown & Inouye, 1978; Schunk, 1981). They will also deal more effectively with challenges and hence produce higher value (Gist & Mitchell, 1992). Accordingly, it was revealed that “perceived self-efficacy influenced subsequent organizational performance through its effects on analytic strategies” (Bandura & Wood, 1989: 805) and can thus be seen as an effective predictor of performance.

At this point we do not want to neglect the common argument that self-efficacy and performance reinforce each other representing a reciprocal causation (Chen et al., 1998). Nevertheless,

scholars have noted that self-efficacy is a better predictor for future performance than past experience (cf. Bandura 1982). More in detail, it is argued that performance is only one source among others affecting a person's perceived self-efficacy. Thus, persons may have high self-efficacy in times of failure and low self-efficacy in times of success.

In light of the conceptual support as well as specific articles showing positive effects of self-efficacy on performance outcomes – i.e. self-efficacy on job performance (Judge & Bono 2001) or self-perceived competencies on venture performance (Chandler & Jansen, 1992) – we propose:

H1: *General self-efficacy will be positively related to firm performance.*

2.2. Self-Efficacy and Effectual Orientation

Belonging to the field of entrepreneurship, Sarasvathy introduced the concept of effectuation as decision process of expert entrepreneurs in 2001. Since then it could gain growing academic importance as researchers showed increasing interest in this topic. According to Sarasvathy effectuation can be interpreted as entrepreneurial heuristics, which expert entrepreneurs apply in the uncertain contexts of new product creation, the creation of new companies or new markets. Different studies have shown that the effectual approach is considerably different from traditional entrepreneurial decision making approaches, which assume individuals to follow goal-driven behavior (Dew et al., 2009). With our latest research on effectuation we transferred the concept from the individual level to a firm-level representing an overarching orientation (Brettel & Werhahn 2012). On this level, we can understand effectuation as business strategy, which is reflected in the particular effectual activities and behaviors of a firm. In more detail, effectuation on this level is regarded as effectual *orientation* as it “reflects the strategic directions implemented by a firm to create the proper behaviors for the continuous superior performance of the business” (Narver & Slater 1990). Firms with an effectual orientation can be characterized by their ability and will to encourage the firm's individual members to (a) continuously bring in their personal means i.e. experience, expertise, knowledge, networks, preferences, skills etc. best possible, (b) to perceive new actors on the market as potential partners as well as to identify and approach committing ones, (c) to base decisions on the concept of affordable loss, (d) to leverage contingencies best possible by making rapid, creative, proactive and effective changes when new information requires a change and (e) to proactively shape the environment – if possible together with partners (Brettel & Werhahn 2012).

The discussed effectual principals provide insights into how people “think, act, make decisions, and solve problems” (Sarasvathy & Dew 2008: 732) and are thus no psychological characteristics. However, Krueger (2007) suggests that entrepreneurial action is primarily based on intentions, which are based on attitudes such as self-efficacy. This argumentation finds empirical evidence from the work of Chen et al. (1998), who found that self-efficacy – as an attitude – may be seen as reliable predictor of entrepreneurial behavior. Moreover, it was shown that possessing relevant traits increases the likelihood that specific behavior is undertaken (Kirkpatrick and Locke, 1991). Following this logic, we propose that CEOs with high levels of self-efficacy are more likely to consequently and successfully implement an effectual orientation. We base this argument on the evidence suggested by prior literature and on the upper echelons theory, which is rooted in Child's (1972) work on the impact of top management's decisions and choices on firm performance. We refer to Hambrick and Finkelstein (1987), who state that top level executives substantially influence the development and implementation of a firm's strategy.

In addition, Hambrick and Mason (1984) claim that specific characteristics of management members may be useful predictors of strategic choices and performance levels. Thus, we argue that generalized self-efficacy has an influence on the CEOs approach to develop, implement and follow a specific strategy, which is reflected in the actions of a firm's individual members and may result in increased firm performance. Next, the respective theoretical links between self-efficacy, effectual orientation and firm performance are presented. Figure 1 provides the research model.

2.3.1. Self-Efficacy and Means Orientation

Firstly, we argue that high levels of CEO self-efficacy make it more likely that a firm's individual members bring in their personal means best possible. On the one hand, we base this argument on the knowledge that the level of perceived self-efficacy is partially interdependent with the assessment and successful use of one's own personal resources. Gist (1987) describes this reciprocal relationship by arguing that the degree of perceived efficacy incorporates motivation and competence. Moreover, Schwarzer et al. (1997: 72) note that "generalized self-efficacy is restricted to one's personal resource beliefs". On the other hand, we base our argument on the work of Bandura (1982), who notes that "people who have a sense of collective efficacy will mobilize their efforts and *resources* in order to cope with external obstacles" (Bandura 1982: 144, emphasis added). In addition, Erikson (2002) shows that the degree of self-efficacy is significantly related to the ability to acquire necessary resources when starting a venture. Thus, we may conclude that CEOs with high levels of self-efficacy are likely to successfully find and apply relevant (personal) means and – with the aim to optimally leverage a firm's means – they also encourage a firm's individual members to use their means best possible.

2.2.1. Self-Efficacy and Partnership Orientation

Secondly, we argue that high levels of CEO self-efficacy make it more likely that a firm's individual employees attempt to perceive new actors in the market as potential partners. They are willing to identify and approach committing partners to co-create the future with them. We know that CEOs with high levels of self-efficacy are successful at mobilizing and mustering the necessary resources when having to deal with obstacles (Bandura 1982) or prospective situations. We also know that often one single firm does not possess all requisite resources when dealing with such a given situation. Therefore, firms may benefit from identifying and approaching other market players that might commit and thus add own valuable resources into relevant processes. This may increase the likelihood of success. Hence, we conclude that CEOs with high levels of self-efficacy are particularly successful at identifying and approaching potential partners. Moreover, with the aim to increase the firm's resource pool, share risks and benefit from an enhanced pool of opportunities, they are also likely to successfully encourage a firm's individual members to identify and approach potential partners.

2.2.2. Self-Efficacy and Affordable Loss Orientation

Thirdly, we argue that CEOs with high levels of self-efficacy do not apply the concept of affordable loss when making decisions and therefore also do not encourage their employees to behave this way. If CEOs were to behave according to this principle, they would strictly avoid making decisions that lead to exceeding the loss that might be affordable. Thus, they would never engage in somewhat risky, but promising undertakings. We know that although entrepreneurs aim to avoid risks (Miner 1990), entrepreneurs with high levels of self-efficacy still feel competent when dealing with situations characterized by risk (Chen et al., 1998). Further, as long

as they do not suffer from heavy overconfidence that may result in unnecessary risk-taking (Hmielecki & Baron, 2008), risky actions present a promising means to secure valuable benefits (Bandura, 1982). Consequently, CEOs with high levels of self-efficacy will not avoid engaging in risky undertakings and thus not encourage the firm's individual members to base all their decisions primarily on the concept of affordable loss.

2.2.3. Self-Efficacy and Contingency Orientation

Fourthly, we argue that high levels of CEO self-efficacy also make it more likely that the individual members of a firm are willing and able to leverage contingencies. We find that high levels of self-efficacy imply that a person believes she is capable of executing courses of action, which may be required in order to deal with prospective, unknown situations (Bandura 1982). Such prospective actions most likely result in decisions or changes that have to be dealt with in rapid, creative, proactive or effective ways. Undertaking this behavior may be triggered by "a strong sense of self-efficacy" as it also facilitates "to withstand failures coupled with some uncertainty" (Bandura 1982: 123). Further, we find that people with low levels of self-efficacy tend to give up when confronted with new, unforeseen and complex situations whereas people with high levels of self-efficacy attempt to even exert greater effort to find solutions and master the challenges (Bandura 1982). In order to deal with these challenges, we propose that individuals need to be able to take advantage of new arising events, surprises or contingencies. Thus, we conclude that CEOs with high levels of self-efficacy successfully make rapid, creative, proactive and effective changes. Moreover, with the aim to leverage as many contingencies as possible and thus create more and more opportunities, CEOs with high self-efficacy are also likely to successfully encourage a firm's individual members to take advantages of contingencies.

2.2.4. Self-Efficacy and Control Orientation

Fifthly, we argue that high levels of self-efficacy also make it more likely that a firm's individual members proactively attempt to shape their surrounding environment. We know that a person's characteristics influence its perception of situations and consequently its environment (cf. House et al. 1996). Thus, the degree of self-efficacy may influence the degree to which oneself may exert a controlling influence on the environment. Also, Bandura and Wood state that high levels of self-efficacy enable people to "effect changes by creative use of capabilities and enlistment of effort" constituting "the personal side of transactional control process" (Bandura and Wood 1989: 805). Put differently, people who show high levels of self-efficacy are able and motivated to find ways to exercise control "[...] in environments containing limited opportunities and many constraints" (806). Thus, we may conclude, that CEOs with high levels of self-efficacy tend to perceive the environment as controllable. Further, with the aim to achieve as much control as possible on the environment, CEOs with high levels of self-efficacy are likely to successfully encourage a firm's individual members to exert a controlling influence on the environment.

Although we expect that self-efficacy and affordable loss are not positively associated, we argue that the sum of all effectual dimensions outweighs this effect – being positively associated with self-efficacy. Thus, we state:

H2: High levels of CEO self-efficacy will be positively associated with effectual orientation.

2.3. Effectual Orientation and Performance

2.3.1. Means-Orientation and Performance

In her seminal work, Sarasvathy (2001) argues that “effectuation processes take a set of means as given and focus on selecting between possible effects that can be created with that set of means.” (p. 245). Similar to the resource-based view, a means orientation encompasses all those means (resources) that enable firms to differentiate themselves from others and present possible performance-drivers. More precisely, observing effectual processes we find that especially those resources seem critical that meet one of the four key requirements for a resource to be strategically important: a resource should be valuable, rare, inimitable or non-substitutable (Barney, 1991). According to Ulrich and Lake (1991) particularly the unique skills and capabilities of employees are not only very valuable, but present a crucial requirement for gaining competitive advantage. Hence, a high means orientation is likely to positively influence performance as it provides a promising framework for leveraging the unique and very valuable means of its individual employees.

2.3.2. Partnership Orientation and Performance

According to Sarasvathy (2001) and Wiltbank (2006) engaging in partnerships may provide firms with more control than conducting a detailed market research or competitive analysis. We find support for a performance-enhancing effect of a partnership orientation from the strategic decision-making comprehensiveness literature. This research stream analyses to which extent companies gather and use environmental information before deciding what to do next (Brinckmann et al., 2010). Especially in uncertain environments that we are facing today, strategic decision-making comprehensiveness has been found to negatively correlate with firm performance (Fredrickson & Mitchell, 1984; Fredrickson & Iaquinto, 1989). Secondly, by cooperating with potential partners, firms may benefit from access to a larger pool of available resources (Brettel et al., 2011). Further, based on the increasing number of resources available, multiple effects may be created together. Finally, by working with committed partners a firm may achieve control over the future and reduce uncertainty (Sarasvathy, 2001). Thus, we conclude that a partnership-orientation is likely to positively influence performance as it provides a promising framework for pursuing performance-enhancing opportunities in cooperation with partners that a firm could not have pursued on its own.

2.3.3. Affordable Loss Orientation and Performance

Very often, the outcomes of decisions that firms have to take are not predictable. According to Sarasvathy (2001) there are two different approaches to make this decision: a causation or an effectuation approach. Following a causal approach, a decision or a selection of alternatives is based on expected return. Following an effectual approach, a decision or selection of alternatives is based on affordable loss or acceptable risk (Sarasvathy, 2001). According to Dew (2009) affordable loss involves decision makers to estimate “[...] what they might be able to put at risk and determining what they are willing to lose in order to follow a course of action” (p. 110). Thus, on a corporate level an affordable loss orientation requires managers and employees to pursue those initiatives, which are affordable and promise a high return and not pursue those initiatives that promise a high return, but exceed the level of what can be afforded. The affordable loss approach is not expected to positively influence company performance as it lacks an adequate amount of risk-taking that may sometimes become necessary to secure performance (cf. Bandura 1982).

2.3.4. *Contingency Orientation and Performance*

Every company has to face and deal with unforeseen strategic discontinuities or surprises, which cannot be predicted easily – especially when the respective environment is characterized by high uncertainty (Hitt et al., 1998). Such positive or negative discontinuities or surprises may result in specific contingencies for each individual company. According to Sarasvathy (2001, 2008) effectuation processes may enable the firm to capitalize on these contingencies with the aim to create new market opportunities. In this sense, Harmeling (2011) states that contingencies should not be regarded as obstacles that need to be overcome or inconveniences that entrepreneurs must accept, but as “resource in the hands of the decision-maker” (Harmeling 2011: 295). On a corporate level, firms may interpret contingencies as new means. Thus, companies may turn into being active agents of change in the world. We expect a high contingency-orientation to be positively associated with firm performance. Respective firms are not only able to flexibly adapt to changing environments, but able to understand and use unforeseen events, information or surprises as advantageous as possible.

2.4.5. *Control Orientation and Performance*

According to Sarasvathy (2001) the idea of exerting a controlling influence on the future is based on the logic that “to the extent we can control the future, we do not need to predict it” (Sarasvathy 2001, p.251). She argues that *effectuators* divide their “event space” into parts that they can control and parts that they cannot control. Then, *effectuators* focus on what they are able to control in order to shape the environment (Sarasvathy et al., 2008). Critical requirement for this control behavior is based on the notion that the environment is endogenous. This implies that agents may proactively create or co-create their environment. On a corporate level, employees may be encouraged to proactively create more demand, influence trends or create future markets. We argue that a corporate control orientation is positively associated with firm performance as it provides the firm and its employees with a promising alternative strategy to exert a performance-enhancing, controlling influence over the future which they cannot exert otherwise.

Although we argue that affordable loss and performance are not positively associated, we argue that the sum of all dimensions is highly correlated with performance. Thus, we state:

H3: *High levels of effectual orientation will be positively associated with performance.*

2.4. **Effectual Orientation as Mediator**

Implicitly, our discussion has suggested that the effect of self-efficacy on firm performance is mediated by effectual orientation. We argue that high levels of generalized self-efficacy do not per se positively impact firm performance. More concrete, we state that the degree of CEO self-efficacy – representing a top management characteristic – may “influence the type of firm that will be created” (Lafuente and Salas 1989: 18). A high degree of CEO self-efficacy enables the effective and efficient implementation of effectual orientation, which translates into higher performance as employees may receive guidelines on how to behave or make decisions. Based on these arguments, we expect that effectual orientation mediates the relationships between CEO self-efficacy and performance.

H4: *The relationship between general self-efficacy and firm performance will be mediated by effectual orientation.*

3. METHOD

3.1. Overview

This study has employed an online survey sent out to small and medium-sized companies in Germany in February and March 2012. Companies were drawn from the membership data of the German Chamber for Industry and Commerce. Questionnaires were sent and filled by the CEOs or leading managers of the respective firms. They had to assess their level of self-efficacy and were considered to possess the most extensive knowledge about specific firm data and ongoing processes. We contacted the companies via email and invited them to either fill out the online survey or to send us a printed and filled questionnaire per post, fax or scan. Regarding the questionnaires, respondents were asked to answer to the presented items on seven point Likert scales, anchored by “strongly disagree” to “strongly agree”. Our final target population consisted of 3829 contacts. After excluding questionnaires from the sample that contained more than 10 % missing values and estimating missing values for questionnaires with less than 10 % missing values our final sample size included 421 questionnaires. In order to reduce desirability bias, we used the cover letter where we explicitly pointed out that all data would be kept confidential, so that identification of any individual or company may be prevented. Further, we checked for non-response bias by comparing characteristics of early and late respondents (Armstrong & Overton, 1977). As we could not find any significant differences regarding the type or size of business, we concluded that non-response bias was not a severe issue. Further, we conducted the Harman’s single factor test in order to test for common method bias (Podsakoff et al., 2003). The analysis suggested that nine factors with eigenvalues greater than 1.0 could be extracted from the exploratory factor analysis and that these accounted for 69 % of the variance. Thus, also common method bias did not appear to be present.

3.2. Measures

3.2.1. Independent Variables

In order to explore the degree of self-efficacy of the CEOs we used the general self-efficacy scale as it was published by Schwarzer and Jerusalem (1995). Example items include: “When I am confronted with a problem, I can usually find several solutions” and “I am confident that I could deal efficiently with unexpected events”. We chose to use the general self-efficacy over the widely discussed entrepreneurial self-efficacy scale as we do not seek to assess the self-efficacy related to the new venture creation process, but seek to explore the link between the “fundamental ability to cope, perform, and be successful” (Judge and Bono, 2001: 80) of the CEO and respective organizational outcomes. The original scale by Schwarzer and Jerusalem (1995) contained ten items with a Cronbach Alpha score of .85. However, due to convergent validity concerns, we had to eliminate 3 items and due to bad model fit we had to eliminate one item leaving the final scale with six items. Thus, the final scale showed high reliability as the respective Cronbach Alpha lied at 0.84.

3.2.2. Dependent Variables

In order to explore the effectiveness of self-efficacy and effectual orientation we chose company performance as dependent variable. We decided to use subjective performance measures over absolute performance measures as these allow for a better comparability of the companies in our sample that come from different industries and life cycle stages. Further, subjective measures have been proven to be as reliable as objective ones (Wall et al., 2004). Following Vorhies and Morgan (2005), we measured performance through respondents’ subjective assessment of their customers’ satisfaction, profitability and market effectiveness compared to its main competitors

over the past 36 months. We checked for internal consistency by examining the respective Cronbach Alphas: customer satisfaction .85, market effectiveness .85 and profitability.85.

3.2.3. Mediating Variable

In order to assess the different levels of effectual orientation we used our recently developed scale (currently in journal submission process). In the following, respective data for the five sub-dimensions of effectual orientation are presented. The means orientation scale consists of three items ($\alpha=.74$, $FR=.76$, $AVE=.52$). The scale of the second dimension – partnership orientation – contains four items and shows strong reliability and validity ($\alpha=.84$, $FR=.85$, $AVE=.58$). The third dimension, affordable loss orientation, is measured on the basis of three items ($\alpha=.75$, $FR=.76$, $AVE=.52$). The fourth dimension, contingency orientation, contains four items ($\alpha=.80$, $FR=.83$, $AVE=.55$) showing good reliability and validity. Also the fifth dimension, control orientation, consists of four items ($\alpha=.84$, $FR=.86$, $AVE=.61$). Table 2 presents the scale.

3.2.4. Control Variables

We included two control variables in our model that could impact the dependent variable: CEO tenure and the functional background of the CEO. We chose CEO tenure as this can be seen as a proxy for professional experience of the CEO and is able to influence firm outcomes (Wang et al. 2011). CEO tenure was measured by the number of years the CEO had spent in his current position and was adapted from Lefebvre (1992) and Jarymiszyn (1985). We assessed the functional background of the respondents with six different categories including marketing, sales, production, IT, controlling and R&D.

3.3. Mediation effects

A mediation effect is shown when the relationship between the independent variable and the dependent variable loses its significance or is diminished when the mediating variable is added to the model. In case that the initial relationship loses its significance when the mediator is added to the model, we speak of a full mediation, otherwise of a partial mediation. Hence, with mediation it is possible to understand how the independent variable affects the dependent variable. Next, in order to assess the significance of the mediation effect, we use the Sobel test (Sobel 1982) that has been a traditional and widely reported method for testing the significance of this relationship. The formula used to evaluate is presented in the following (Bontis, Booker, & Serenko, 2007):

$$\text{Sobel test equation: } z\text{-value} = \frac{a*b}{\sqrt{(b^2*s_a^2 + a^2*s_b^2)}}$$

4. FINDINGS

4.1. Data Overview

Conducting our survey, we additionally collected data concerning the background of the CEOs, such as age, gender, functional and educational background. Further, we asked the respondents to specify the numbers of years they had spent in their company and in their current position. On average respondents had already worked in their position for about 13.13 years ($SD=8.58$) and had been active in the company for about 16.33 years ($SD=12.68$). Most of them also indicated that they had been working in other industries before ($Mean=2.29$, $SD=1.37$). Summarizing these data, which may also hold as proxies for professional experience of the CEOs, we may argue that

the respondents could be categorized as experienced managers. Respective data is presented in table 2.

4.2. Data Analysis

We tested our hypotheses using structural equation modeling with AMOS 20. We tested all measures for reliability, convergent validity (Bagozzi and Phillips, 1982), and discriminant validity (Bagozzi et al., 1991). In order to ensure reliability, we calculated Cronbach's Alpha with the cut-off point ($>.7$) (Nunnally, 1978) and item-to-total correlations ($>.5$). We checked for convergent validity by assessing if the individual sub-constructs of our research model generated average variances extracted (AVE) above the recommended .5 and factor reliabilities above .6 (Bagozzi & Yi, 1988). As this was the case, we concluded that convergent validity was given. Further, we also achieved discriminant validity as the AVEs of all sub-constructs exceeded the squared correlation between the specific factor with the remaining factors (Fornell and Larcker, 1981). We calculated and evaluated various model fit indices using multiple criteria including the $\chi^2/\text{degrees of freedom}$ ratio (Wheaton, Muthen, Alwin, & Summers, 1877), the Jöreskog and Sörbom's goodness-of-fit index (GFI), the AGFI, the NFI of Bentler and Bonett's (1980), the CFI (comparative fit index) (Hu & Bentler, 1995), the root mean square error of approximation (RMSEA) (Steiger & Lind, 1980), and the standardized root mean square residual (SRMR). We analyzed the overall fit of our final research model within a full structural equation model. The model met established model fit criteria (GFI = .90, RMSEA = .053, χ^2/df = 2,19, AGFI = .88, NFI = .84, CFI = .91, SRMR = .057). Table 3 presents descriptive statistics, AVEs and factor reliabilities.

4.3. Hypothesis Testing

To investigate the direct and indirect effects of general self-efficacy on firm performance we used a structural equation model. Testing for the direct effect of self-efficacy on firm performance in an autonomous research model, we see that there is a positive and also significant impact on firm performance (.302***). Hence, we may confirm the first hypothesis – self efficacy is positively correlated with firm performance. However, when adding effectual orientation as mediator to the research model, we note that the direct effect diminishes; it even loses its significance (.352). At the same time, we note a strong correlation between self-efficacy and the mediating variable effectual orientation (.421***) as well as a strong influence from effectual orientation on firm performance (.307***). In order to evaluate the mediation, we calculated the z-value. As this was highly significant (z-value of 3.203, $p < 0.01$), a full mediation effect is shown. We may therefore confirm hypothesis 2, 3 and 4 as we observe significant correlations between the respective variables and a full mediation effect of effectual orientation. Respective information is shown in table 4.

5. CONCLUSION & DISCUSSION

This research is the first to show that a CEO's self-efficacy is positively related to a firm's effectual orientation, which in turn has a positive impact on performance. Thus, with this research we are able to add insights on the interplay of effectuation and dispositions – a debate which was initiated by Goel and Karri (2006). Second, our findings contribute to the discussion of the role of dispositional research in management research, more specifically in entrepreneurship literature. We show that self-efficacy is a useful predictor of organizational behavior, which helps us to gain a more profound understanding of entrepreneurial processes on a corporate level. Third, we also

contribute to the understanding of the “mechanisms and processes by which TMT characteristics shape firm outcomes” (Carpenter, M.A., Geletkanycz, M.A., & Sanders 2004: 763) as we study effectual orientation as mediating variable.

Like any other study, this research is not without limitations or avenues for further research. Thus, we encourage researchers to examine the role of affordable loss as part of effectual orientation in more detail. As we did not expect positive relationships between a CEO’s self-efficacy and affordable loss orientation or affordable loss orientation and performance, more research is necessary to shed light on the antecedents and impacts of this dimension. Further, we encourage scholars to intensify research around effectual orientation aiming to add to the theoretical generalizability and practical tangibility of this concept.

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FIGURES

Figure 1: Overview of the research model

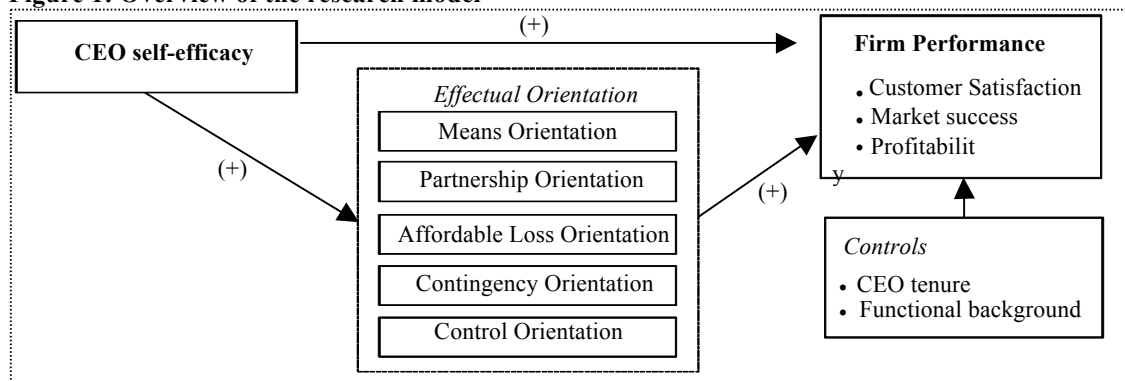


Table 2: Background information on respondents/firms

Sample (N=421)					
Distribution of age		Educational background		Functional background	
20-30 years	2%	Vocational training	2%	Marketing	11%
30-40 years	9%	Bachelors degree	9%	Sales	56%
40-50 years	39%	Graduate	39%	Controlling	2%
60-70 years	11%	MBA	11%	R&D	13%
70 +	1%	Ph.D.	1%	IT	1%
		Habilitation		Production	11%
Gender		Others		Others	6%
male	90%				
female	10%				
Job experience		N° of Employees		Equity in company	
Years in current position (Mean)	13.13	< 50	72%	Yes	57%
Years in current company (Mean)	16.33	50-249	24%	No	43%
		> 250	3%		

Table 3: Correlations, square root of AVE in diagonal and descriptive statistics

1.Means	.525								
2.Partnership	.085	.566							
3.Affordable Loss	.154	.041	.521						
4.Contingency	.204	.159	.058	.529					
5.Control	.143	.391	.010	.246	.556				
6.Customer Satisfaction	.047	.016	.002	.051	.017	.586			
7.Market Success	.015	.010	.003	.052	.068	.147	.616		
8.Profitability	.046	.012	.000	.052	.045	.167	.423	.793	
9.Self-Efficacy	.135	.060	.017	.095	.057	.050	.027	.027	.500
<i>Statistics</i>									
Mean	6,1	5,5	6,2	5,9	5,4	5,6	5,0	4,9	5,4
SD	0,9	1,3	1,2	1,0	1,4	1,0	1,3	1,0	1,1

Table 4: Findings of regression analysis on structural relationships & hypotheses testing

Path	Path coefficient	Result
H1 Model without mediating variable Self-Efficacy → Firm Performance	.302***	(+)
H2 Model with mediating variable Self-Efficacy → Effectual Orientation	.421***	(+)
H3 Effectual Orientation → Firm Performance	.307***	(+)
H4 Self-Efficacy → Firm Performance	.056	
<i>Controls:</i>		
CEO tenure → Firm Performance	.004	
Functional background		
Marketing → Firm Performance	-.101	
Sales → Firm Performance	-.327***	
Controlling → Firm Performance	.041	
Production → Firm Performance	.039	
R&D → Firm Performance	.049	
IT → Firm Performance	.005	

Standardized parameter estimates are shown; ***p<.01, ** p<.05, *p<.1