

Essays on Effectuation: Insights from CEOs, Top Managers, and Middle Management

by

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Abstract

This dissertation aims to understand effectuation theory by examining the individual antecedents of effectuation principles, and the materialization of effectuation principles within the firm.

Essay 1 investigates the relationship between chief executive officer (CEO) narcissism and affordable loss (AL) behaviors, based on the narcissistic admiration and narcissistic rivalry perspective. The affordable loss heuristic, as one crucial sub-dimension of effectuation, delineates the maximum level of investment entrepreneurs are ready to lose in a worst-case scenario. Conflicting conceptualizations remain regarding whether entrepreneurs' psychological traits matter for AL (Grégoire & Cherchem, 2020; Hensel & Visser, 2020; Sarasvathy & Dew, 2008). Using data collected from the CEOs and paired vice presidents at 122 small and medium enterprises (SMEs) in mainland China, this study explores the association between psychological traits, especially CEO narcissism and AL behaviors under environment and resource constraints (e.g., perceived uncertainty and slack resources).

The findings show that CEO admiration-based narcissism is positively related to AL behaviors in the firm. Furthermore, when firms hold more slack resources, narcissistic admiration has a stronger positive association with AL; while when the environment becomes more uncertain, narcissistic admiration has a weaker positive association with AL. Meanwhile, only when environment becomes more uncertain, CEO rivalry-based narcissism has a stronger negative association with AL. This article contributes to trait-based effectuation research and suggests that individual psychological traits affect AL behaviors at the firm level, though the patterns of the relationship vary with both the type of narcissism and contexts.

Essay 2 explores how firm-level effectuation influences the behaviors of middle managers. The literature exploring effectuation and causation at the firm-level has largely neglected the

challenges involved in implementing effectuation within organizational settings (Hubner & Baum, 2018). This study investigates how individual dimensions of effectuation (experimentation, affordable loss, flexibility, and pre-commitment) influence middle-level managers' participation in decision-making.

Utilizing multilevel data from 536 middle-level managers across 131 SMEs in mainland China, I found that experimentation, affordable loss, and precommitment exhibit unique patterns in their interactions with the collective organizational engagement climate in these firms. As collective organizational engagement becomes stronger, the impact of experimentation on middle managers' participation in decision-making switches from positive to negative. However, the increase in collective organizational engagement weakens the positive impact of affordable loss and lessens the negative impact of precommitment. This study underscores the importance of integrating variables related to internal organizational dynamics into research on the nexus between effectuation and middle managers' entrepreneurial behaviors.

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My PhD journey began in the fall of 2018. Six years prior, I had completed my Master's in Business Administration, acquiring knowledge in Strategy, Organizational Behavior, International Business, and Corporate Governance. Despite having no prior background in Entrepreneurship, I selected it as my PhD focus because I wanted to explore significant, unfamiliar territory rather than treading familiar ground. It has been an honor to have Dr. Wenlong Yuan as my PhD supervisor. During the first two years of my studies, he taught two pivotal courses: Contemporary Research Topics in Entrepreneurship and Behavioral Foundations of Entrepreneurship. These courses helped lay a robust theoretical foundation and guided me in selecting my dissertation topic.

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Dedication

I dedicate this work to:

Hong Hao & Jianshu Shen, my beloved parents

and

Luo Liu, my dear husband.

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Chapter 1 General Introduction

1.1 Statement of Problem

Effectuation sheds light on the decision-making process and proposes that expert entrepreneurs choose a non-predictive strategy and use their available means to leverage new opportunities (Sarasvathy, 1998; Dew et al., 2009; Read et al., 2016). The existing literature comprises two units of analysis: the individual level and the firm level. Our research focused on effectuation within small and medium enterprises (SMEs) the firm level, adopting the survey approach from Chandler et al. (2011) and Shirokova et al. (2020) It has been widely accepted as a formative construct (Mackenzie et al., 2005; Perry et al., 2012) with four sub-constructs, namely, experimentation, flexibility, affordable loss, and precommitments (Chandler et al., 2011).

Following the call of current review studies on effectuation theory (e.g. Perry et al., 2012; Grégoire & Cherchem, 2020), Essay 1 focuses on two research questions: 1) What individual factors drive a firm to adopt an effectuation approach? 2) When, where, and why might effectuation be prevalent, taking into consideration both internal and external constraints at the firm level?

In extant literature, potential links between personal traits and one's preference or behaviors for effectuation remain unclear (Grégoire & Cherchem, 2020). Some scholars proposed that personality traits impact entrepreneurs' cognitive and social decision-making skills, and thus specific personality traits will be associated with effectuation (Hensel & Visser, 2020; Karri & Goel, 2008). While some other scholars disagree. For instance, Sarasvathy and Dew (2008, p.732) argue that effectuation, as a decision logic, “may or may not have basis in an innate psychological trait”.

To understand whether entrepreneurs' psychological traits matter for effectuation and the contexts of application, I examined the relationship between chief executive officer (CEO) narcissism and affordable loss (AL) behaviors, as one crucial sub-construct of effectuation. The affordable loss heuristic delineates the maximum level of investment entrepreneurs are ready to lose in a worst-case scenario. Extant psychological research on narcissism (Borgholthaus et al., 2023; Mathieu & St-Jean, 2013; Nevicka et al., 2011; Uppal, 2020) highlights the importance of narcissism to CEOs, their cognition and entrepreneurial behaviors. Meanwhile, I incorporated slack resources as an internal constraint and perceived environmental uncertainty as an external constraint and examined the influence of these factors on the main relationship.

Extending the focus of Essay 1 on the predictors of effectuation, Essay 2 asks the following research question: What is the impact of effectuation on the internal organization of firms?

Extant effectuation literature has established the substantial and nuanced implications of effectuation for firm outcomes, such as business model development (Reymen et al., 2017), innovation performance (Berends et al., 2014), and opportunities creation and recognition (Hayton et al., 2011). However, the literature has largely neglected the challenges involved in implementing effectuation within organizational settings (Hubner & Baum, 2018). In this essay, I investigated how individual dimensions of effectuation –including experimentation, affordable loss, flexibility, and pre-commitment– and causation influence middle-level managers' participation in decision-making within varying degrees of collective organizational engagement climate.

1.2 Contributions of the Study

1.2.1 Theoretical contributions

Essay 1 contributes to trait-based effectuation research and suggests that individual psychological traits affect AL behaviors at the firm level, though the patterns of the relationship vary with both the type of narcissism and contexts.

Essay 2 indicates that experimentation, affordable loss, and precommitment exhibit unique patterns in their interactions with collective organizational engagement climate, thus influence on middle managers' participation in decision-making differently.

1.2.2 Practical implications

Essay 1 suggests that affordable loss can be considered as a useful tool for top managers to make decisions under uncertainty and resource constraints. To specify, emotional aspects of decision-making—how much willingness they feel about the investment—play an important role in their decision process, particularly when dealing with admiration narcissistic CEOs.

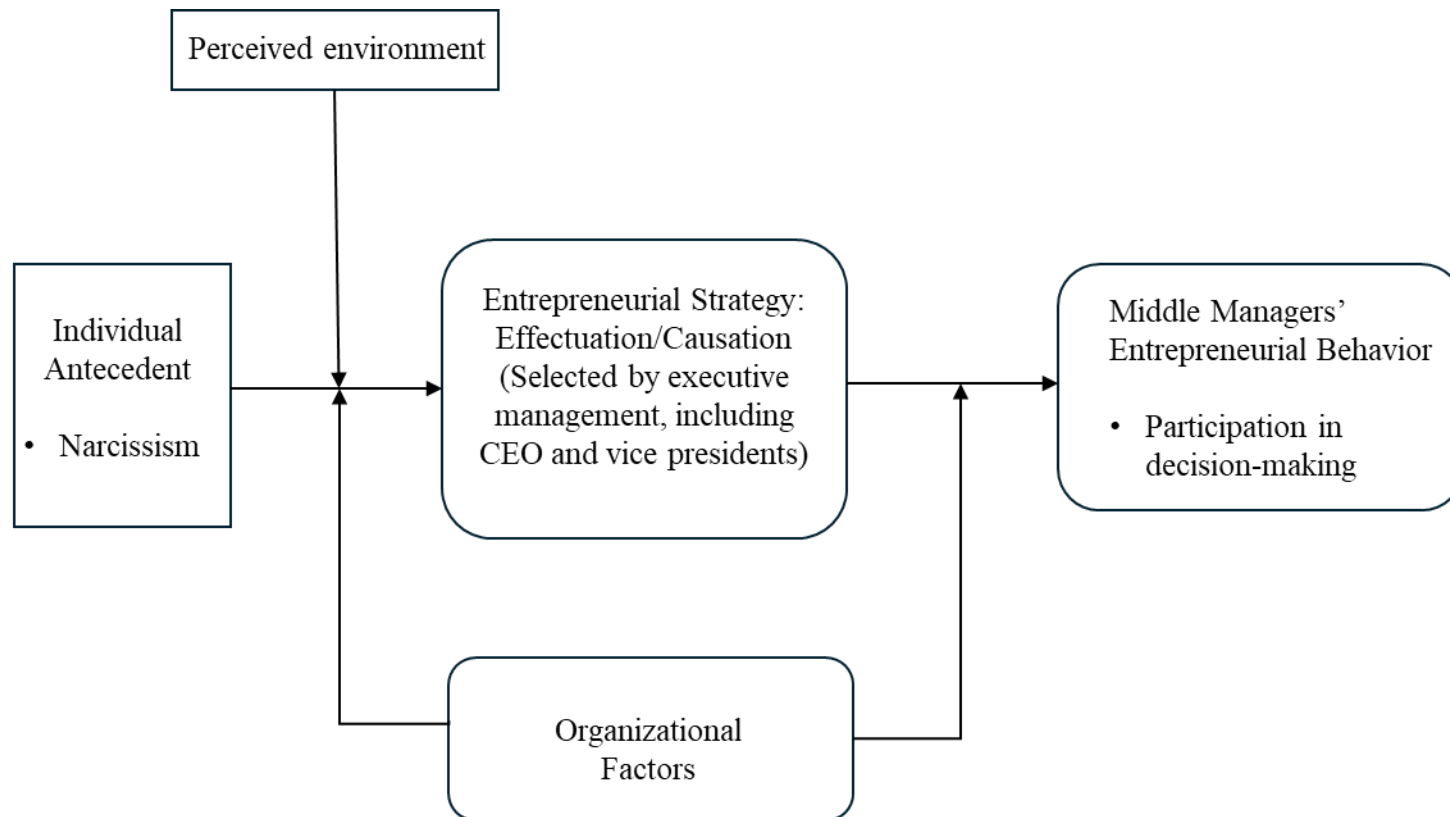
Essay 2 indicates that effectuation principles vary in their interactions with organizational attributes and should not be used interchangeably. Additionally, considering whether to adopt an effectuation approach, top managers should carefully decide which specific principles to implement, what is expected from MMs, what may be the impact on middle managers' behaviors, and what are the boundary conditions.

1.3 Structure of the Dissertation

The dissertation on the relationship between effectuation theory, CEO personality, and middle-level managers' behaviors is organized into four structured chapters.

Chapter 1 serves as a general introduction to the research, outlining the problem statement and the contributions of the study. In Chapter 2, the focus shifts to the investigation of a trait-based effectuation model, where I examined CEO narcissism and AL behaviors under conditions such as perceived uncertainty and slack resources. Chapter 3 delves into how the principles of effectuation as exercised by top managers are transferred to and manifested in the behaviors of middle management, particularly under a collective engagement climate. The dissertation concludes with Chapter 4.

Figure 1.1 Overview model of the dissertation



Chapter 2 Go Big or Go Home: Do Narcissistic CEOs Pursue Affordable Loss

2.1 Introduction

The affordable loss heuristic (AL), delineates the maximum level of investment entrepreneurs are ready to lose in a worst-case scenario (Sarasvathy, 2001, p. 252), and can be seen as the opposite side of expected return (Dew, Read, et al., 2009). According to Brettel et al. (2012), Cai et al. (2017), Yang et al. (2021) and Chandler et al. (2011), affordable loss can be seen as one of the four components of effectuation, a formative construct, and might influence on innovation and new venture performance at firm level, as a “mode of actions” (Grégoire and Cherchem, 2020). Following the pioneering work of Sarasvathy (2001), an emerging stream of research (Dew et al. 2009; Martina 2020) has started to examine AL separately and argued that AL involves both the capability of what individuals can risk and the willingness to risk specific resources in their investment, thereby highlighting the relevance of individual-level factors for effectuation behaviors.

However, personality traits, as typical individual-level dispositional variables, have not been extensively investigated in effectual research (Hensel and Visser, 2020; Karri and Goel, 2008). Conflicting conceptualizations remain regarding whether entrepreneurs’ psychological traits matter for AL (Grégoire & Cherchem, 2020). Some scholars propose that personality traits impact entrepreneurs’ cognitive and social decision-making skills, and thus specific personality traits will be associated with AL and effectuation (Hensel & Visser, 2020; Karri & Goel, 2008). However, some scholars disagree. Sarasvathy and Dew (2008, p. 732) argued that effectuation, as a decision-making logic, “may or may not be rooted in an innate psychological trait.” Empirical evidence on this issue is mixed, with studies demonstrating strong, weak, or no

association between psychological characteristics and effectuation, including AL as a sub-construct (e.g., Allen, 2003; Engelen et al., 2016; Hensel & Visser, 2020).

This paper intends to investigate the relationship between psychological traits, especially CEO narcissism and AL behaviors at a given firm. Narcissism refers to a “complex of personality traits and processes that involve[s] a grandiose yet fragile sense of self as well as a preoccupation with success and demands for admiration” (Ames et al., 2006, p. 440-441). The study focuses on CEO narcissism for two reasons. First, narcissistic CEOs may hold exaggerated beliefs about their own capabilities and achievements (Resick et al., 2009), which may influence their ability and motivation to pursue AL (the two components of AL in Martina, 2020, p. 753). Second, in prior research, narcissism has been linked to high risk propensity (Ham et al., 2018; Chatterjee & Hambrick, 2011) and overconfidence (Navis & Ozbek, 2016), which may reflect on their entrepreneurial investment (Kashmiri et al., 2017).

Based on the survey data from the CEO and a paired vice president in 122 small and medium-sized enterprises (SMEs) in mainland China, the findings show that CEO narcissism is related to the firm-level AL behaviors, but the association can be either positive or negative, depending on the specific types of narcissism (narcissistic admiration or narcissistic rivalry) and internal/external contexts (perceived uncertainty and slack resources).

The findings make three principal contributions to the research on AL and effectuation. First, it responds to recent calls to study individual-level explanations for AL and effectuation (Grégoire & Cherchem, 2020; Perry et al., 2012) and adds to the limited empirical evidence about the antecedents of AL and effectuation. Second, the study helps to reconcile a conflicting perspective in the effectuation literature regarding the relevance of personality traits (Hensel & Visser, 2020; Karri & Goel, 2008; Sarasvathy & Dew, 2008). The research shows that CEO narcissism, as an

individual personality trait, does matter to AL behaviors. Third, the results show that CEO narcissistic admiration and rivalry have opposite effects on AL behaviors, thereby corroborating the emerging evidence on the different mechanisms grandiose narcissists use to gain status.

2.2 Literature Background

Effectuation sheds light on the decision-making process and proposes that expert entrepreneurs choose a non-predictive strategy and use their available means to explore new opportunities (Sarasvathy, 2001, p. 245). Effectuation has been widely accepted as a formative construct (Mackenzie et al., 2005; Perry et al., 2012; Chandler et al., 2011). In line with that, an emerging stream of research (Dew et al., 2009; Martina, 2020) has started to examine AL separately due to its natural connection with underinvestment and potential opportunity loss at the firm level.

Regarding the mechanism of AL, Martina (2020) proposed an elaborated process model with two elements — ability and willingness. The ability element refers to the reference point about what entrepreneurs can risk and what they can afford to lose. In most cases, they would risk their windfall gains to pursue entrepreneurial endeavors (Blanchflower & Oswald, 1998). On the other hand, the willingness element is determined by each specific entrepreneurial investment, the subjective task value, and reflects emotional preferences (Dew et al., 2009). Hence, this paper argues that the dominant cognitive aspects of an entrepreneur might be taken into consideration due to their potential influences on individual subjective ability and willingness.

2.2.1 Personality traits and entrepreneurial constructs

Understanding individual characteristics and preferences to become an entrepreneur is at the core of entrepreneurship research (Baron, BOOK; Obschonka and Stuetzer, SBE 2017). Although the trait approach to study entrepreneurship was viewed as unfruitful and unproductive in the 1980s

due to the limitations of personality constructs and the lack of cross-situational consistency in personality traits (Gartner, 1989) (Gartner, W. B. (1988). "Who is an entrepreneur?" is the wrong question. *American journal of small business*, 12(4), 11-32.), development of techniques such as meta-analysis and increasing acceptance of the five-factor model in the 1990s (Brandstätter, PID 2011) has led to the resurgence of research on entrepreneurial personality. Over time, substantial evidence has emerged supporting the validity of certain personality variables in the field of entrepreneurship (Baum et al., 2014; Hamilton et al., 2019), with findings on the linkages between a variety of personality traits and entrepreneurial constructs. Typical examples include the impact of self-efficacy (Şahin et al., 2019) on entrepreneurial intention (Şahin et al., 2019) and on entrepreneurial intention (Palmer et al., 2019), need for achievement on business success (Collins et al., 2004) (Zhao et al., 2010), risk-taking on entrepreneurship and success (Stewart & Roth, 2004), and dark triad traits on entrepreneurship (Gorgievski & Stephan, 2016; Mathieu & St-Jean, 2013).

A highly influential model of personality structure which has been applied to entrepreneurship studies in the past two decades is 'The Big Five' factor model (Costa and McCrae, 1992; De Raad, 2000). In a meta-synthesis of five meta-analyses on personality aspects of entrepreneurship, Brandstätter (PID 2011) reported that the big five personality traits (including extraversion, emotional stability, openness to experience, agreeableness, and conscientiousness) are relevant to entrepreneurial intention and entrepreneurial performance. More recently, Şahin et al. (Şahin et al., 2019) and Zhou et al. (IJEBr 2018) found that multiple configurations of the big five traits are associated with high levels of entrepreneurial intention, thereby emphasizing personality profiles and interdependencies among individual characteristics.

2.2.2 Personality traits and effectuation

Despite the large number of empirical studies on effectuation (with AL as a sub-construct), entrepreneurship scholars currently still hold conflicting views regarding personality traits as antecedents of effectuation.

First, various theoretical perspectives have been applied to examine individual characteristics to effectuation, which grows into a somewhat fragmented literature map. For example, at the individual level, expertise or knowledge as the acquired skills of an experienced entrepreneur may help him/her to adopt effectual logics and exhibit high performance (Dew et al., 2009; Politis et al., 2012). The other potential factor can be a certain social identity, which facilitates an individual's goal clarity and leads to effectuation behaviors in the venture-creation process (Gabrielsson & Politis, 2011; Sieger et al., 2016; York et al., 2016). Not only do theoretical rationales for the choice of individual antecedents of effectuation vary, but empirical evidence is limited and inconclusive (Grégoire & Cherchem, 2020).

Second, some scholars view personality as a highly relevant dispositional variable for effectuation, since they may contribute to “the cognitive infrastructure of entrepreneurs” at the individual level (Karri & Goel, 2008, p. 739). Sarasvathy and Dew (2008), as well as Dew et al. (2008) argue that a firm's entrepreneurial behaviors rely on the role of the entrepreneur, but effectuation is based on behavioral assumptions rather than psychological characteristics. They contend that the use of effectuation is unrelated to most psychological measures of personal traits, rather than a practical, situational rationality (Allen, 2003; Sarasvathy et al., 2008). However, in a recent empirical study, Hensel and Visser (2020) find support for the association between personality traits (big five) and effectuation principles at individual level, as well as Coudounaris and Arvidsson (2021). Shirokova et al., (2023) studied how the dark side of a

CEO's personality influences the choice between effectuation and causation as alternative behavioral logics at the firm level. The findings suggest that CEOs with higher levels of psychopathy are more likely to adopt a causal logic, whereas those with Machiavellian traits tend to rely on an effectual logic. However, narcissism, a significant entrepreneurial personality trait, does not appear to be related to effectuation or causation at the firm level.

2.2.3 Potential relationship between AL and narcissism

Extant research suggests that narcissism plays an important role in entrepreneurship studies (Mathieu & St-Jean, 2013), and there are both theoretical rationales and some indirect empirical evidence supporting the connection between CEO narcissism and AL behaviors at the firm level.

First, narcissistic CEOs demonstrate high risk propensity (Ham et al., 2018; Chatterjee & Hambrick, 2011), which may increase their entrepreneurial intentions (Zhao et al., 2010) and entrepreneurial investments, leading to more AL behaviors at the firm level.

Second, on the opposite, highly narcissistic entrepreneurs are particularly sensitive to the costs of failure (Liu et al., 2019). They may be unwilling to admit failure and to terminate unsuccessful initiatives in a timely way (Engelen et al., 2016), which may potentially limit their adoption of AL. Based on these, we propose that extant research on CEO narcissism and entrepreneurship-related constructs fails to consider different types of CEO narcissism, and considering both the bright and dark side of narcissism (Back et al., 2013) and potential contexts may help untangle the theoretical confusion between CEO narcissism and AL (see Figure 2.1).

Back et al. (2013, p. 1015) introduced the Narcissistic Admiration and Rivalry Concept (NARC), which emphasizes admiration and rivalry as two strategies that activate different affective-motivational, cognitive, and behavioral pathways. This measurement is highly effective

for demonstrating and shedding light on the often-contradictory effects commonly observed in narcissism research, especially regarding the company-level impacts of CEO narcissism. On one hand, narcissism as an entrepreneurial personality (Mathieu & St-Jean, 2013), shapes CEO's motivation and commitment to new ventures (Brownell et al., 2023) though risking taking and hope for achievement. On the other hand, the rivalry traits of narcissism are likely to lead to the production of less effective outcomes, such as conflicts between the CEO and top management (Bachrach et al., 2022). Thereby, the NARC model offers distinct perspectives on how CEO narcissism can impact a firm's AL activities.

2.3 Hypotheses Development

CEOs high in narcissistic admiration may prefer to pursue new activities to enhance their grandiose fantasies, and AL behaviors provide them with the appropriate strategies to evoke social interest and admiration. First, individuals high in narcissistic admiration are driven by hope for greatness (Back et al., 2013), which may encourage CEOs to pursue entrepreneurial opportunities. Their belief is "Show the world how great you are!" (Back, 2018, p. 59). Consequently, they are likely to invest in endeavors working toward the goal in spite of obstacles.

Second, individuals high in narcissistic admiration not only crave social admiration, but also aim to relentlessly reinstate their high self-esteem (Back et al., 2013). Numerous business founders often test their projects and execute them incrementally. This strategy assists in acquiring knowledge and understanding the opportunity as it evolves (Blank, 2013). AL actions often consist of a sequence of stepwise investments rather than singular ones (Dew et al., 2009), and the stepwise investments provide the opportunity for narcissistic admiration CEOs to obtain adulation time after time.

Finally, unlike narcissistic rivalry CEOs, narcissistic admiration CEOs may be more capable of mental toughness (Manley et al., 2019), and willing to deal with the ups and downs of their AL actions. They can perform at high levels under stressful situations, and their behaviors may stimulate social admiration. I thus propose:

H1a: A CEO's narcissistic admiration is positively related to AL in the firm.

In contrast, CEO rivalry-based narcissism, which includes a pursuit of dominance, belittling others, and aggressive behaviors such as irritation, hostility, and social insensitivity, motivates them to defend their superior status (Grove et al., 2019). Driven by a hope for supremacy and a frightening fear of failure (Back et al., 2013), CEOs high in narcissistic rivalry may reject downside risks or sequence rounds of small investments for three reasons. On one hand, CEOs high in narcissistic rivalry may be worried that the potential loss of the resources makes them appear inferior to their rivals, which may jeopardize their social status. For example, rivalry narcissists always follow “Don’t let others tear you down!” (Back, 2018, p. 60). The fear of failure might cause negative emotions, leading to a high degree of stress and anxiety (Waldman et al., 2001), which ultimately reduces CEOs’ willingness to take downside risks.

On the other hand, narcissistic rivalry is negatively associated with mental toughness (Manley et al., 2019), while mental toughness and perseverance are often viewed as necessary ingredients of entrepreneurship (Ma & Tan, 2006). Therefore, it seems difficult for CEOs with high narcissistic rivalry to suffer mental toughness, such as the risk of potential loss.

Last but not least, fear of failure tends to increase stress levels and a devaluation of business opportunities and their subordinates, thereby reducing the likelihood of opportunity exploitation or starting a business (Cacciotti & Hayton, 2015; Kollmann et al., 2017). For example, it could

activate social disapproval and conflicts, such as negative feedback from the CEO to the top management team (TMT) (Bachrach et al., 2022). Thus, I propose:

H1b: A CEO's narcissistic rivalry is negatively related to AL behaviors in the firm.

Although CEOs have discretion in many of their choices, they face certain external and internal constraints at the meantime. Nevicka et al. (2011) point out that narcissists are more sensitive to context than non-narcissists are. To specify, CEO narcissism has been found to interact with a dynamic market (e.g., Engelen et al., 2016; Lang et al., 2022) and be affected by organizational resource bases (Wales et al., 2013b). Moreover, AL is about resource commitments that entrepreneurs can afford to lose in their investments under environmental uncertainty and ambiguity (Martina, 2020). Hence, both available organizational resources and environmental uncertainty will likely impact the relationship between CEO narcissism and AL. I thus incorporate these two boundary conditions below.

The first condition is perceived uncertainty. Jiang and Tornikoski (2019, p. 25) highlighted the influence of perceived uncertainty on behavioral logics, especially causation and effectuation process. Effectuation research suggests that entrepreneurs employ varying levels of effectual logics depending on the amount of environmental uncertainty (Cowden et al., 2022). As uncertainty reaches higher levels, decision-makers are more inclined to adopt effectual logic to comprehend the situation (Read et al., 2016).

However, although a perceived uncertain environment can offer abundant opportunities and more potential for self-enhancement than others, narcissistic CEOs are likely to be more alert to such opportunities for two reasons. First, perceived uncertainty might complicate the information gathering process, harming their willingness to take AL actions indirectly. For example, an uncertain environment leads to difficulties in collecting complete information from the market,

requires strategic adaptations (Welter & Kim, 2018). Meanwhile, the knowledge and information acquired while experimenting with and commercializing the opportunity shape one's willingness of financial decision-making (Reddy, 2023). Thus, perceived uncertainty can lead to a reluctance to engage in stepwise investments due to insufficient information about potential gains.

Second, narcissists exhibited a heightened inclination to attribute their achievements to personal ability (Stucke, 2003), however, unpredictable environment increases the probability of investment failures (Engelen et al., 2016). When the environment is more uncertain, the ambiguity of information becomes stronger and the path to converting ideas and opportunities into successful businesses becomes less clear (Hmieleski et al., 2015). This results in a significant risk of investment failure and resource loss, ultimately impairing the ability of narcissistic admiration CEOs to engage in potentially more downside risks. I thus expect CEOs high in narcissistic admiration to be more motivated to adopt AL in a stable environment than an uncertain environment.

***H2:** A CEO's narcissistic admiration will interact with perceived uncertainty to influence AL: When the environment is perceived to be more uncertain, a CEO's narcissistic admiration has a weaker positive relationship with AL in the firm.*

The second condition, slack resources, are defined as “a reservoir of commonly available resources not fully deployed/utilized in current operations” (Verbeke & Yuan, 2013, p. 253). Resources have been seen as critical to deploying effectual behaviors and financial decisions (Dew et al., 2009). To be specific, the strategic literature presents two contrasting perspectives on resource slack: while a high availability of resources may diminish the motivation to explore and innovate, slack can conversely allow a venture to experiment with new projects (Ruiz-Jiménez et al., 2021a).

In this paper, I argue that slack resources make CEOs high in narcissistic admiration more likely to execute AL decisions for two reasons. First, slack resources may increase narcissistic CEOs' willingness to adopt the AL logic. Generally, individuals are more willing to risk resources that are windfall gains rather than expense through psychological process of mental accounting (Reddy, 2023). Therefore, slack resources might be seen as available assets, prepared to be allocated to potential opportunities regardless of whether they result in a loss or a win. For instance, CEOs may pursue or continue with projects if plenty or sufficient slack existed (Marlin & Geiger, 2015).

Second, people high in narcissistic admiration expect relentless adulation for self-assurance of their social status (Back et al., 2013). The AL behaviors often involve stepwise investments, with multiple rounds of small commitments and renewal (Sarasvathy, 2001). Ample resources provide CEOs high in narcissistic admiration the ability to pursue a larger number of AL initiatives and more rounds of smaller investments. I thus propose:

H3: A CEO's narcissistic admiration will interact with organizational slack to influence AL:

When a firm has access to more slack resources, a CEO's narcissistic admiration has a stronger positive relationship with AL in the firm.

CEOs high in rivalry narcissism tend to perceive any potential risk as unaffordable due to their fear of failure, fostering a hostile environment and disregard the needs of subordinates (Back, 2018). When the environment is more unstable, they are more likely to turn down subsequent rounds of small investments for two reasons. First, perceived uncertainty could make the process of gathering information more complex, mitigating their willingness to engage in affordable loss actions. Second, narcissists demonstrated an increased tendency to credit their successes to personal skill, while attributing their failures to the challenging nature of the task (Stucke, 2003).

Furthermore, rivalry narcissism is expected to result in external attributions for negative outcomes (Kelley & Michela, 1980; Siamagka, 2023). In line with that, rivalry-based narcissistic CEOs might attribute their investment failures to external factors, such as high environmental uncertainty. Therefore, when environment is perceived stable, CEOs high in rivalry narcissism might have difficulty in attributing their potential failure to the external environment, which weaken their unwillingness to pursue affordable loss behaviors. I propose:

***H4:** A CEO's narcissistic rivalry will interact with perceived uncertainty to influence AL: When the environment is perceived to be more uncertain, a CEO's narcissistic rivalry has a stronger negative relationship with AL in the firm.*

On the contrast, slack resources make CEO high in narcissistic rivalry feel more secure about their financial situation and lead to less rejection to affordable loss activities. For instance, individuals are more probable to spend resources in windfall gains categories rather than other types of assets (Arkes et al., 1994). Under this scenario, CEOs high in narcissistic rivalry are less likely to worry about risk of failure, since excess resources play a role as buffer to against potential losses (Bourgeois, 1981). Therefore, with slack resources, they are more likely to accept investment in affordable loss projects, such as sequence investments on new products. I propose:

***H5:** A CEO's narcissistic rivalry will interact with organizational slack to influence AL: When a firm has access to more slack resources, a CEO's narcissistic rivalry has a weaker negative relationship with AL in the firm.*

2.4 Methodologies

2.4.1 Sample frame

To apply effectuation theory, I chose the small and medium enterprises (SMEs) from emerging economy of mainland China to collect primary data. SMEs and emerging economics have been considered as a common context to study effectuation theory, due to their natural relationship with new ventures (Tan et al., 2009) and environmental uncertainty (Cowden et al., 2022; Baron et al., 2018). According to the GDP level and the composition of three strata of industry, the authors chose Guizhou province as our survey location. In 2018, the per capita GDP in Guizhou was 41,244 RMB, which was lower than the average, 65,246 RMB in mainland China (National Bureau of Statistics of China, 2019). With the assistance of local government, the authors got the contact information of 800 companies located on the list of Guizhou Provincial Administration for Industry and Commerce. I collected data from CEOs and their top managers in selected SMEs based on the latest criteria about employee number and annual revenue from the National Bureau of Statistics of China (2017).

To reduce common method bias, I collected independent variables and dependent variables from two sources through two sets of questionnaires for CEO and top managers, especially vice president (VP), respectively in 2018 and 2019. First, I made a phone call to get permission from each company in advance and collected data by questionnaires. The first questionnaire for the CEOs includes narcissism rating, their background information, and firm characteristics. The second questionnaire asks a VP to rate perceived uncertainty, slack resources and AL at the firm level. Additionally, I followed two steps in the translation process to reduce translation errors for conceptual equivalence (Roy et al., 2001). Moreover, I conducted a pilot test with 10 MBA students to fix the unclarity in the scales and instructions.

In the CEO questionnaire, 183 out of 800 CEOs responded to our questionnaire. While in the top manager questionnaire, 122 VPs out of 183 answered the question about perceived uncertainty, slack resources, and affordable loss. Merging these two sets, I collated a sample of 122 firms with the responses from both CEOs and paired VPs. The final effective response rate was 15.3 percent, which is consistent with other studies based on a Chinese context (Wen et al., 2002). To analyze the potential non-response bias, I ran t-tests about firm age and size differences between responding and non-responding firms. I did not find a significant difference for firm age ($t = 1.39, p = .17 > .05$). Non-responding firms are significantly smaller than responding firms ($t = -3.82, p < .001$), which may suggest that the results may be more applicable to relatively larger SMEs.

2.4.2 Measurement

Independent Variable. I used the 18-item Narcissistic Admiration and Rivalry Questionnaire (NARQ) scale developed by Back et al. (2013) to assess CEOs' narcissistic admiration and rivalry. The questionnaire has been applied and validated extensively (Manley et al., 2019). CEOs were asked to score their narcissism on a scale from 1 (strongly disagree) to 6 (strongly agree).

Dependent Variable. I used the three-item scale developed by Chandler et al. (2011) to measure AL behaviors (see Table 2.1).

Moderators. I applied the four-item scale from Waldman et al. (2001) to measure perceived environmental uncertainty. I excluded one item ("Very rapidly expanding through the expansion of old markets and the emergence of new ones") because of the low factor loading and retained

the other three items for CFA. Unabsorbed slack was based on the four-item scale from Ling et al. (2008) and Simsek et al. (2007).

Control Variables. Since CEO's characteristics and experience may influence his/her decision-making process (Stroe et al., 2018), I included four individual-level variables of the CEO as controls, namely, gender, age, education level, work experience. Furthermore, I acknowledge that China has a free market and an authoritarian state (Zhao, 2010), so the type of ownership might have influence on CEO's investment. Additionally, industrial characteristics might be reflected in the decision-making process and investment propensity at the firm level (Müller et al., 2018; Yang et al., 2021). Therefore, at the firm level, I controlled firm age, firm size, type of ownership, and industry.

2.4.3 Reliability and validity check

I performed two separate confirmatory factor analyses (CFA) to evaluate the validity of the constructs (Kline, 2015) and to accommodate the large number of items (28 in total). First, to validate the scale of narcissism, I conducted a CFA of NARQ based on the sample of 122 CEOs in our merging set. The 18 items loaded only on their associated dimensions, with construct reliabilities of both admiration and rivalry above the 0.7 threshold (Hair, 2010) (see Table 2.1). The output suggests an acceptable model fit ($\chi^2/df = 1.715$, $RMSEA = 0.077$, $CFI = 0.935$, $IFI = 0.939$). Second, VPs were asked to report their AL behaviors, perceived environmental uncertainty and unabsorbed slack, so I conducted another CFA to validate the scale of the other three constructs within VP set. The result suggests that 10 items loaded only on their related dimensions, and it shows a good model fit ($\chi^2/df = 1.428$, $RMSEA = 0.059$, $CFI = 0.969$, $GFI = 0.944$) (Bentler & Bonett, 1980). Besides, I run a single-factor model for both steps, which showed poor data fit ($\chi^2/df = 2.917$, $RMSEA = 0.126$, $CFI = 0.825$, $IF = 0.835$; $\chi^2/df = 4.017$,

$RMSEA = 0.158$, $CFI = 0.768$, $IFI = 0.777$). The construct reliabilities (CR) are all above 0.80, indicating adequate convergent validity of the constructs (Fornell & Larcker, 1981)(see Table 2.1). I further conducted Harman's single-factor test (Podsakoff et al., 2003) and found that no general factor accounted for the majority of the variance (16.78 percent < 50 percent).

Combining the above results, I concluded that the results are unlikely to be substantially biased by common method bias.

2.5 Results

2.5.1 Descriptive statistics

Table 2.2 shows the descriptive statistics and correlations of all the constructs in the study.

According to the output, narcissistic admiration and rivalry are positively correlated. As Back and his colleagues suggested (2013; 2018), admiration and rivalry have independent effects, despite their positive association. In line with the hypothesis proposed, narcissistic admiration is positively related to affordable loss. Moreover, the results uncover that the ownership type of the firm affects firm's affordable loss behaviors. State-owned firms are more likely to pursue AL, while private firms are less likely to pursue AL, which is consistent with the literature that the type of ownership and political relationship positively influence narcissist CEO's effect on investments (Fung et al., 2020).

2.5.2 Hypotheses testing

This study used multivariate linear regression to test the hypotheses. Model 1 tested the regression of AL on the control variables. In Model 2, AL was regressed on narcissistic admiration, narcissistic rivalry, and the control variables to test H1. In Model 3, unabsorbed slack and perceived environmental uncertainty were added as independent variables based on Model 2.

In Model 4, 5, 6, I tested the moderation effect of slack and uncertainty on admiration narcissism. In Model 7 and 8, I examined the moderation effect of slack and uncertainty on rivalry narcissism. Table 2.3 presents the results of the regression analysis.

H1 proposed the relationship between narcissistic admiration, narcissistic rivalry, and AL. As shown in Table 2.3, narcissistic admiration is positively related to affordable loss ($\beta = 0.26, p < .05$, Model 2), while no significant relationship was found between rivalry narcissism and affordable loss ($\beta = -0.12, p = 0.26$, Model 2). The results support H1b but do not support H1a.

H2 suggests competing hypotheses for the interaction effects between narcissistic admiration and perceived environmental uncertainty. The interaction term of narcissistic admiration*uncertainty is significant both when it enters the model by itself ($\beta = -0.24, p < .05$, Model 5) and when both interaction effects are included ($\beta = -0.30, p < .01$, Model 6). The detected moderation effect is presented in Figure 2.2. The positive effect of narcissistic admiration is higher with the low uncertainty (significant) than with the high uncertainty (not significant). Therefore, when perceived uncertainty is low, CEO's narcissistic admiration is weaker positively related to firm's AL. The results thus support H2.

H3 suggests the moderation effects of narcissistic admiration and unabsorbed slack. As shown in Figure 2.3, the interaction term of admiration* slack is significant both when it enters the model by itself ($\beta = 0.20, p < .05$, Model 4) and when both interaction effects are included ($\beta = 0.26, p < .05$, Model 6). The simple slope changes from non-significant and negative at low levels of unabsorbed slack (1 SD below the mean) to significant and positive at higher levels of organizational slack (1 SD above the mean), which supports H3.

H4 suggests the moderation effects of narcissistic rivalry and perceived environmental uncertainty. From Figure 2.4, the simple slope changes from non-significant at low levels of

perceived environmental uncertainty (1 SD below the mean) to significant at higher levels of perceived uncertainty (1 SD above the mean), which supports H4.

H5 suggests the moderation effects of narcissistic rivalry and perceived organizational slack. Based on Model 3 and 7 in Table 2.3, H5 is not supported.

2.5.3 Post hoc analysis

First, I removed all the control variables, and ran the models with two independent variables, narcissistic admiration, and narcissistic rivalry, and two moderators, perceived environmental uncertainty and unabsorbed slack. The results showed the same significance and directions as the original models. Additionally, I run the same model for the other three effectuation dimensions, namely, experimentation, flexibility, and pre-commitment. I found that only flexibility responds to the predictors and moderators. Similar with AL, narcissistic admiration has a significant positive relationship with flexibility, and narcissistic rivalry shows a significant negative relationship with flexibility. However, when perceived environmental uncertainty is high or there are more unabsorbed slacks in the organization, the negative relationship between CEO narcissistic rivalry and flexibility will be weakened.

2.6 Discussions

In this study, I found support for all the proposed theories linking CEO admiration-driven narcissism to affordable loss behaviors. However, the hypothesis about CEO rivalry-based narcissism and affordable loss activities is only confirmed in scenarios where the environment is perceived to be stable. Given narcissistic admiration and rivalry can be both chronically activated and prompted by situational cues as opportunities for social admiration or a risk of social failure (Back et al., 2013), it is important to identify the situational dependencies of narcissism on AL.

Actually, admiration is associated with a secure non-striving style (Gilbert et al., 2009; Grove et al., 2019), suggesting that individuals high in narcissistic admiration feel secure within their social status, and that they don't feel under pressure to compete. Compared with narcissistic rivalry CEOs who tend to avoid potential losses because of their anxiety about loss of status, narcissistic admiration CEOs are less likely to feel distressed about risking a certain number of resources. Hence, we assume CEOs high in narcissistic admiration are more likely to be influenced by situational conditions.

Regarding the interaction effect between narcissistic admiration and environmental uncertainty, I found that AL of narcissistic CEOs high in admiration does not change significantly with environmental uncertainty, indicating that narcissistic admiration does bias how CEOs interpret the external environment when environmental uncertainty is perceived high. However, extant literature (Engelen et al., 2016) also provides partial and weak support for the perspective of self-enhancement opportunity that the effects of narcissistic CEOs are stronger in more dynamic markets. These contradictory findings may suggest that situational factors vary for different outcome variables (shareholder value versus AL) and narcissism conceptualization (as a whole construct or admiration/rivalry).

Furthermore, I did not find the interaction between CEO rivalry-based narcissism and slack resources. Here are the potential reasons: Rivalry-based narcissism is linked to an increased awareness of social comparison threats and a delicate sense of self-esteem (Brownell et al., 2023), leading to self-centered actions. Therefore, when a firm has more slack resources, it will engage in more CEO self-interest behaviors rather than downside investment decisions.

2.6.1 Theoretical contributions

Recently, more and more scholars (Goel et al., 2006; Dew et al., 2009; Martina, 2020) have started to conceptualize the individual sub-dimensions of effectuation rather than a whole, and some others (Hensel & Visser, 2020; Karri & Goel, 2008) have begun to investigate the personality determinants of effectuation antecedents. The study follows these emerging streams, and sheds light on the recent debate about the relevance of personality constructs for AL and effectuation. Although Hensel and Visser (2020) provided the early evidence for the connection between big five personality traits and effectuation at the individual level, their study was based on the pre-launch stage and the measurement issues led to the exclusion of AL. This study further corroborates the theoretical prediction that CEOs' personality traits do matter for AL behaviors at the firm level. I agree with Sarasvathy (2008) that everyone can learn to apply effectuation, but also prove that people with diverse personality traits do vary in their preferences for AL and firms will exhibit AL behaviors differently.

Additionally, addressing the divergent conclusions in the literature on CEO narcissism, which tends to categorize narcissism as either entirely positive (Borgholthaus et al., 2023) or completely negative (Chatterjee & Hambrick, 2011; Zhu & Chen, 2015), appears to oversimplify due to the complex nature of narcissism. This paper applied narcissistic admiration and rivalry, exploring the duality and complexity of narcissism outcomes. The results extend the current understanding of the dark side of the CEO personality on decision-making behavioral logics (Shirokova et al., 2023)

Last but not least, the paper includes two essential boundary conditions, namely, perceived uncertainty and slack resources. Effectuation has been originally proposed as an entrepreneur's decision-making framework under uncertainty and limited resources (Read & Sarasvathy, 2005).

On the one hand, many studies have demonstrated that environmental uncertainty influences the relationship between effectuation/causation and firm performance, especially new ventures (Garonne & Davidsson, 2010; Peng et al., 2020). On the other hand, slack resources enable the venture to explore new projects (e.g. affordable loss, experimentation) (Ruiz-Jiménez et al., 2021b). Therefore, our study contributes to this argument under small and medium enterprises scenarios.

2.6.2 Practical implications

Affordable loss, a key component of effectuation, can be considered as a useful tool available to top managers facing uncertainty and resource constraints. Practitioners realized that the emotional aspects of decision making— their willingness to invest— play an important role in their decision process. This study suggests that admiration narcissistic CEOs, confident in their own abilities and always seeking to assert their uniqueness, are more likely to favor stepwise investments over large, singular commitments. In contrast, rival narcissistic CEOs, who often strive to maintain their superior status by undermining their subordinates, may find that considering downside risks or pursuing sequential small investments increases their stress when defending their status. This explains why some entrepreneurs may indeed be more risk loving than others (Dew et al., 2009).

Additionally, both external and internal constraints determine what top managers can afford to lose. Funds accumulated in loosely linked mental accounts, such as unexpected financial gains, and savings earmarked for launching a business, can be viewed as unabsorbed resources within an organization. These resources facilitate behaviors at the firm level that aligns with the affordable loss principle. In contrast, in highly uncertain external environments where unpredictable shocks may occur at any time, firms are at higher risk of failure and likely to face

cash flow problems. Consequently, they might scale back on small exploratory investments to "test the waters." Rather than seizing opportunities to develop new products or projects, these firms often focus on maintaining their current operations to ensure survival.

2.6.3 Limitations and future directions

Future research could address a number of limitations of this study. First, I limited our attention to narcissistic admiration and rivalry, while other personality traits, such as humility, may also affect entrepreneurial outcomes (Zhang et al. 2017).

Second, the measurement of the constructs was subjective, such as CEO narcissism, affordable loss, perceived uncertainty and slack resources. Objectivity ensures accurate measurement, analysis, and replication of studies. This allows different investigators to validate the results when they replicate the studies (Armony & Vuilleumier, 2013). However, objective measurement is not always attainable. Currently, for effectuation dimensions, scholars have only developed survey-based approaches at the venture or team level (McKelvie et al., 2020). Therefore, future research should consider other methodologies, such as in-depth qualitative studies, to validate the arguments presented in this research.

Third, the mechanism underlying the CEO's personality traits and firm-level behaviors is still uncovered. For example, Wales et al. (2013) found that while CEO narcissism impacts firm performance variance, this effect is partially mediated through entrepreneurial orientation (EO). In our study, the CEO's personality traits might influence the cultural values shared among the organization's members (Giberson et al., 2009), which might shape the decision-making behavioral logic. Future research may explore the potential mediation effect in this relationship.

Last but not the least, the empirical analysis was based on SMEs in mainland China, which may raise concerns about the generalizability of the findings. Cultural differences regarding CEOs' personality traits and leadership might influence generalizability. Narcissism is primarily discussed in Western literature, with research indicating that Western leaders display more narcissistic behaviors compared to Eastern leaders (Wang et al., 2012). In addition, effectuation analyses have expanded from pre-venture and start-up stages to SMEs (Palmie et al., 2019; Shirokova et al., 2020), and future research can extend my analyses to other stages or other countries to test the generalizability of the theoretical arguments.

Table 2.1 Variables measurement

Scale Items	Construct Reliability	Average Variance Extracted	Factor loadings
<i>Narcissistic admiration</i>	0.900	0.491	
I am great.			0.760
I will someday be famous.			0.672
I deserve to be seen as a great personality.			0.651
I show others how special I am.			0.700
I enjoy my successes very much.			0.703
Being a very special person gives me a lot of strength.			0.588
Most of the time I am able to draw people's attention to myself in conversations.			0.682
I manage to be the center of attention with my outstanding contributions.			0.653
Mostly, I am very adept at dealing with other people.			0.714
<i>Narcissistic rivalry</i>	0.894	0.507	
Most people won't achieve anything.			0.621
Other people are worth nothing.			0.570
Most people are somehow losers.			0.614
I secretly take pleasure in the failure of my rivals.			0.633
I want my rivals to fail.			0.591
I enjoy it when another person is inferior to me.			0.672
I react annoyed if another person steals the show from me.			0.643
I often get annoyed when I am criticized.			0.651
I can barely stand it if another person is at the center of events.			0.676
<i>Organizational slack: The extent to which a firm...</i>	0.877	0.657	
Has had plentiful resources to produce its products and/or service.			0.701
Has had abundant resources for training and rewarding employees to actively think about changes or new business problems.			0.812
Has made a great deal of resources available for experimental projects.			0.805
Has had more resources than promising ideas for using all of its resources.			0.793
<i>Perceived uncertainty</i>	0.800	0.579	
Very dynamic, changing rapidly in technical, economic, and cultural dimensions.			0.724
Very risky, one false step can mean the firm's undoing.			0.695
Very stressful, exacting, hostile, hard to keep afloat.			0.509
<i>Affordable loss</i>	0.913	0.809	
We were careful not to commit more resources than we could afford to lose.			0.704
We were careful not to risk more money than we were willing to lose with our initial idea.			0.700
We were careful not to risk so much money that the company would be in real trouble financially if things didn't work out.			0.681

Table 2.2 Descriptive statistics and correlations

	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. CEO gender	0.82	0.38																
2. CEO age	42	7.52	-0.21*															
3. CEO education	4.39	1.16	0.25**	-0.13														
4. CEO work experience	2.35	0.76	0.02	0.52**	0.11													
5. Firm age	7.78	7.26	-0.28**	0.14	-0.04	0.17												
6. State-owned firm	0.31	0.47	0.12	0.03	0.26**	0.14	-0.20*											
7. Private firm	0.63	0.48	-0.08	-0.11	-0.18*	-0.08	0.24**	-0.88**										
8. Service Industry	0.61	0.49	-0.06	-0.07	0.13	0.07	-0.14	0.32**	-0.23**									
9. Technology Industry	0.07	0.26	-0.04	0.03	0.18	0.04	0.07	-0.19*	0.09	-0.35**								
10. Manufacture Industry	0.16	0.37	0.03	0.03	0.11	-0.13	0.12	-0.25**	0.20*	-0.55**	-0.13							
11. Firm size	106.17	111.56	0.14	0.04	0.28**	0.08	0.21*	0.09	-0.05	0.02	-0.04	0.08						
12. Narcissistic rivalry	2.74	0.87	0.02	0.30**	-0.05	0.22*	0.06	-0.22*	0.14	-0.08	0.26**	0.02	0.01					
13. Narcissistic admiration	3.77	0.71	0.13	0.03	0.03	0.05	-0.10	-0.05	0.01	0.14	0.00.	0.05	-0.01	0.24**				
14. Slack	4.28	0.83	0.02	0.09	0.00	-0.08	0.01	0.00	0.01	-0.17	-0.05	0.16	-0.01	-0.12	0.18*			
15. Uncertainty	3.70	0.98	-0.01	0.21*	-0.14	-0.02	-0.06	0.14	-0.20*	0.05	-0.02	0.03	0.25**	0.27**	0.09	0.18*		
16. Affordable loss	4.18	0.85	-0.07	0.10	-0.14	0.03	-0.11	0.22*	-0.23**	-0.08	-0.05	0.10	0.08	-0.14	0.19*	0.22*	0.20*	

Note: *p <.05; **p <.01. Sample size: 122.

Table 2.3 Regression analysis of CEO narcissism predicting AL

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Gender	-0.05	-0.10	-0.08	-0.13	-0.09	-0.14	-0.08	-0.09
Age	0.27	0.40	0.20	0.06	0.10	-0.12	0.20	0.15
Education	0.18	0.14	0.15	0.19	0.18	0.24*	0.15	0.16
Work experience in the industry	0.03	-0.01	0.01	0.04	0.04	0.09	0.01	0.08
Firm age	-0.42	-0.40	-0.26	-0.30	-0.20	-0.24	-0.26	-0.25
State-owned firm	0.19	0.31	0.31	0.22	0.34	0.24	0.31	0.19
Private firm	-0.38	-0.26	-0.22	-0.29	-0.28	-0.39	-0.22	-0.27
Service industry	-0.27	-0.40	-0.37	-0.35	-0.42	-0.42	-0.37	-0.30
Technology industry	-0.21	-0.14	-0.14	-0.13	-0.17	-0.16	-0.14	-0.28
Manufacturing industry	0.32	0.16	0.16	0.09	0.13	0.03	0.16	0.20
Firm size	-0.01	0.02	-0.03	-0.05	-0.04	-0.07	-0.03	-0.10
Narcissistic rivalry		-0.12	-0.16	-0.18	-0.16	-0.19	-0.16	-0.11
Narcissistic admiration		0.26*	0.23*	0.14	0.21*	0.11	0.22*	0.21*
Slack resources			0.08	0.19	0.04	0.16	0.08	0.10
Perceived uncertainty			0.16	0.19	0.25*	0.30**	0.16	0.12
Admiration*Slack				0.20*		0.26**		
Admiration*Uncertainty					-0.24*	-0.30**		
Rivalry*Slack							0.00	
Rivalry*Uncertainty								-0.22*
R ²	0.14	0.20	0.23	0.27	0.28	0.34	0.14	0.28
ΔR^2	0.05	0.09	0.11	0.15	0.15	0.22	0.10	0.16
F	1.50	1.89	1.91	2.19	2.25	2.81	1.77	2.27
P	0.14	0.04	0.03	0.01	0.01	0.00	0.05	0.01

Note: 1. *p < .05; **p < .01; ***p < .001.

2. Sample Size: 122.

Figure 2.1 Research model in Chapter 2

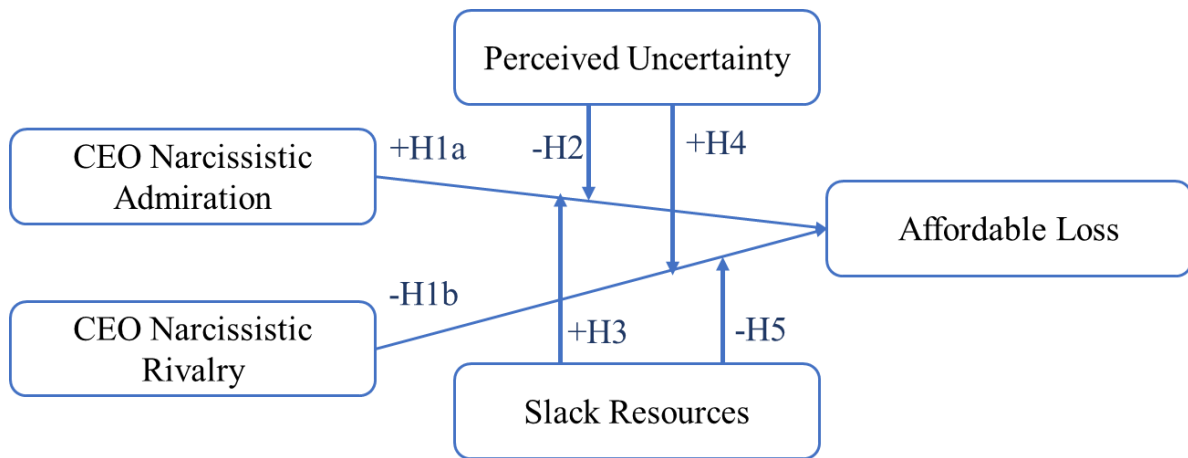


Figure 2.2 The moderation effect of perceived uncertainty on narcissistic admiration and AL

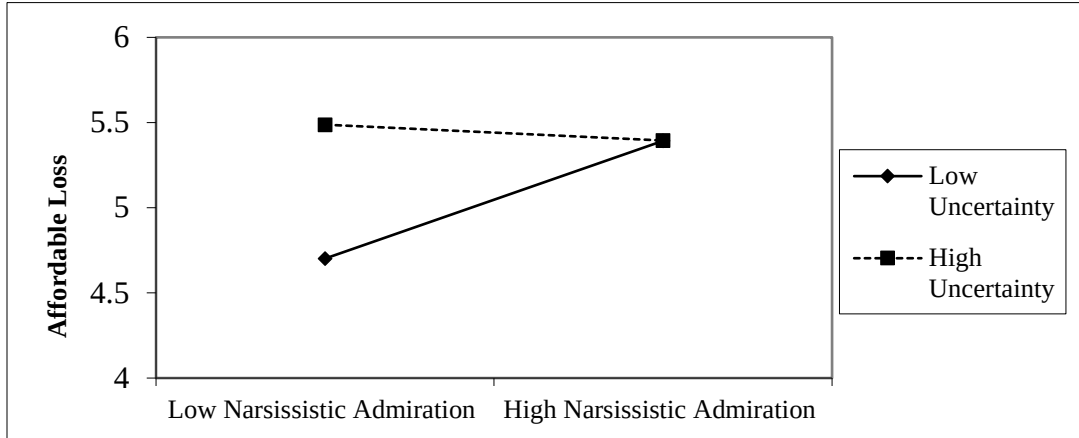


Figure 2.3 The moderation effect of unabsorbed slack on narcissistic admiration and AL

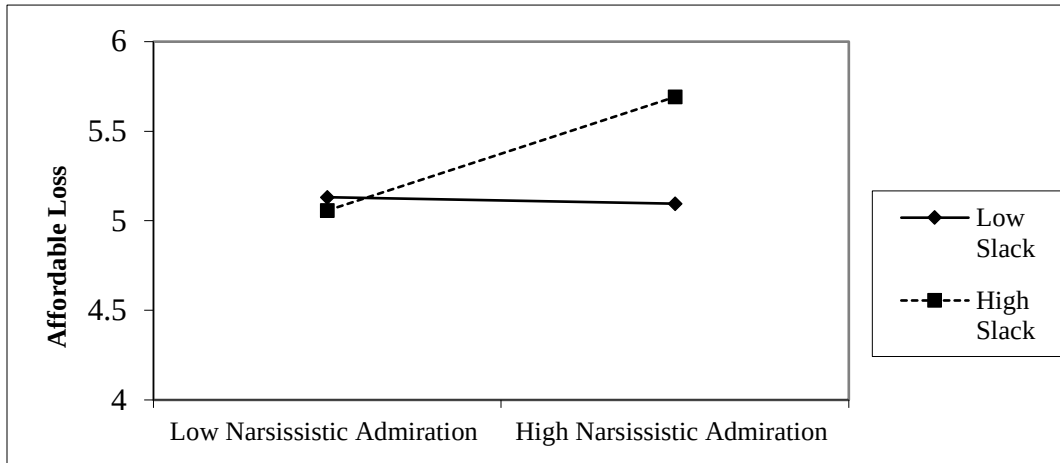
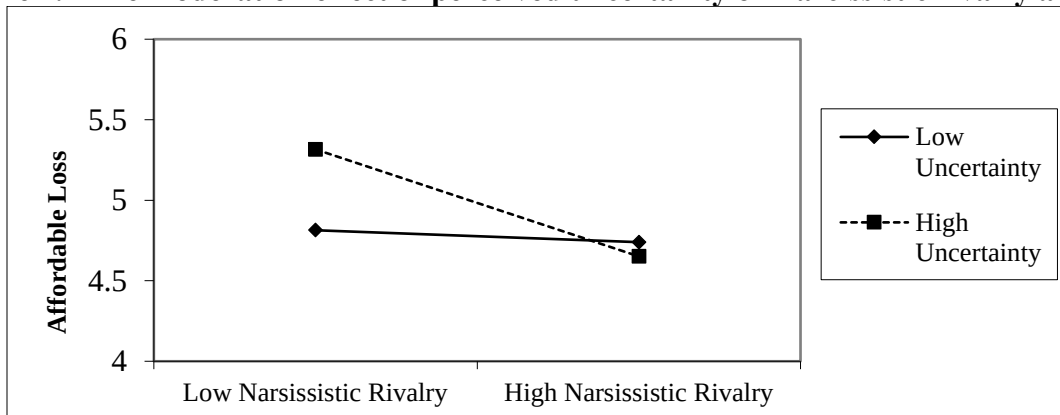


Figure 2.4 The moderation effect of perceived uncertainty on narcissistic rivalry and AL



Note: High level= +1 SD; low level= -1 SD.

Chapter 3 Implementing Effectuation in Small and Medium Enterprises: A Multilevel Analysis from a Middle Management Perspective

3.1 Introduction

Sarasvathy (1998, p. 40-41) introduced the concept of effectuation as a decision-making logic that is specifically tailored for entrepreneurial action. In contrast to the traditional causation logic, which assumes highly predictable circumstances that are characterized by well-defined objectives, precise operational plans, and readily available environmental information (Sarasvathy, 2001, p. 245), effectuation acknowledges the uncertainties and ambiguities inherent in the startup process (Cowden et al., 2022, p. 2). Entrepreneurs recognize that risk is a fundamental aspect of their journey, so they focus on managing outcomes by employing the principles of effectuation (Dew et al., 2009). While early research focused on describing the two logics, researchers have recently extended the analyses from individual entrepreneurs to the firm level, such as new ventures and corporate units (e.g. Cai et al., 2017; Shirokova et al., 2020; Smolka et al., 2018). The firm-level studies investigate the relationship between effectuation/causation logics and firm performance/behaviors, such as business model development (Reymen et al., 2017), innovation performance (Berends et al., 2014), and opportunities creation and recognition (Hayton et al., 2011).

However, the literature exploring effectuation and causation at the firm-level has largely neglected the challenges and potential conflicts involved in implementing effectuation and causation within organizational settings (Hubner & Baum, 2018). For instance, middle managers may respond in both positive and negative ways. On the one hand, when firms embrace the effectuation logic, they frequently encounter the need to experiment with various ideas and adapt

to unforeseen developments. But in a large organization, the continual changes that are inherent in effectuation may engender confusion and conflicting demands among lower-level managers and employees, who are often tasked with executing various responsibilities. Such confusion regarding shifting plans could significantly alienate employees and diminish their active involvement in business activities. On the other hand, given effectuation's emphasis on flexibility and adaptability, top managers may find themselves inclined to delegate more decision-making authority to middle-level managers and employees, enabling them to collaboratively design and establish organizational policies and processes. Effectuation, therefore, may require the active participation of employees to fully exploit the potential of effectual logic.

The above arguments suggest that firm-level effectuation has implications for how organizations operate, but extant inferences seem to be inconsistent with each other. This paper investigates the relationships between firm-level effectuation and employee involvement, particularly focusing on the participation of middle-level managers (MMs) in decision-making, for two primary reasons. First, research (Blumentritt et al., 2005) has posited that the performance of ventures and the success of organizations depends upon entrepreneurs' capacity to foster a participative process that facilitates employees' full engagement and utilization of their capabilities. Effectuation, characterized as a decision-making logic employed by entrepreneurs and top managers (Brettel et al., 2012), promotes entrepreneurial outcomes among employees. (Hubner & Baum, 2018). Therefore, understanding the nexus between effectuation and middle managers' (MMs') involvement in decision-making processes can illuminate how effectuation influences the internal dynamics of the firm. Moreover, MMs often assume pivotal roles in executing their firm's strategies (Floyd & Wooldridge, 1992) because they function as primary agents to translate principles of effectuation or causation into tangible practices. Positioned at

this critical juncture, MMs serve as a focal point for scrutinizing the input-process-output dynamics within an organization (Wooldridge et al., 2008). They not only strive to achieve the objectives outlined by top leadership (Floyd & Wooldridge, 1999), but also spearhead new initiatives (Rezvani, 2017).

This study proposes that effectuation influences MMs' participation in decision-making processes. Using multilevel data collected from 131 top managers and 536 MMs across 131 firms, I found support for several hypotheses, but the relationships vary for principles of effectuation such as experimentation, affordable loss, and pre-commitment (see Figure 1). As collective organizational engagement becomes stronger, the impact of experimentation on middle managers' participation in decision-making switches from positive to negative. However, the increase in collective organizational engagement weakens the positive impact of affordable loss and lessens the negative impact of precommitment.

The study reported here makes several significant contributions to literature. First, it clarifies the influence of firm-level effectuation on MMs' behavior and illustrates the pervasive impact of effectuation principles within organizational hierarchies. While conventional research on effectuation often overlooks its broad influence within firms, our study offers initial insights into the role of MMs in effectuation implementation and execution. This underscores the necessity for further inquiry into the implications of firm-level effectuation on organizational strategy, structure, and configurations (e.g., Hubner & Baum, 2018).

Second, the varying impact of effectuation principles on the decision-making involvement of MMs calls for more research on the individual principles of effectuation, rather than treating effectuation as a whole (McKelvie et al., 2020). Positioned as a formative construct in the spirit of Chandler et al. (2011), the principles of effectuation and causation may exhibit concurrent

overlap or sequential utilization, engendering diverse dynamics and heterogeneity across dimensions (Jiang & Rüling, 2019). The nuanced effects of effectuation dimensions suggest that they may form configurations with other organizational elements (Harms et al., 2021).

Third, the findings underscore the importance of integrating variables related to internal organizational dynamics into research on the relationship between effectuation and firm performance. The existing literature presents a spectrum of findings, ranging from positive effects (Smolka et al., 2018) to non-significant impacts (Eijdenberg et al., 2017). Scholars have proposed various contextual factors as potential moderators, including perceived environmental uncertainty (Eijdenberg et al., 2017), economic crises (Shirokova et al., 2020), and institutional factors at the country level (Shirokova et al., 2021). However, scant attention has been given to examining the significance of intra-organizational factors. The research presented here highlights the substantial influence of effectuation on internal organizational behaviors, thus advocating for greater consideration of internal contingencies in future research endeavors.

3.2 Literature Review

3.2.1 Effectuation and its stakeholders within the firm

Effectuation has evolved from its initial focus on individual-level decision-making (Dew et al., 2009; Read & Sarasvathy, 2005; Sarasvathy, 2008) to encompass (a) applications at the firm level (Alzamora-Ruiz, del Mar Fuentes-Fuentes, et al., 2021; Hauser et al., 2020) and (b) interactions with a diverse range of stakeholders (Hubner & Baum, 2018; Ko et al., 2022; X. Zhou et al., 2023). Initially, Sarasvathy (1998, p. 39-40, 2001, p. 245) introduced effectuation as a logic of entrepreneurial action, focusing on how individual entrepreneurs make decisions under conditions of uncertainty. Scholars following this tradition emphasize the role of individual entrepreneurs or decision episodes as the level of analysis. For example, Goel and Karri argued

that certain personality traits of the entrepreneur, when combined with effectual reasoning, increase the entrepreneur's propensity to exhibit over-trust (Karri & Goel, 2008).

Scholars have since extended the analysis of effectuation to the firm level, recognizing its relevance in shaping organizational strategies and behaviors (Berends et al., 2014; Read et al., 2009). Examples of these firm-level variables include firm performance (Read et al., 2009), business model development (Reymen et al., 2017), and opportunities creation and recognition (Hayton et al., 2011). This shift highlights a transition from examining how individual entrepreneurs manage uncertainties to investigating how entire firms leverage effectual principles to achieve strategic goals and adapt to dynamic environments.

Moreover, research on effectuation is increasingly focusing on the interactions between firms and a diverse range of stakeholders (e.g., their networks, customers, and employees), and the impact of effectuation on these stakeholders. At the network level, Kerr and Coviello (2020) developed a network theory of effectual dynamics and argued that both diverse and cohesive pre-existing networks can facilitate effectual processes, with the former supportive of more timely access to new means, such as new stakeholders, resources and market, and the latter more supportive of broader array of new means. At the customer level, Ko et al. (2022) highlighted the vital role of customer co-creation activities in translating effectuation logic into a firm's innovation success. At the employee level, Zhou et al. (2023) argued that the application of effectual logic significantly enhanced the innovative behavior of employees, and Hubner and Baum (2018) hypothesized how effectual and causal logics shape employees' commitment, motivation, and creativity. At the manager level, Helmersson & Mattsson (2013) proposed that effectuation and causation orientations are fundamental traits of any type of manager.

The application of effectuation at the firm level and as a relational concept raises two critical questions: How does effectuation materialize within the firm, and which stakeholders are involved? At the organizational level, effectuation manifests itself in various ways, shaping organizational structures, processes, and behaviors to adapt to dynamic environments and capitalize on emerging opportunities (Roach et al., 2016). The various elements of environment, strategy, structure, culture, and process may need to cluster together to facilitate firm-level effectuation. For example, Perry et al. (2012) proposed that entrepreneurs employing effectuation may prefer to hire contingent employees rather than full-time employees, and outsource production rather than building a hierarchical firm. Similarly, firms may adopt decentralized decision-making structures, empower employees to experiment and take calculated risks, and foster a culture of collaboration and adaptability to embrace effectual behaviors (Shirokova et al., 2020). This suggests that certain critical internal variables must be aligned for effectuation to effectively function as a firm-level behavior.

I thus suggest that for effectuation to exert an influence in the firm, it must cascade down through organizational hierarchies, affecting the behaviors and attitudes of middle managers (MMs), frontline employees, and other stakeholders within the firm. This trickle-down effect is essential for translating strategic intent into actionable initiatives. For example, Berends et al. (2014) found that when top managers adopt effectual principles, these often permeate the organization, shaping how middle managers interpret and implement strategic directives. Similarly, Rezvani (2017) discussed how MMs play a critical role in converting top-level strategies into operational plans and initiatives, with effectual behaviors shaping their approach to decision-making and resource allocation.

In the trickle-down process for firm-level effectuation, MMs are instrumental in operationalizing effectual strategies within the firm. In the middle management literature, scholars (Floyd & Wooldridge, 1992; Wooldridge & Floyd, 1990) have emphasized the critical role of MMs in translating strategic intent into actionable initiatives and spearheading organizational change, owing to their unique position within the organization. MMs have a deep understanding of the operational realities and constraints that frontline employees face, enabling them to effectively bridge the gap between strategic vision and practical execution (Wooldridge et al., 2008).

Furthermore, the involvement and commitment of MMs is vital for the successful implementation and institutionalization of effectuation within firms. Current research has consistently highlighted the benefits of involving employees in decision-making processes at various levels of the organization (Cotton et al., 1988; Eisenberger et al., 1990; Fenton-O'Creevy, 2001). Blumentritt et al. (2005) argued that a participative organizational culture, characterized by empowerment and autonomy, is conducive to fostering entrepreneurial behavior among employees at all levels. When employees feel valued, included and safe in decision-making processes, they are more likely to perceive their work as meaningful and develop a stronger sense of ownership and identification with the organization (Rezvani, 2017). Moreover, participatory decision-making has been linked to higher levels of adaptability. Engaging employees in the decision-making process enables organizations to leverage their knowledge and skills to identify opportunities, address issues, and implement changes more effectively, thereby enhancing organizational agility and resilience in dynamic environments.

3.2.2 Effectuation and MMs' participation in decision-making

As a crucial component of employees' involvement (Lawler, 1986), participation in decision-making—often referred to as decentralization (Aiken & Hage, 1966)—means the degree to which managers are included in making decisions related to resource allocation and policy formulation (Dewar et al., 1980, p. 120). We suggest that firm-level effectuation may be associated with MMs' participation in decision-making, but there can be arguments for both positive and negative associations. From the perspective of top managers, MMs might be seen as partners to create the future. Effectuation emphasizes exploration and adaptation to an unpredictable reality, requiring flexibility, and the capacity to improvise and experiment. For example, when top managers regard their employees as collaborative partners in creating the business, they may permit them to be more involved in designing the firm's structures and making them a crucial component of the company's development process (Hubner & Baum, 2018). MMs' participation in decision-making may motivate them to leverage their expertise and influence to drive organizational change, enhance adaptability, and unlock new opportunities for growth.

From the perspective of MMs, work demands stemming from firm-level effectuation may present both challenges and benefits. On the one hand, effectuation emphasizes flexibility and experimentation, necessitating continuous adaptation to unforeseen circumstances for both executives and MMs. Executives are compelled to involve MMs in decision-making processes to gather insights into environmental dynamics, and to empower them to respond to emerging opportunities, thereby creating the necessity to enhance MMs' participation in decision-making. On the other hand, the flexibility that is necessary to determine the right course of action (Chandler et al., 2011) can induce psychological strain, anxiety, and frustration among

employees (Bordia et al., 2004). Tensions may also arise as MMs have to stay disciplined and focused on routine work, while simultaneously engaging in experimentation (Galkina et al., 2022). Such frustration and tensions may threaten MMs' willingness to get involved in decision-making.

Since the relationship between firm-level effectuation and MMs' participation in decision-making can have both positive and negative aspects, I suggest that collective organizational engagement is a contextual boundary condition. Collective organizational engagement refers to the shared perception among organizational members that the organization as a whole is deeply committed to physical, cognitive, and emotional investment in their work (Barrick et al., 2015, p. 113). Social contexts and others' behaviors not only provide cues, information, and events for an individual to observe and interpret, but they also create pressures for an individual to conform to contextual norms (Pfeffer, 1978).

In practice, MMs usually attend to information in the social context and behave in ways that are consistent with their contextual norms. When MMs collaborate closely, shared emotional and motivational experiences may result in aligned behavioral and cognitive attitudes (Barsade & Gibson, 2007). Collective organizational engagement may also guide MMs with stable expectations of behavioral norms and provide role models for them to develop cognitive models for framing decisions and understanding social identities (Haynie et al., 2010; Wood & Bandura, 1989). With behavioral patterns retained in memory as scripts, social norms serve as external reinforcement for MMs' behaviors, particularly in uncertain contexts (J. Kerr & Coviello, 2020). However, the likelihood that MMs will adopt certain behaviors depends on the strength of collective organizational engagement and the prevalence of the behaviors (Rendell et al., 2011).

3.3 Hypothesis Development

In empirical studies, effectuation has been viewed as either an aggregated construct or as specific and separate principles (McKelvie et al., 2020; Palmié et al., 2019). Although most research views the effectuation construct as a whole (Alzamora-Ruiz et al., 2021; Reymen et al., 2015), a few studies (Brettel et al., 2012; Palmié et al., 2019) have proposed that different effectuation principles reflect different cognitive processes, and that these differ substantially in their implications. For example, Palmie et al. (2019) contended that two effectuation principles—experimentation and flexibility—reflect a promotion focus that emphasizes potential gains, while the principles of pre-commitment and affordable loss focus on preventing potential losses. Their empirical results showed that pre-commitments and affordable loss are negatively related to entrepreneurial orientation (EO); flexibility is positively related to EO; and the relationship between experimentation and EO is not significant. I therefore suggest that the four effectuation principles (i.e., pre-commitment, affordable loss, experimentation, and flexibility) trigger unique expectations from MMs in the implementation of top managers' decisions. Thus, there are different relationships between each effectuation principle and MMs' participation in decision-making. These four principles of effectuation and causation are explored separately in the following paragraphs.

3.3.1 Pre-commitment

Effectuation emphasizes forming strategic partnerships and obtaining pre-commitments from stakeholders as strategies to decrease or remove uncertainty (Sarasvathy, 2001, p. 254). For example, effectuators rely on pre-commitment principle to develop alliances with suppliers, customers, and other stakeholders to spread responsibilities (Chandler et al., 2011, p. 380-381). Individuals embracing the pre-commitment principle proactively share their concepts with

potential external partners at an early stage and seek their commitment to collaboration from the outset of their initiatives.

At the firm level, pre-commitment entails forming alliances and fostering relationships with customers, suppliers, and other strategic partners. It also requires the disclosure of organizational plans, allocation of resources to collaborative endeavors, and relinquishing a degree of control to external entities. Top managers often perceive these decisions as strategic in nature.

Consequently, they perceive little urgency in involving MMs in the decision-making process.

Top managers who prioritize pre-commitment emphasize avoiding “false alarms” and making accurate rejections (Palmié et al., 2019), suggesting that only a select few situations warrant the direct attention of top managers. Given the strategic significance of pre-commitment with alliance partners and the limited number of such alliances, MMs’ involvement in decision-making processes is likely to be curtailed. This suggests the following hypothesis:

H1a: Pre-commitment has a negative relationship with MMs’ participation in decision-making.

The presence of a robust collective organizational engagement environment creates the potential to foster a social milieu that is conducive to participatory behavior. Engaged individuals exhibit physical involvement in tasks, cognitive focus on their roles, and emotional connections to both colleagues and their work (Kahn, 1992, 2010). The shared perception of employees investing their full selves into their work can serve as a catalyst for the proliferation of role models, increase the salience and mimicry of appropriate behaviors, and create pressures to conform to norms (Barrick et al., 2015).

The substantial investment of personal resources into expansive work roles within such an engaged environment suggests that MMs may be motivated to provide top managers with more information, such as insights about potential partners, when they perceive the relevance of such

activities for the organization (Raes et al., 2011) . Moreover, actively engaged MMs may demonstrate greater propensity to participate in discussions, offer feedback, and provide constructive perspectives on decisions pertaining to alliance formation and coordination efforts, including activities like recruitment and promotion (Loewenstein et al., 1989). Such proactive engagement behaviors may attenuate the negative impact of pre-commitment on MMs' participation in decision-making.

By contrast, in settings characterized by low levels of collective organizational engagement, MMs are more likely to focus on executing top managers' directives; they may exhibit diminished interest in strategic issues such as alliance formation, and display less interest in information exchange with top managers. In such contexts marked by decreased engagement, pre-commitment may exhibit a negative association with MMs' participation in decision-making.

As a result:

***H1b:** When the collective organizational engagement climate in an organization becomes stronger, pre-commitment has a weaker negative relationship with MMs' participation in decision-making.*

3.3.2 Affordable loss

The affordable loss principle underscores the importance of considering potential downsides and evaluating projects based on the maximum acceptable level of loss in worst-case scenarios (Chandler et al., 2011, p. 380). Under this principle, top managers prioritize opportunities where failure is deemed acceptable, opting for minimal goals that do not jeopardize the firm's survival in the event of failure. Projects aligned with the affordable loss principle tend to be incremental and less risky, rather than bold and disruptive, often staying within the firm's current technological scope (Palmié et al., 2019). Top managers typically favor a series of incremental

investments and multiple rounds of commitments over a single extensive commitment, aiming to mitigate potential losses (Sarasvathy, 2008).

Firms following the affordable loss principle may exhibit a positive relationship with MMs' participation in decision-making. There are three reasons for this. First, top managers may need MMs' insights to accurately assess the degree to which new proposals deviate from current operations and the potential investment loss. As top managers are addressing relatively unpredictable phenomena and are more distant from the source of knowledge (Mom et al., 2007), they may need to seek information from MMs (Ries, 2011).

Second, given that MMs play a crucial role in the successful execution of new projects, their involvement becomes imperative. Unlike the strategic and external-focused nature of alliances associated with pre-commitment, projects governed by the affordable loss principle necessitate active engagement from MMs to ensure successful implementation. Recognizing MMs as key actors (Birken et al., 2012), top managers are likely to employ various strategies to enhance their motivation and commitment, such as consulting with MMs for suggestions, inviting them to express their opinions, and consistently involving them in activities related to new projects (Barton & Ambrosini, 2013).

Third, under the affordable loss principle, firms are often willing to allocate a certain amount of resources to new projects while acknowledging and accepting that these resources may be lost (Fisher, 2012). Available resources and time may promote entrepreneurial endeavors (Hornsby et al., 2002) and enhance MMs' participation in the decision-making process. While MMs may harbor some ambivalence due to the inherent risks and unpredictability associated with new projects, the endorsement of such initiatives by top managers may alleviate their concerns. Thus:

H2a: Affordable loss has a positive relationship with MMs' participation in decision making.

It also seems likely that the positive relationship between affordable loss and MMs' participation in decision-making will be moderated by the degree of collective organizational engagement. In environments characterized by low levels of collective organizational engagement, the intrinsic characteristics of typical projects, the imperative for MMs' involvement, and the likelihood of organizational support may support the positive impact of affordable loss.

In the presence of a robust collective organizational engagement environment, there are two strong “push” factors for MMs' participation: the situational features related to affordable loss and those related to collective organizational engagement. They can be viewed as two separate sets of situational opportunities (Johns, 2006) which, in combination, may bolster each other's impact. However, a constraint arising from the nature of the projects linked to affordable loss may countervail the above two situational opportunities for participation.

Affordable loss entails the determination of what decision-makers are willing to risk and the estimation of the maximum acceptable loss. This estimation hinges on various factors such as the organization's current financial condition, temporal constraints, available knowledge, psychological commitment, life stages, and aspirations, all of which can significantly vary among entrepreneurs (Dew et al., 2009; Martina, 2020). Without the active participation from top managers, it becomes very challenging for MMs to accurately gauge top managers' tolerance for affordable loss or to act upon presumed levels. Consequently, the potential for MMs' participation may be constrained to a certain extent, beyond which any “push” factor may become ineffective. Since robust collective organizational engagement may have elevated MMs' participation, the effect of affordable loss on MMs' participation in decision-making will be attenuated. This suggests the following hypothesis:

***H2b:** When the collective organizational engagement climate in an organization becomes stronger, affordable loss has a weaker positive relationship with MMs' participation in decision making.*

3.3.3 Experimentation

Experimentation refers to “a series of trial-and-error changes pursued along various dimensions of strategy, over a relatively short period of time, in an effort to identify and establish a viable basis for competing” (Nicholls-Nixon et al., 2000, pp. 496). Firms rely on available means to identify new opportunities which are distinct and radically different. Since many experiments may be unfruitful, firms are willing to abandon them. Although both affordable loss and experimentation involve abandoning unsuccessful projects, they differ significantly (Palmie et al., 2019). Experimentation emphasizes striving for hits, while affordable loss stresses avoiding losses; as a result, projects selected under the experimentation principle are risky and radical, while projects associated with affordable loss are incremental and less risky (Chandler et al., 2011).

Firms adhering to the experimentation principle may exhibit a positive relationship with MMs' participation in decision-making. Recognizing that significant risks exist in experiments, top managers need MMs to actively engage in the experiments and learn through hands-on experience how to address challenges. Similar to projects associated with affordable loss, experiments necessitate MMs' active participation to ensure that poor execution will not lead to unfruitful experiments and failure. Although substantial risk may cause some hesitation in MMs, they may have to devote their energy to the experiments after top managers have decided to explore alternative solutions.

Collective organizational engagement moderates the relationship between experimentation and MMs' participation in decision-making. In environments characterized by low levels of collective organizational engagement, the necessity for MMs' involvement suggests that the positive association between affordable loss and MMs' participation will hold in such settings.

Although the above arguments are similar to those for affordable loss, the situation of a robust collective organizational engagement environment, together with the inherent risk of experimentation, may lead to different predictions. In a strong collective organizational environment, MMs tend to commit to their work and view organizational interests and future growth as their core job duties (Barrick et al., 2015). Since experiments often involve substantial risk and rapid learning from early failure (Klenner et al., 2022), experiments and rapid failure tend to generate divergent opinions and MMs may perceive such experiments as a potential risk to organizational success.

The possibility also exists that ramping up the quantity and pace of experiments could lead to constant organizational changes which can potentially overwhelm MMs and lead to burnout (Bruch & Menges, 2010). As well, teamwork during experimentation can lead to substantial coordination expenses (Straub et al., 2023), particularly for complex projects, which in turn may diminish MMs' incentives to participate.

These arguments suggest that experimentation may negatively affect MMs' participation in decision-making in a robust collective organizational engagement environment. Since there may be both positive and negative effects of experimentation when collective organizational engagement varies, the following hypothesis is proposed:

H3: When the collective organizational engagement climate in an organization is strong, experimentation has a negative relationship with MMs' participation in decision making, but

when the collective organizational engagement climate in an organization is weak, experimentation has a positive relationship with MMs' participation in decision making.

3.3.4 Flexibility

Flexibility manifests as an adaptable strategy aimed at coping with unforeseen contingencies and seizing such contingent opportunities (Chandler et al., 2011, p. 376). Contingencies may mean unexpected people problems, unexpected events, and unexpected information. A distinguishing feature of entrepreneurship is that effectuators use such chance events and contingencies as resources and inputs to create something new (Harmeling & Sarasvathy, 2013; Read et al., 2016). At the firm level, capitalizing on contingencies entails the proactive embrace of unforeseen events and transforming them into lucrative opportunities, which often lead to unexpected positive outcomes (Fisher, 2012). The greater the novelty of emerging alternative opportunities, the more they diverge from existing courses of action, requiring increased adaptability to effectively capitalize on them.

While the literature on effectuation (Shirokova et al., 2020) has examined firm-level flexibility, the following significant question arises when we try to predict the implications of flexibility for MMs: Who is responsible for leveraging unexpected contingencies within the firm? Although the effectuation literature does not offer a definitive answer, insights from related research areas such as agility and ambidexterity provide some guidance (Birkinshaw & Gupta, 2013; Gibson & Birkinshaw, 2004; Girod et al., 2023). One potential approach involves managing flexibility by using *structural* separation, that is, by employing autonomous business units or distinct entities that are focused on new business development (Tushman & O'Reilly, 1996). Another perspective suggests *temporal* separation, where business units concentrate on specific tasks on certain days and switch to different activities on others (Adler et al., 1999). Yet

another strategy is to adopt a contextual approach, which encourages all employees to exercise judgment when confronted with contingencies (Gibson & Birkinshaw, 2004).

These three approaches suggest quite different expectations for MMs' participation in decision-making. In the first two situations, MMs responsible for autonomous units and those doing flexibility-related tasks may be more involved in decision-making, while MMs doing routine task operations may have lower expectations for participation. Under the third situation, every employee needs to seek out new opportunities. Given these points, it does not seem reasonable to formulate a formal hypothesis for the relationship between flexibility and MMs' participation in decision-making; rather, the relationship will be explored with an empirical test.

3.4 Method and Data Collection

3.4.1 Data collection

I collected data from a sample of 800 small and medium enterprises (SMEs) in mainland China in 2018 and 2019. These companies were involved in the food, chemical, commerce, construction, and finance industries. The Provincial Administration for Industry and Commerce in Guizhou Province randomly selected the 800 firms from its database. This method of sampling aligns with the perspective in effectuation research, which posits that effectuation is a strategic leadership's decision-making logic that reflects their preferences and actions (Alzamora-Ruiz, Fuentes-Fuentes, et al., 2021; Hauser et al., 2020). SMEs tend to favor effectual decision-making logic more than larger enterprises (Hauser et al., 2020), because they frequently encounter external uncertainties that create the potential for internal change (Laine & Galkina, 2017; Roach et al., 2016).

To enhance the response rate, coordinators from the Provincial Administration for Industry and Commerce engaged in direct recruitment of top- and middle-level managers as survey

participants. This involved calling each CEO (or chairman) to explain the study's objectives, assure confidentiality, and highlight governmental support. Consistent with existing studies (Chandler et al., 2011), we developed our questionnaires with all survey items from the current literature and applied the translation/back-translation method (Brislin, 1970) to translate all items from English to Chinese. The surveys were conducted in Chinese. To encourage candid feedback, participants were instructed not to discuss the survey among themselves. The research coordinator gathered the responses and forwarded them to us.

I conducted the survey in two waves of data collection, with two different questionnaires, one designed for top managers and the other for MMs. In the first wave, we collected data from top managers, which usually included the chairman of the board, CEO (or president), and vice presidents. The CEO decides the list of top managers at their firm. Additionally, each CEO also nominated a set of 10 MMs from their organization. After six months, we conducted the second wave of the survey. Our coordinators contacted MMs, who independently completed the questionnaire for MMs. From the first wave, responses were received from 184 top managers in 184 firms; the second wave yielded responses from 830 MMs. Data were deleted from six companies that were classified as large enterprises (they had more than 999 employees), and data were deleted from 47 other companies that had either no middle manager responses or only one response.

After consolidating data from the two rounds of surveys, the empirical analysis included responses from 131 top managers and 536 middle managers. This resulted in response rates of 16.38% for top managers and 6.7% for middle managers. T-test comparisons were used to assess the consistency of the data and no significant differences were found between the final sample

and the excluded group with respect to the demographic variables of top managers and middle managers ($p > .05$).

Middle manager teams consisted of an average of four middle managers. Of the top managers, 97 (74.05%) were male and 34 (25.95%) were female, with an average age of 40 ($SD = 7.76$); 77 (58.78%) were top managers and 54 (41.22%) were CEOs. Among them, 7 (5.34%) top managers graduated from high school, 41 (31.30%) of them received a college education, 66 (50.38%) of them had bachelor's degree, 13 (9.92%) of them held master's degree, and 2 (1.53%) of them had doctoral degree.

Of the middle-level managers, approximately 55% (241) were male, with an average age of 35 ($SD = 6.96$). Among them, 31 (5.78%) graduated from high school, 188 (35.07%) received a college education, 300 (56.0%) had a bachelor's degree, 16 (3.0%) held master's degree, and 1 (0.2%) had a doctoral degree. In terms of firm ownership, 33 (25.19%) were state-owned, 88 (67.18%) were privately owned, and 10 (7.63%) were foreign owned.

3.4.2 Measures

All items were established measures that have been used in literature. All the measurement items are listed in Table 3.1 and the Appendix.

Dependent variable. Drawing on the work of Jansen et al. (2005) and Mom (2006), this study employed a four-item scale for “participation in decision making.” This scale measures the degree to which managers are involved in decision-making processes related to resource allocation and policy development. An example of an item is: “I participate in decisions regarding the adoption of new policies.”

Independent variable. In this research, the scale formulated by Chandler et al. (2011) was used to assess causation and effectuation within organizations. Effectuation included four core principles: experimentation, affordable loss, flexibility, and precommitment.

Moderator. Organizational collective engagement was measured by a six-item scale from the literature (Barrick et al., 2015) (Cronbach alpha = 0.899). Respondents were asked questions like, "Do you and your coworkers really 'throw' yourselves into your work?", "My coworkers and I gain considerable pride from performing our jobs well," and "My coworkers and I tend to be highly focused when doing our jobs."

Control variables. Following existing studies (Liu & Xi, 2022; Psychogios et al., 2009), I included control variables at both the individual and firm level. At the individual level, I controlled the following demographic variables of MMs: age, gender (1 = male, 2 = female), educational level (ranging from 1 = junior high to 7 = Doctorate), and work tenure (measured in years). At the firm level, I controlled industry (1 = service, 2 = high-tech, 3 = traditional manufacturing), type of ownership (1 = state-owned, 2 = private, 3 = foreign/joint venture), and company size (determined by the count of employees).

3.4.3 Analytic strategy

Given that 536 middle managers were nested within 131 companies, variance partitioning analyses were used to assess the suitability of employing multilevel analysis (Raudenbush & Bryk, 2002). In line with previous research (Liang et al., 2021), the Intraclass Correlation Coefficient (ICC) of the dependent variable was computed (MMs participation in decision-making) using a one-way random-effect analysis of variance model (ANOVA). Organizational-level ICC1 was 0.19, which exceeded the recommended cut-off value of 0.05 (LeBreton & Senter, 2008). This result indicated that 19% of the variance in MMs participation in decision-

making can be interpreted as between-organization variance, mandating the use of a multilevel model that allows random variation across firms.

Consequently, a hierarchical linear modeling approach was utilized to evaluate our hypotheses, with individuals positioned at Level 1 and organizations at Level 2, employing Mplus 7 (Muthén, 2016). In this study, the independent variable (IV) was measured at Level 2, while both the moderator (M) and dependent variable (DV) were measured at Level 1. To prevent the issue of conflated effects across levels of analysis, I followed the procedure of Preacher et al. (2016) and applied their moderation in the 1x (2→1) model design, decomposing the individual-level variable (MM's participation in decision-making) into a within-firm part (within-collective organizational engagement) and between-firm part (collective organizational engagement means). Hypothesis testing focuses on the interaction between effectuation and the between-firm part of organizational collective engagement (collective organizational engagement means) at Level 2. For a clearer interpretation of the results, all predictors were grand-mean centered prior to analysis (Aiken et al., 1991).

3.5 Results

3.5.1 Preliminary analysis

Before testing the hypotheses, two separate confirmatory factor analyses (CFAs) were conducted at the individual- and organization-level to validate the constructs instead of using a multilevel confirmatory factor analysis (MCFA). Because the study is comprised of 536 observations, it falls short of the 800-observation benchmark suggested for optimal performance in MCFA, according to Dyer et al. (2005). They observed that MCFA yields satisfactory results with at least 800 total observations, regardless of whether these are spread over numerous groups with fewer

individuals or fewer groups with more individuals per group, a phenomenon also noted by Mok (1995). We thus conducted two CFAs rather than MCFA.

At the individual level, the results showed that the two-factor model of collective organizational engagement and participation in decision-making ($\chi^2 = 80.45$, $df = 30$, $p < 0.00$, $RMSEA = 0.05$, $CFI = 0.99$, $TLI = 0.98$) fits better than the one-factor model ($\chi^2 = 766.43$, $df = 31$, $p < 0.00$, $RMSEA = 0.19$, $CFI = 0.79$, $TLI = 0.70$). At the organizational level, a series of CFA analyses were conducted on causation and effectuation, including experimentation, affordable loss, flexibility, and pre-commitment. The outcomes showed that the five-factor model fits the data quite well ($\chi^2 = 108.67$, $df = 75$, $p < 0.00$, $RMSEA = 0.06$, $CFI = 0.95$, $TLI = 0.93$), and significantly better than the alternative four (four-factor model: $\chi^2 = 180.14$, $df = 79$, $p < 0.00$, $RMSEA = 0.14$, $CFI = 0.71$, $TLI = 0.63$; three-factor model: $\chi^2 = 242.50$, $df = 80$, $p < 0.00$, $RMSEA = 0.14$, $CFI = 0.69$, $TLI = 0.61$; two-factor model: $\chi^2 = 276.88$, $df = 82$, $p < 0.00$, $RMSEA = 0.15$, $CFI = 0.65$, $TLI = 0.57$; one-factor model: $\chi^2 = 292.63$, $df = 83$, $p < 0.00$, $RMSEA = 0.14$, $CFI = 0.70$, $TLI = 0.62$).

Furthermore, the analyses indicated that the effectuation and causation constructs met the satisfactory thresholds as outlined by Hair et al. (2014), ensuring the reliability, convergent validity, and discriminant validity of the scales, as detailed in Tables 3.1 and 3.2. Following the guidance of Hair et al. (2014), three items were removed from the causation scale, two from the effectuation scale, one from experimentation, and one from flexibility. They suggest that eliminating items with loading factors below 0.40 will not compromise the content validity of the constructs, a finding consistent with current studies on effectuation (Ruiz-Jiménez et al., 2021; Smolka et al., 2016).

To evaluate convergent validity, the Average Variance Extracted (AVE) was analyzed, which surpassed the recommended threshold of 0.5 for each construct (Hair et al., 2014). For discriminant validity, the Fornell-Larcker criterion (Fornell & Larcker, 1981) was applied, which dictates that the square root of the AVE for each construct should exceed the highest correlation with any other construct, as shown in the Appendix. Furthermore, the outer loadings demonstrated a stronger connection with their respective constructs than with other latent variables, thereby further supporting good discriminant validity (Hair et al., 2014).

Finally, both procedural and statistical remedies were applied to alleviate the influence of potential common method bias in the study (Podsakoff et al., 2003, 2012). For procedural remedies, we obtained the predictor and dependent variables from two different sources: causation and effectuation were collected from top managers, and collective organizational engagement and participation in decision-making were reported by MMs.

For statistical remedies, we included a common latent factor and conducted Harman's single factor test to evaluate the magnitude of common method bias. The results with a common method factor showed a poorer fit than the proposed five-factor model ($\chi^2 = 91.44$, $df = 62$, $p < 0.00$, $RMSEA = 0.06$, $CFI = 0.95$, $TLI = 0.93$). Two Harman's single factor tests were conducted at both levels. The total variances extracted by one factor did not exceed 50% at both the organizational level (28.14%) and the individual level (38.47%). Combining the above results suggests that the results are unlikely to be substantially biased by common method bias.

3.5.2 Hypothesis testing

Table 3.3 presents the descriptive statistics and bivariate correlations. Table 3.4 provides the results of multilevel linear regression. Model 1 includes only the individual and firm level control variables. Model 2 includes all the control variables and five predictors, including

causation, pre-commitment, experimentation, affordable loss, and flexibility. Model 3 adds collective organizational engagement at both the individual and organizational levels. In Model 3, the four principles of effectuation and causation have non-significant relationships with MMs' participation in decision-making, thereby rejecting Hypotheses 1a and 2a. However, the result suggests a weak negative relationship between pre-commitment and MMs' participation in decision-making ($\beta = -0.118$, S.E. = 0.066, $P = 0.073$).

Following Preacher et al. (2016) and Liang et al. (2021), I run a 1x (2→1) model to test the moderation effects. In Model 5, the interaction terms between firm-level collective organizational engagement and three effectuation principles are introduced. All three interaction terms were significant, including the interaction term between experimentation and collective engagement climate ($\beta = -0.291$, S.E. = 0.086, $p = 0.001$), the interaction term between affordable loss and collective engagement climate ($\beta = -0.211$, S.E. = 0.096, $p = 0.027$), and the interaction term between pre-commitment and collective engagement climate ($\beta = 0.234$, S.E. = 0.052, $p = 0.000$). To corroborate the results, the three moderation effects were tested separately in Models 7, 8 and 10 (see Table 5). The interaction terms for experimentation ($\beta = -0.285$, S.E. = 0.085, $p = 0.001$, Model 7) and affordable loss ($\beta = -0.288$, S.E. = 0.107, $p = 0.007$, Model 8) are significant, though the interaction term for pre-commitment ($\beta = 0.068$, S.E. = 0.046, $p = 0.137$, Model 10) is not significant.

Three simple slope tests were run in order to examine the moderation effects; the stylized effects are shown in Figure 3.2, 3.3 and 3.4. For pre-commitment, the interaction terms are significant in Model 5 but not significant in Model 10. Based on Model 5, the simple slopes changed from significant and negative at low (15% percentiles; $b = -0.440$, $p = .000$) and medium ($b = -0.187$, $p = .003$) levels of collective organizational engagement, to non-significant

($b = -0.067$, $p = .504$) at high levels (85% percentiles) of collective engagement climate. This finding partially supports Hypothesis 1b.

For affordable loss, the simple slopes changed from significant and positive at low and medium levels of collective engagement climate ($b = 0.448$, $p = .014$; $b = 0.207$, $p = .016$), to non-significant at high levels of collective engagement ($b = -0.33$, $p = .751$). This supports Hypothesis 2b. For experimentation, the simple slopes were significant and negative at high levels of collective organizational engagement ($b = -0.283$, $p = .011$), non-significant at medium levels of collective organizational engagement ($b = -0.066$, $p = .244$), and significant and positive at low levels of collective organizational engagement ($b = 0.415$, $p = .000$). These findings support Hypothesis 3.

Finally, the moderation effects of collective organizational engagement on the effects of causation and flexibility are explored in Models 4, 6 and 9 in Table 3.5. Both interaction terms are non-significant, though the p-value of the interaction between flexibility and collective organizational engagement is at 0.092.

3.5.3 Post hoc analysis

In this study, I run the same model for causation, and find that the main relationship between causation and MM's participation in decision-making, and moderation effect of organizational collective engagement are not significant. Causation differs from effectuation. The latter is a flexible decision-making logic, while the former is a planning-based decision logic (Reymen et al., 2015). Related literature on strategic planning (Ansoff, 1988) and middle management (Ahearne et al., 2013; Raes et al., 2011; Westley, 1990; Wooldridge & Floyd, 1990) seems to imply different effects for MMs' participation. Since strategic planning and analysis (Mintzberg, 1978) makes the assumption that the distribution of outcomes within a group can be reliably

predicted through calculation, there seems to be limited space left for MMs to participate in decision making. But the literature on middle management involvement in strategy (Ahearne et al., 2013; Raes et al., 2011; Westley, 1990; Wooldridge & Floyd, 1990) suggests that MMs can take roles like championing alternatives, facilitating adaptation, synthesizing information, and implementing a deliberate strategy. For example, Westley (1990) provided strong evidence that excluding middle managers from strategic processes is de-energizing, leading to expectations for MM agency on the organizational strategy process (Mantere, 2008; Wooldridge & Floyd, 1990). The recent literature suggests that MMs typically take the role of strategy implementor (Jansen van Rensburg et al., 2014), but have limited involvement in the strategy process. Thereby indicating that causation, as a concept closely related to strategic planning, is not a main determinant of MMs' participation in decision-making.

3.6 Discussions

3.6.1 Theoretical implications

I found general support for the hypotheses that firm-level effectuation affects MMs' participation in decision-making, and that the four principles of effectuation exhibit quite distinctive patterns. As a result, this research makes two important contributions to the effectuation literature.

First, the study contributes to firm-level effectuation research by asking the following broad questions: What are the implications of effectuation for the strategy, structure, and processes in the firm? Who are the stakeholders? Although some scholars have developed conceptual articles about the impact of effectuation on employee behaviors (Hubner & Baum, 2018), we do not know whether effectuation affects internal functioning of a firm and how effectuation cascades down. This study is among the first to examine the impact of effectuation on an important structural variable, namely the allocation of decision-making authority to MMs. The findings

suggest that research on firm-level effectuation requires an understanding of how effectuation is achieved in the firm, by looking at who makes the decisions, who is involved, and how decisions are implemented.

Second, the findings reveal that pre-commitment, experimentation, and affordable loss interact with collective organizational engagement in very different ways. For pre-commitment, the negative effect is weakened by the moderator; for affordable loss, the positive effect is weakened; and for experimentation, the influence reverses direction. Interestingly, the main effects of these three principles are insignificant, suggesting that their effects are very sensitive to contexts. Consistent with the theoretical argument, the interaction effects of flexibility and causation with organizational collective engagement are not significant. These results support the growing body of literature (e.g., Palmié et al., 2019) that points to significant differences among effectuation principles and underscores the need for further conceptualization of individual effectuation principles.

3.6.2 Implication for practice

This paper may help top managers to understand the challenges when they implement effectuation principles within their firms, and how organizational parameters influence this process. The findings indicate that effectuation principles vary in their interactions with organizational attributes and should not be used interchangeably (Palmié et al., 2019). Different effectuation principles can lead to fundamentally diverse outcomes, such as positive or negative effects on middle managers' involvement in decision-making. As they consider whether to adopt an effectuation approach, top managers need to decide which specific principles to implement, what is expected from MMs, what may be the impact on MMs' behaviors, and what the boundary conditions are.

Another implication stems from the recognition that experimentation is easier said than done. For organizational leaders, experimentation can be a part of building a “distilled experience,” which involves making adjustments such as expanding or narrowing the firm’s product scope, adding or removing partners, and altering how top management allocates their time (Nicholls-Nixon et al., 2000). However, the impact of experimentation on middle managers is highly context-dependent. When MMs are deeply emotionally and cognitively committed to the organization, they may experience burnout due to frequent trial-and-error changes (Bruch & Menges, 2010), and they may eventually resist alterations that affect their own departments (Tushman & O’Reilly, 1996). Although both scholars and practitioners in entrepreneurship (Kerr et al., 2014; Lindholm-Dahlstrand et al., 2019; Manso, 2016) have been preaching the value of experimentation, executives should consider whether their MMs are prepared for such tasks.

3.6.3 Limitations and directions for future research

This study has several strengths, but it also has some limitations that may suggest areas for future research. First, the unique patterns of the effectuation principles suggest that more research should be directed towards understanding how executives and managers apply these principles at work and how these principles interact with organizational parameters. For example, the flexibility principle has largely been maintained as one dimension of effectuation in entrepreneurship literature. But there has been much research in other management disciplines on agility (e.g. Girod et al., 2023; Sherehiy et al., 2007) and flexibility (Zhou & Wu, 2010). These studies investigate agility/flexibility across different levels (e.g., strategic, organizational, and leadership) and different dimensions (e.g., production, people, information, and market). They illustrate how agility/flexibility interacts with organizational parameters, which has raised new questions: What does flexibility, affordable loss, pre-commitment, and experimentation

mean for managers across different hierarchical levels/ unit of analysis? What do these ideas look like in practice, and how do they get implemented in the firm? The findings demonstrate that different effectuation principles may imply diverse expectations from MMs, thereby suggesting that the way of organizing activities may differ for different principles.

Second, the analysis highlights the need for clearer definitions when researchers apply the construct of effectuation, which was initially introduced to describe decision-making processes at the individual entrepreneur level (S. D. Sarasvathy, 2001a). Literally, effectuation has received broad support as a firm-level concept, creating complexities regarding the meaning of firm-level effectuation (McKelvie et al., 2020). For instance, does it refer to the behaviors of the top managers, or does it describe a characteristic that permeates the entire organization? If firm-level effectuation characterizes the entire organization, further delineation of its components is necessary. Conversely, if it pertains primarily to top management behaviors, understanding its influence on organizational strategy and structure becomes crucial, such as the top manager level, the middle manager level and the employee level.

Third, the uniqueness of each principle may suggest the promise of a configurational approach, both across various principles of effectuation and between effectuation principles and organizational characteristics. For example, Harms et al. (2021) discovered that two configurations of effectuation and causation components may lead to a firm's business model innovation. It is also possible that configurations emerge between effectuation components, causation, and organizational strategy and structure, in the approach similar to entrepreneurial orientation (Miller, 2011).

Last but not least, I chose small and medium enterprises to study effectuation and causation theory because, in these scenarios, the CEO and top managers are viewed as the key decision-

makers rather than the board of directors (McKelvie et al., 2020). Current research indicates that venture CEOs with an effective strategy-making process can both secure resources from the board and maintain power in the decision-making process (Garg & Eisenhardt, 2017). Therefore, the decision-making logic of top leaders can be considered the decision-making principles at the firm level. However, in certain situations, a venture CEO may have less power than their directors if they have relinquished a significant amount of equity (Wasserman, 2003). Future studies might include board directors as key stakeholders, examining their behaviors and how these influence the effectual behavior and logic within the firm.

Table 3.1 Measurement model of causation and effectuation

Indicator	Factor Loadings	CR	AVE
<i>Causation</i>		0.838	0.571
C1. We analyzed long run opportunities and selected what we thought would provide the best returns.	0.873		
C2. We developed a strategy to best take advantage of resources and capabilities.	Dropped		
C3. We designed and planned business strategies.	0.819		
C4. We organized and implemented control processes to make sure we met objectives.	Dropped		
C5. We researched and selected target markets and did meaningful competitive analysis.	0.724		
C6. We had a clear and consistent vision for where we wanted to end up.	Dropped		
C7. We designed and planned production and marketing efforts.	0.629		
<i>Experimentation</i>		0.821	0.605
E1. We experimented with different products and/or business models.	Dropped		
E2. The product/service that we now provide is essentially the same as originally conceptualized.	0.705		
E3. The product/service that we now provide is substantially different than we first imagined.	0.776		
E4. We tried a number of different approaches until we found a business model that worked.	0.847		
<i>Affordable loss</i>		0.848	0.658
A1. We were careful not to commit more resources than we could afford to lose.	0.909		
A2. We were careful not to risk more money than we were willing to lose with our initial idea.	0.588		
A3. We were careful not to risk so much money that the company would be in real trouble financially if things didn't work out.	0.894		
<i>Flexibility</i>		0.796	0.567
F1. We allowed the business to evolve as opportunities emerged. Flexibility	0.737		
F2. We adapted what we were doing to the resources we had.	Dropped		
F3. We were flexible and took advantage of opportunities as they arose.	0.832		
F4. We avoided courses of action that restricted our flexibility and adaptability.	0.656		
<i>Pre-commitment</i>		0.708	0.548
P1. We used a substantial number of agreements with customers, suppliers and other organizations and people to reduce the amount of uncertainty.	0.754		
P2. We used pre-commitments from customers and suppliers as often as possible.	0.725		

Table 3.2 Discriminant validity for causation and four dimensions of effectuation

	Causation	Experimentation	Affordable loss	Flexibility	Precommitment
Causation	0.756				
Experimentation	0.053	0.778			
Affordable loss	0.296**	0.432***	0.811		
Flexibility	0.571***	0.065	0.348**	0.753	
Precommitment	0.544***	0.286**	0.656***	0.579***	0.74

Table 3.3 Descriptive statistics and correlations

	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.MM gender	0.452	0.498	1															
2.MM age	34.990	7.041	-.144**	1														
3. MM education	4.438	0.943	0.074	-.195**	1													
4. MM work experience	5.360	5.292	-0.047	.385**	0.074	1												
5. Causation	4.496	0.729	-0.044	0.003	-.090*	0.012	1											
6. Experimentation	3.582	0.785	-0.021	-0.044	0.021	-0.034	0.054	1										
7. Affordable loss	4.259	0.750	-0.079	-0.017	-.183**	-0.038	.450**	.424**	1									
8. Flexibility	4.315	0.701	-0.056	0.073	-.201**	-0.052	.402**	.220**	.444**	1								
9. Pre-commitment	4.337	0.869	0.007	-0.037	-.203**	-.173**	.227**	.336**	.487**	.558**	1							
10. State-owned	0.250	0.433	-0.043	0.066	-0.043	-.162**	-0.036	-0.020	.099*	0.012	0.071	1						
11. Private	0.670	0.469	0.016	-0.045	0.058	.126**	-0.048	0.020	-.127**	-0.025	-.138**	-.829**	1					
12. High-tech	0.140	0.347	.086*	0.026	.146**	.193**	-.269**	-.129**	-.311**	-.276**	-.358**	-.146**	.201**	1				
13. Manufacturing	0.160	0.366	-0.015	-0.011	-.190**	-0.057	.211**	.138**	.145**	.175**	.188**	-.227**	.172**	-.175**	1			
14. Number of employees	125.810	117.960	-0.001	0.049	.145**	.166**	-0.027	-.090*	-0.036	-.233**	-.158**	.143**	-.127**	0.057	0.004	1		
15. Collective organizational engagement	4.282	0.940	0.054	-0.046	-0.038	0.001	-0.015	-0.075	-0.073	.119**	.114**	0.021	-0.002	-0.045	-0.079	-0.007	1	
16. Participation in decision making	4.019	0.863	0.057	-0.043	-0.040	0.064	-0.001	0.036	0.045	0.054	-0.026	-0.006	0.030	0.081	0.027	-0.034	.222**	1

Note: *p <.05; **p <.01. Sample size: 536.

Table 3.4 Multilevel regression results

	Model 1			Model 2			Model 3			Model 4			Model 5		
	B	S.E.	P	B	S.E.	P	B	S.E.	P	B	S.E.	P	B	S.E.	P
<i>Within level</i>															
MM gender	0.046	0.088	0.601	0.046	0.088	0.601	0.029	0.082	0.718	0.029	0.082	0.718	0.048	0.071	0.504
MM age	-0.346	0.243	0.155	-0.346	0.243	0.155	-0.322	0.230	0.161	-0.322	0.230	0.161	-0.317	0.231	0.170
MM education	0.019	0.050	0.708	0.019	0.050	0.708	-0.008	0.048	0.862	-0.008	0.048	0.862	-0.008	0.048	0.863
MM work experience	0.137	0.096	0.153	0.137	0.096	0.153	0.122	0.096	0.203	0.122	0.096	0.203	0.122	0.096	0.201
Collective organizational engagement							0.221	0.078	0.005	0.221	0.078	0.005	0.221	0.078	0.005
<i>Between level</i>															
State-owned	0.119	0.196	0.546	0.072	0.201	0.722	0.031	0.200	0.877	-0.036	0.173	0.833	-0.001	0.166	0.997
Private	0.076	0.199	0.704	0.028	0.203	0.891	-0.033	0.201	0.870	-0.110	0.176	0.517	-0.081	0.169	0.633
High-tech	0.227	0.130	0.081	0.271	0.143	0.058	0.290	0.146	0.399	0.328	0.138	0.017	0.283	0.144	0.049
Manufacturing	0.058	0.163	0.723	0.046	0.157	0.770	0.127	0.151	0.399	0.221	0.138	0.017	0.226	0.144	0.103
Number of employees	-0.065	0.115	0.572	-0.043	0.117	0.735	-0.062	0.115	0.589	-0.149	0.107	0.164	-0.151	0.105	0.149
Causation				-0.052	0.108	0.622	-0.070	0.098	0.480	-0.029	0.084	0.728	-0.053	0.075	0.485
Experimentation				0.030	0.062	0.622	0.053	0.062	0.396	0.071	0.057	0.208	0.069	0.058	0.230
Affordable loss				0.060	0.093	0.516	0.126	0.088	0.150	0.180	0.083	0.030	0.198	0.077	0.010
Flexibility				0.150	0.087	0.084	0.104	0.087	0.228	0.056	0.083	0.496	0.038	0.081	0.637
Pre-commitment				-0.074	0.068	0.295	-0.118	0.066	0.073	-0.220	0.065	0.001	-0.193	0.067	0.004
Intercept	4.003	0.050	0.000	4.001	0.049	0.000	4.000	0.046	0.000	3.977	0.046	0.000	3.943	0.050	0.000

Table 3.4 Multilevel regression results (Continued)

	Model 1			Model 2			Model 3			Model 4			Model 5		
	B	S.E.	P	B	S.E.	P	B	S.E.	P	B	S.E.	P	B	S.E.	P
Collective organizational engagement means							0.274	0.084	0.001	0.356	0.062	0.000	0.358	0.063	0.000
Interaction															
Causation*COEM										0.059	0.101	0.562			
Experimentation*COEM										-0.291	0.086	0.001	-0.273	0.086	0.001
Affordable loss*COEM										-0.211	0.096	0.027	-0.215	0.094	0.022
Flexibility*COEM										-0.210	0.125	0.092			
Pre-commitment*COEM										0.234	0.052	0.000	0.185	0.045	0.000
AIC	1358.414			1364.84			1335.893			1324.456			1322.01		
BIC	1409.824			1437.67			1417.291			1427.275			1416.26		
Deviance	1371.732			1383.707			1356.979			1351.091			1346.426		

Table 3.5 Multilevel regression supporting models

	Model 6			Model 7			Model 8			Model 9			Model 10		
	B	S.E.	P	B	S.E.	P	B	S.E.	P	B	S.E.	P	B	S.E.	P
Within level															
MM gender	0.029	0.082	0.718	0.029	0.082	0.718	0.029	0.082	0.718	0.029	0.082	0.718	0.029	0.082	0.718
MM age	-0.322	0.23	0.161	-0.322	0.23	0.161	-0.322	0.23	0.161	-0.322	0.23	0.161	-0.322	0.23	0.161
MM education	-0.008	0.048	0.862	-0.008	0.048	0.862	-0.008	0.048	0.862	-0.008	0.048	0.862	-0.008	0.048	0.862
MM work experience	0.122	0.096	0.203	0.122	0.096	0.203	0.122	0.096	0.203	0.122	0.096	0.203	0.122	0.096	0.203
Collective organizational engagement	0.221	0.078	0.005	0.221	0.078	0.005	0.221	0.078	0.005	0.221	0.078	0.005	0.221	0.078	0.005

Table 3.5 Multilevel regression supporting models (Continued)

	Model 6			Model 7			Model 8			Model 9			Model 10		
	B	S.E.	P	B	S.E.	P	B	S.E.	P	B	S.E.	P	B	S.E.	P
Between level															
State-owned	0.049	0.196	0.803	-0.001	0.175	0.994	0.016	0.180	0.927	0.042	0.198	0.831	0.054	0.199	0.787
Private	-0.013	0.199	0.949	-0.075	0.178	0.672	-0.018	0.182	0.920	-0.018	0.200	0.928	-0.017	0.202	0.931
High-tech	0.287	0.142	0.043	0.360	0.143	0.012	0.305	0.141	0.030	0.296	0.139	0.033	0.255	0.145	0.079
Manufacturing	0.116	0.152	0.446	0.182	0.143	0.202	0.147	0.138	0.288	0.114	0.152	0.453	0.124	0.154	0.423
Number of employees	-0.066	0.114	0.563	-0.105	0.111	0.342	-0.116	0.108	0.281	-0.064	0.114	0.575	-0.067	0.114	0.561
Causation	-0.009	0.083	0.916	0.003	0.081	0.968	-0.029	0.079	0.714	-0.005	0.087	0.950	-0.028	0.083	0.737
Experimentation	0.057	0.062	0.905	0.057	0.060	0.336	0.025	0.058	0.662	0.055	0.063	0.381	0.070	0.064	0.276
Affordable loss	0.111	0.083	0.180	0.154	0.076	0.042	0.208	0.084	0.013	0.111	0.084	0.186	0.103	0.081	0.200
Flexibility	0.073	0.085	0.394	0.042	0.084	0.616	0.010	0.088	0.912	0.074	0.085	0.382	0.087	0.083	0.296
Pre-commitment	-0.123	0.067	0.067	-0.188	0.077	0.015	-0.134	0.072	0.063	-0.129	0.069	0.063	-0.124	0.063	0.049
Intercept	4.005	0.046	0.000	3.988	0.045	0.000	3.989	0.044	0.000	4.007	0.048	0.000	3.999	0.046	0.000
Collective organizational engagement means	0.272	0.085	0.001	0.325	0.074	0.000	0.296	0.071	0.000	0.269	0.085	0.001	0.277	0.086	0.001
Interaction															
Causation*COEM	-0.030	0.100	0.764												
Experimentation*COEM				-0.285	0.085	0.001									
Affordable loss*COEM							-0.288	0.107	0.007						
Flexibility*COEM										-0.037	0.106	0.727			
Pre- commitment*COEM													0.068	0.046	0.137
AIC	1338.404			1327.517			1330.526			1338.386			1337.433		
BIC	1424.087			1413.200			1416.208			1424.068			1423.125		
Deviance	1360.600			1349.713			1352.722			1360.582			1359.639		

Figure 3.1 Research model in Chapter 3

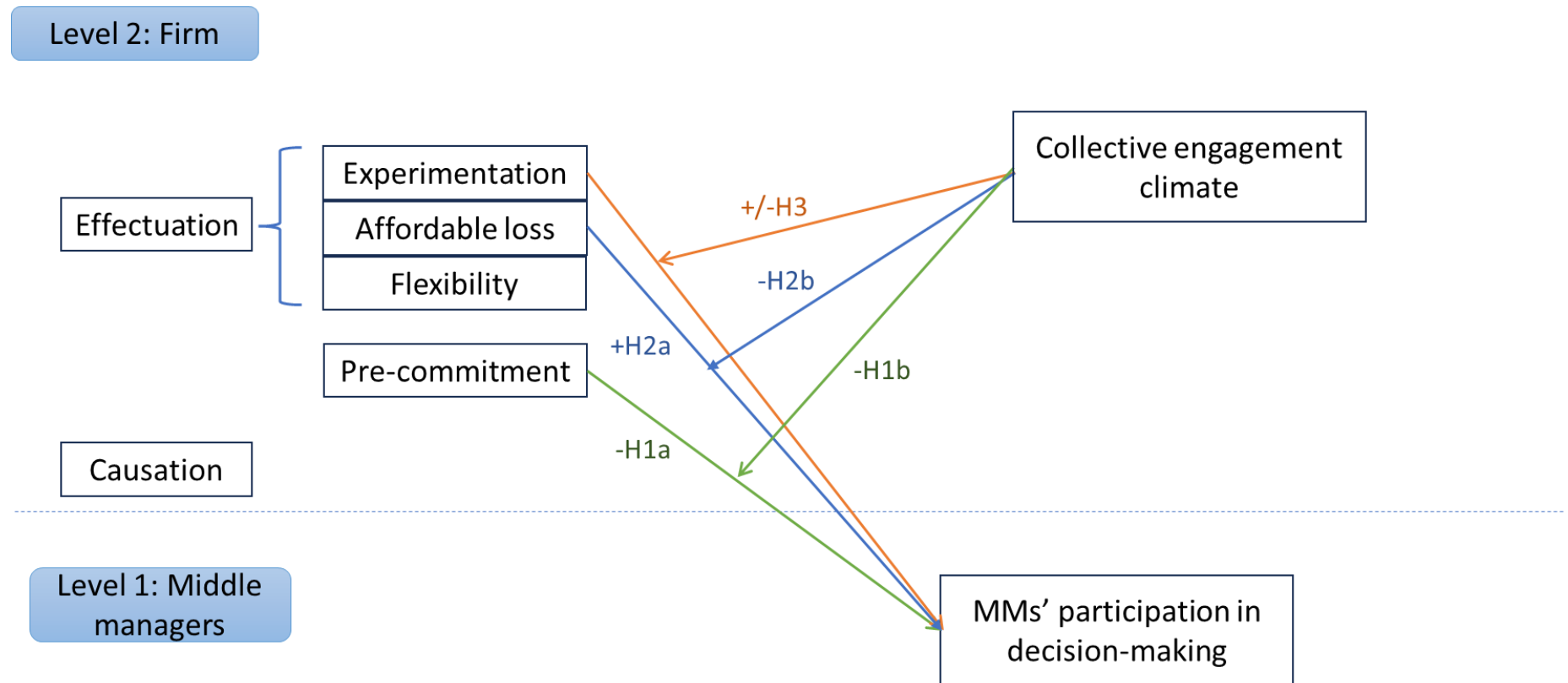


Figure 3.2 The moderation effect of organizational collective engagement on pre-commitment and MMs' participation in decision-making

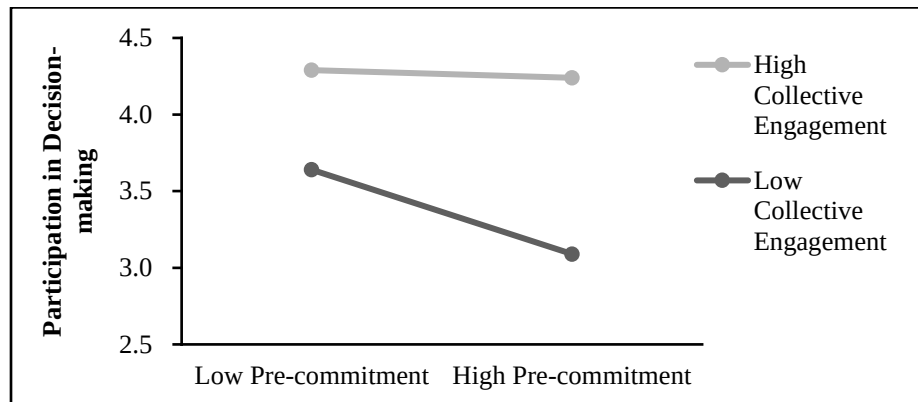


Figure 3.3 The moderation effect of organizational collective engagement on AL and MMs' participation in decision-making

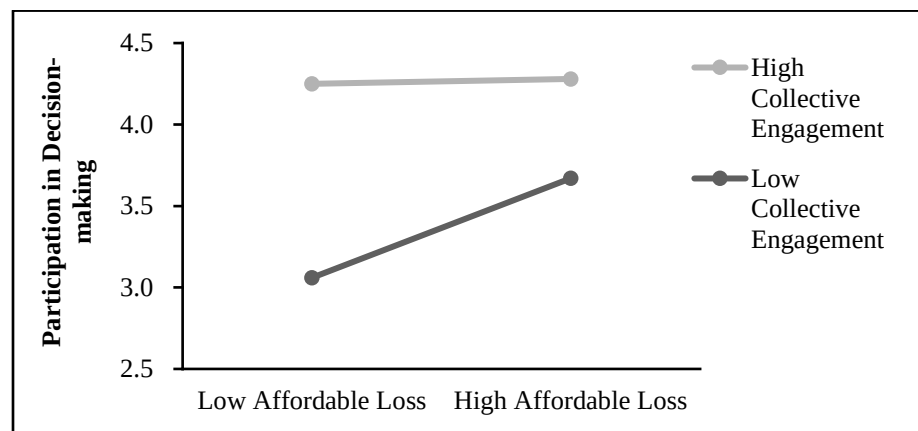
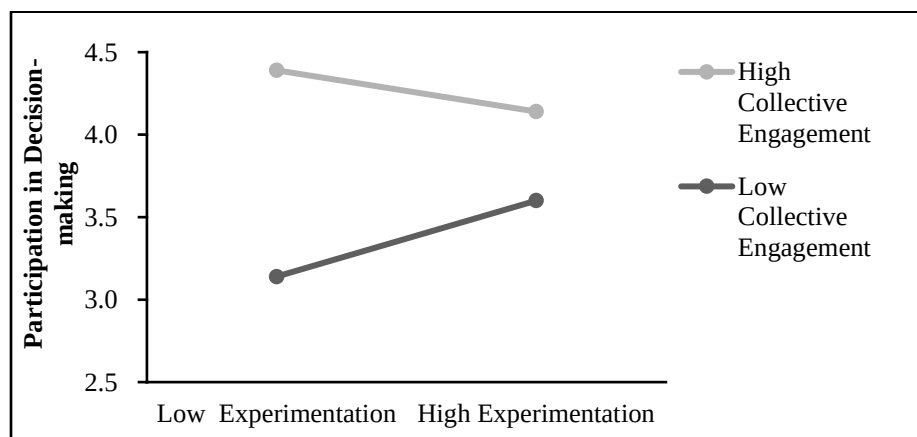


Figure 3.4 The moderation effect of organizational collective engagement on experimentation and MMs' participation in decision-making



Note: High level= 85% percentile; low level= 15% percentile.

Appendix to Chapter 3

Participation in Decision-making

- I participate in decisions on implementing new processes or products/ services.
- I participate in decisions on adopting new policies.
- I participate in decisions on hiring new colleagues.
- I participate in decisions on the promotion of colleagues.

Collective Organizational Engagement

- My coworkers and I really “throw” ourselves into our work.
- I find nearly everyone devotes a lot of effort and energy to our work.
- My coworkers and I gain considerable pride from performing our jobs well.
- Nearly everyone at work feels passionate and enthusiastic about our jobs.
- Performing work in my work area (as a whole) is so absorbing that we often forget about the time.
- My coworkers and I tend to be highly focused when doing our jobs.

Chapter 4 Conclusion

As a researcher specializing in effectuation theory at the firm behavior level, we have gained considerable insights into its critical role in managing uncertainties and unpredictability (Sarasvathy, 2001; Welter & Kim, 2018), which significantly influence firm performance (Shirokova et al., 2021), innovation (Alzamora-Ruiz et al., 2021), and growth (Yang et al., 2021). However, the internal mechanisms within the firm—often considered a "black box"—have not been thoroughly explored. This dissertation seeks to delve into two hierarchical levels within the firm: top manager level, and middle management level. It aims to uncover insights from these tiers and examine how effectuation principles/behaviors are transmitted and implemented across these different management hierarchies.

Essay 1 contributes to trait-based effectuation research and suggests that individual psychological traits are responsible for AL behaviors at the firm level though the patterns of the relationship vary with both the type of narcissism and contexts. This can be viewed as an extension of the current personality approach to understanding entrepreneurship/ effectuation. The findings show that CEO admiration-based narcissism is positively related to AL behaviors in the firm. Furthermore, when firms hold more slack resources, narcissistic admiration has a stronger positive association with AL; while when the environment becomes more uncertain, narcissistic admiration has a weaker positive association with AL. Meanwhile, only when environment becomes more uncertain, CEO rivalry-based narcissism has a stronger negative association with AL. The study enhances our understanding of the relationship between CEO psychological traits and the effectual behaviors of top managers.

Essay 2 findings indicate that experimentation, affordable loss, and precommitment exhibit unique patterns in their interactions with collective organizational engagement climate. When

collective organizational engagement becomes stronger, the impact of experimentation on middle managers' participation in decision-making switches from positive to negative. However, collective organizational engagement weakens the positive impact of affordable loss and lessens the negative impact of precommitment. This study provides deeper insights into how the effectuation sub-dimensions related behaviors influences the entrepreneurial behaviors of middle managers. This research adds to the body of knowledge on stakeholders (e.g. middle-level managers) in effectuation theory.

In future research, I have outlined four key areas of focus. First, I aim to further explore the mechanisms discussed in Essay 1, particularly identifying potential mediators that might influence the relationship between CEO narcissism and firm-level effectuation behaviors. Second, I intend to refine the measurement of affordable loss. While Essay 1 utilized the scale from Chandler et al. (2011), which emphasizes behaviors related to affordable loss in decision-making, it does not adequately address the concept of expected return. Therefore, drawing from Dew et al. (2009) and Martina (2020), a more specific scale is needed to measure affordable loss accurately. Third, to deepen the understanding of stakeholders in effectuation, especially within SMEs, I plan to examine the role and influence of board directors. Current literature on effectuation and SMEs often assumes that top managers, including CEOs, are the key decision-makers, but it is crucial to also consider the power and impact of board directors. Lastly, I wish to investigate the interplay between effectuation and other key constructs in entrepreneurship, such as entrepreneurial orientation and entrepreneurial intention, to further understand the contributions of effectuation theory to the field of entrepreneurship.

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