Fabian E. Diefenbach

Entrepreneurship in the Public Sector

When Middle Managers Create Public Value

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With a foreword by Prof. Dr. Peter Gomez

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Foreword

The public sector, with its wide range of organizations, plays a key role in our society. Whether or not these public sector organizations should foster entrepreneurial management in order to fulfill their legal mandate is an ongoing debate among scholars and practitioners. Advocates argue that entrepreneurial managers can create public value by analyzing public needs and by implementing creative ideas. On the other hand, opponents warn of a lack of democratic legitimization, the neglect of core responsibilities, and the danger of promoting self-interested rule-breaking managers. This debate is often characterized by dogmatic, normative arguments. Fabian Diefenbach approaches the debate on entrepreneurship in the public sector from a different, evidence-based angle.

This work allows the reader to develop an understanding of entrepreneurship within organizations, what drives such entrepreneurship, and which consequences it may have. The basis is a thorough literature review that highlights shared and distinct elements of private and public sector entrepreneurship within organizations. In this review, Fabian Diefenbach pays special attention to middle management, doing justice to its crucial role in the entrepreneurship process. The research model he develops based on the review represents the essence of some 30 years of research in private and public sector entrepreneurship. Particularly notable is the integration of the new field of public value management. The study's empirical part is based on a dedicated data set. The organization studied here, the German *Bundesagentur für Arbeit* (Federal Labor Agency), appears particularly suitable for this research: It is Europe's largest bureaucracy and has set entrepreneurship as one reform objective. In the data analyses, sophisticated techniques – particularly structural equation modeling – make this work unique in its field and a potential reference for other scholars.

The present dissertation not only closes a significant gap in the academic literature; more importantly, it also succeeds in highlighting how its results can be applied. It may thereby help embed entrepreneurship in public sector management and enhance public value creation – a matter with relevance beyond the public sector.

Prof. Dr. Peter Gomez

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Kirchheim unter Teck, May 2011 Fabian E. Diefenbach

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List of Abbreviations

Abbreviation	Full term
ADF	asymptotically distribution-free
AGFI	adjusted goodness of fit index
AVE	average variance extracted
CE	corporate entrepreneurship
CEAI	corporate entrepreneurship assessment instrument
CFA	confirmatory factor analysis
CFI	comparative fit index
CR	composite reliability
df	degrees of freedom
e.g.	*exempli gratia* (for example)
EFA	exploratory factor analysis
EM	expectation maximization
EO	entrepreneurial orientation
et al.	*et alii* (and others)
FLA	Federal Labor Agency (*Bundesagentur für Arbeit*)
GDP	gross domestic product
GFI	goodness of fit index
GOF	goodness of fit
HA	head of local agency (*Vorstand der Geschäftsführung*)
HIS	head of local internal services (*Geschäftsführer Interner Service*)
HLM	hierarchical linear modeling
HO	head of local operations (*Geschäftsführer Operativ*)
HR	human resources
i.e.	*id est* (that means)
ICC	intra-class correlation coefficient
IR	indicator reliability
KPI	key performance indicator
MAR	missing at random
MCAR	missing completely at random
MCS	management control system(s)
MI	modification index
N	sample size
n.a.	not available
NFI	normed fit index
NMR	non random missing
NNFI	non-normed fit index
NPM	new public management
OECD	Organisation for Economic Co-operation and Development
p	probability
PV	public value
PVM	public value management
PVO	public value orientation
RMSEA	root mean squared error of approximation
RQ	research question
SD	standard deviation
SE	standard error
SEM	structural equation model/modeling
SGB	*Sozialgesetzbuch* (social security code)
TLI	Tucker-Lewis index
TPM	traditional public management

Abstract

Public sector organizations face a changing environment and increasing expectations to enhance public value creation. Scholars and practitioners have repeatedly suggested that these organizations should become more entrepreneurially oriented as a way to respond to these challenges. While in the private sector, antecedents and consequences of a firm's entrepreneurial orientation (EO) have been studied extensively, such research in the public sector is rare. Yet, the private and public sectors differ in important ways, which makes the transferability of concepts difficult. Thus, there is a need to better understand antecedents of EO and how EO is related to public value creation in public sector organizations.

To close this gap, this dissertation draws on the corporate entrepreneurship, public entrepreneurship, and public value management literatures to identify relevant antecedents and develop a corresponding model. The model focuses on the middle management level, which is particularly important in achieving entrepreneurial orientation due to its mediating role. Data from multiple levels of Germany's Federal Labor Agency, including 250 middle managers, are used to test the model.

Results based on structural equation modeling suggest that five factors influence EO. These are management support, staff motivation, multitude of expectations, the managers' localism, and the managers' tenure in the current position/department. Furthermore, the data show a strong positive relationship between EO and public value orientation. This study thereby advances the public entrepreneurship, public value management, and private sector corporate entrepreneurship literatures. Additionally, this dissertation provides suggestions for human resources and general managers on how to help their organizations become entrepreneurially oriented and create public value.

Keywords: public entrepreneurship; corporate entrepreneurship; entrepreneurial orientation; public value; public value management; new public management; middle management.

Zusammenfassung

Öffentliche Institutionen agieren in einem sich rasch ändernden Umfeld, in dem von ihnen erwartet wird, dass sie Gemeinwohl (Public Value) schaffen. Akademiker und Praktiker haben in der Vergangenheit immer wieder empfohlen, dass sich diese Organisationen hierzu unternehmerisch ausrichten sollten. Während es im privaten Sektor zwar umfangreiche Erkenntnisse über die Voraussetzungen und Konsequenzen Unternehmerischer Ausrichtung (UA) gibt, ist dieses Konzept im öffentlichen Sektor wenig erforscht. Die beiden Sektoren unterscheiden sich jedoch in wichtigen Aspekten, sodass Erkenntnisse nicht einfach übertragen werden können. Es besteht daher Bedarf, auch im öffentlichen Sektor Voraussetzungen Unternehmerischer Ausrichtung, aber auch die Beziehung zwischen UA und Public Value, besser zu verstehen.

Diese Dissertation adressiert diese Forschungslücken, indem entsprechende Voraussetzungen in den Forschungsbereichen Corporate Entrepreneurship, Public Entrepreneurship und Public Value Management identifiziert und in ein entsprechendes Modell integriert werden. Das Modell bezieht sich auf die mittlere Managementebene, da diese durch ihre Mediationsrolle entscheidend dazu beiträgt Organisationen unternehmerisch auszurichten. Getestet wird das Modell mit Strukturgleichungsanalysen anhand von Umfragedaten aus der deutschen Bundesagentur für Arbeit.

Die Ergebnisse weisen darauf hin, dass fünf Faktoren UA beeinflussen: Unterstützung durch das Management, motivierte Mitarbeiter, Erwartungsvielfalt, lokale Verbundenheit und Dienstzeit auf aktuellem Posten. Zudem wird eine starke positive Beziehung zwischen Unternehmerischer Ausrichtung und Public Value Ausrichtung gezeigt. Diese Dissertation trägt dadurch zu allen drei oben genannten Forschungsbereichen bei. Darüber hinaus werden Implikationen für Personalmanager und andere Führungskräfte aufgezeigt, die helfen können Organisationen unternehmerischer auszurichten und Public Value zu schaffen.

1 Introduction

> *Public-service institutions such as government agencies, labor unions, […] and the like need to be entrepreneurial and innovative fully as much as any business does. Indeed, they may need it more.*
>
> *(Drucker, 1985, p. 177)*

1.1 Context: Entrepreneurship and Public Value in the Public Sector

Public sector organizations, which in this study refer to government-owned and government-funded organizations (Rainey, 2009, p. 80; Section 3.1.1), form an important part of our society. This is evident from the facts that government provides one in seven jobs and its expenditures range from 30% to 55% of GDP in the OECD countries (OECD, 2009, pp. 52–67) – over and above the public sector's social functions. Organizations in this sector, like many other organizations, face the challenge to act in changing environments with increasingly high expectations (Schedler & Proeller, 2003, pp. 26–31). Peter Drucker (1985, p. 177) is not the only one to issue a call for entrepreneurship in order to address these challenges. Similar requests have been voiced in different contexts and cultures in the past decades (Bellone & Goerl, 1992; Currie, Humphreys, Ucbasaran, & McManus, 2008; Lewis, 1980; Meynhardt & Metelmann, 2009; Morris & Jones, 1999; Osborne & Gaebler, 1992).

However, entrepreneurship is not part of the traditional public management approach associated with a Weberian bureaucracy (Weber, 1946, pp. 196–198), which dominated many public administrations until the 1970s. The 'ideal' bureaucracy type was characterized by strict hierarchies and the adherence to rules. Subsequently, macro trends and increasing criticism (whether justified or not; Du Gay, 2000) due to inflexible and inefficient structures have led to the development and application of the new public management (NPM) approach (Hood, 1991; Schedler & Proeller, 2003). Under the NPM heading, private sector management principles have been introduced to help transform many public sector organizations (Pollitt & Bouckaert, 2004, pp. 103–142). Increasing entrepreneurship was seen as a means to such transformation (Osborne & Gaebler, 1992). Yet, NPM has also drawn criticism, mainly due to being too narrowly focused on service delivery (Alford & Hughes, 2008, pp. 136–137; Kelly, Mulgan, & Muers, 2002, pp. 9–10). The emerging research field of public value management (PVM) seeks to re-introduce a value creation perspective beyond output measures (Du Gay, 2000, p. 142; Meynhardt & Metelmann, 2009, p. 298). PVM was in-

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itiated by one of the advocates of entrepreneurship in the public sector (Moore, 1995). He equates "managerial success in the public sector with initiating and reshaping public sector enterprises in ways that increase their value to the public in both the short and the long run" (1995, p. 10). Entrepreneurship is thus an inherent part of both NPM and PVM: in NPM with a focus on performance delivery in terms of efficiency and customer satisfaction, and in PVM with the goal of 'maximizing' public value (Kelly et al., 2002, p. 10; Stoker, 2006, p. 44).

In the light of these public sector developments, this dissertation studies antecedents of entrepreneurial orientation (i.e., what makes public sector organizations innovative, proactive, and risk-taking) and how entrepreneurial orientation (EO) is related to an orientation towards public value creation.

1.2 Research Gap and Research Questions

Entrepreneurship within existing organizations (Miller, 1983, p. 770), often referred to as *corporate entrepreneurship* (Burgelman, 1983b, p. 1349; Covin & Miles, 1999, p. 47; Covin & Slevin, 1991, p. 7; Guth & Ginsberg, 1990, p. 5; Kuratko, Ireland, Covin, & Hornsby, 2005, p. 275; Sharma & Chrisman, 1999, p. 18), has been studied extensively within the private sector. Consensus is emerging on both antecedents and consequences of corporate entrepreneurship (Rauch, Wiklund, Lumpkin, & Frese, 2009; Zahra, Jennings, & Kuratko, 1999). However, we know little about antecedents of entrepreneurship in public sector organizations, and differences between the private and the public sectors impede the blind transfer of concepts (Pettigrew, Ferlie, & McKee, 1992, p. 13; Rainey, 2009, pp. 60–64). With respect to entrepreneurship, especially greater goal ambiguity, traditionally fewer incentives and less decision-making autonomy for managers, and risk/reward trade-offs that favor error avoidance make the public sector distinct (Bernier & Hafsi, 2007, p. 490; Currie et al., 2008, p. 990; Morris & Jones, 1999, pp. 77–78).

Middle managers (i.e., managers at intermediate levels of the organization; Dutton & Ashford, 1993, p. 398; Uyterhoeven, 1972, p. 75; Sections 2.2.1 and 3.3.4) play a special role in corporate entrepreneurship in both the private and public sectors. Their position in the middle of the organization enables them to mediate between groups (Wooldridge, Schmid, & Floyd, 2008, p. 1191): they can communicate new initiatives to top management (Burgelman, 1983a, pp. 12–13, 1983b, pp. 1352–1353), promote autonomous and informal entrepreneurship (Kanter, 1982, pp. 95–105, 1989), and

generally shape an organization's strategy by championing, synthesizing, facilitating, and implementing (Floyd & Lane, 2000, pp. 157–161; Floyd & Wooldridge, 1997, pp. 466–472). In the private sector context, a set of internal organizational antecedents has been established for middle managers (Hornsby, Kuratko, & Zahra, 2002, p. 269; Kuratko, Hornsby, & Bishop, 2005, pp. 702–704). The perception of these antecedents (Marginson, 2002, p. 1027) influences the degree to which middle managers engage in entrepreneurial behavior (Hornsby, Kuratko, Shepherd, & Bott, 2009). In the public sector, middle managers are identified as the most entrepreneurial people (Morris & Jones, 1999, p. 83), the largest group of initiators (Borins, 2000, p. 500), and a major source of entrepreneurial creativity (Bernier & Hafsi, 2007, p. 494).

Despite the increased importance of public entrepreneurship through NPM and PVM, little empirical research on this topic exists. One group of studies focuses on levels other than middle management. These studies focus on actors outside of existing organizations (Mack, Green, & Vedlitz, 2008), interactions with the private sector (Markowski & Hall, 2007), whole organizations (Moon, 1999) or top managers (e.g., city managers; Teske & Schneider, 1994). A second group of studies stops short of empirically analyzing the spectrum of middle managers' public entrepreneurship: several are purely conceptual (Kearney, Hisrich, & Roche, 2007, 2008; Roberts, 1992), while others have merely reproduced measurement instruments from the private sector (Wood, Holt, Reed, & Hudgens, 2008). Public sector middle managers have only recently become the focus of some (qualitative) research (Currie & Procter, 2005; Meynhardt & Metelmann, 2009). In the light of demands for increased entrepreneurship in the public sector, and the importance of the middle manager/department level[1], the following research question seems especially pertinent:

> *Which antecedents explain department-level entrepreneurial orientation in the public sector?*

Entrepreneurship in the public sector is not without its critics (deLeon & Denhardt, 2000; Du Gay, 2000; Rhodes & Wanna, 2008; Terry, 1998). These critics point to threats to the democratic governance, rule-breaking, self-interested managers, and unintended consequences such as competition to private businesses. It is therefore not self-evident that entrepreneurial orientation in the public sector is always beneficial. In

[1] In this dissertation, middle managers at the department level are studied.

his plea for entrepreneurship in the public sector, Mark Moore (1995) introduces the concept *public value*, which can be described as "[v]alue for the public – a result of evaluations about how basic needs of individuals, groups and the society as a whole are influenced in relationships involving the public" (Meynhardt, 2009, p. 212). According to Moore (1995), public sector managers' ultimate goal is to create public value, largely by managing their organizations entrepreneurially. While Moore's (1995) work has seen practical application (e.g., BBC, 2004; ZDF, 2006) and has resulted in an emerging research stream (e.g., Alford, 2008; Alford & O'Flynn, 2009; Beck Jørgensen & Bozeman, 2002; Gains & Stoker, 2009; Stoker, 2006; Talbot, 2006), there are few empirical studies in this area. Both proponents (Kelly et al., 2002) and critics (Rhodes & Wanna, 2007) have been largely prescriptive or conceptual in their argumentation. Yet, it remains unclear whether entrepreneurially oriented organizations also exhibit an orientation towards public value creation. The following research question therefore seems pertinent:

> *How is department-level entrepreneurial orientation related to public value orientation?*

This dissertation seeks to provide answers to these two related research questions and to develop implications for theory and practice. To do so, literature on corporate entrepreneurship (i.e., entrepreneurship within existing private sector organizations), public entrepreneurship (i.e., entrepreneurship in the public sector), and public value management is reviewed. A number of hypotheses are developed and integrated into one model. This model is tested with data from one of Europe's largest administration, active in a *Rechtsstaat* context (Pollitt & Bouckaert, 2004, pp. 52–53).[2] Specifically, the study uses data from multiple sources and levels of Germany's Federal Labor Agency (FLA), which recently named increased entrepreneurial orientation as one of its primary reform goals (Meynhardt & Metelmann, 2009, pp. 278–280).

[2] In a *Rechtsstaat* system, government is mainly concerned with preparing, promulgating, and enforcing laws; civil servants are expected to follow rules and ensure procedural correctness. Germany, Belgium, Italy and – to a lesser degree – France and Finland can be characterized as *Rechtsstaat* systems. *Rechtsstaat* is certainly not the only way to describe Germany's administration (Pollitt & Bouckaert, 2004, pp. 39–64). Yet, with respect to entrepreneurship and public value management, this may be the most appropriate characterization.

1.3 Contributions

By developing an integrated model at the middle management level, empirically validating it, and interpreting its results, this dissertation seeks to contribute to research on public entrepreneurship, public value management, and corporate entrepreneurship. Furthermore, its findings may have specific implications for management practice.

This dissertation seeks to contribute to public entrepreneurship research in a number of aspects. First, it develops a model at the middle management level that integrates research from the private sector (e.g., Kuratko et al., 2005) taking into account public sector particularities. Second, existing measurement instruments for antecedents (e.g., Hornsby et al., 2002) and entrepreneurial orientation (Covin & Slevin, 1989, p. 86; Miller & Friesen, 1982, p. 24, 1983, p. 776) are adjusted to the public sector context and may serve future research in terms of measurement. Third, this dissertation adds to the few empirical works that focus on middle management in public entrepreneurship (Currie & Procter, 2005; Meynhardt & Metelmann, 2009; also see Bernier & Hafsi, 2007, p. 494; Borins, 2000, p. 500; Morris & Jones, 1999, p. 83). With respect to the research stream of public entrepreneurship in general, this dissertation follows calls for increased methodological rigor by analyzing large-scale data with structural equation modeling (Currie et al., 2008, p. 988; Morris & Jones, 1999, p. 87; Zerbinati & Souitaris, 2005, p. 46).

Furthermore, the emerging field of public value management may benefit from this dissertation. It strengthens PVM scholarship in favor of a more networked government – one that engages with different actors in the respective community (Collins, 2007, p. 7; Gains & Stoker, 2009; Kelly et al., 2002, pp. 26–27; Stoker, 2006, pp. 47–56) – by identifying related constructs as antecedents of EO. Furthermore, this dissertation contributes to a discussion that often asserts that the quantification of public sector goals negatively affects positive organizational outcomes (Bevan & Hood, 2006; Christiensen, Lægreid, Roness, & Røvik, 2007, pp. 149–158; Meynhardt & Metelmann, 2009, pp. 296–298; Schultz, 2009; and, to some extent, Pollitt & Bouckaert, 2004). Finally, the examination of the relationship between entrepreneurial orientation and public value orientation helps to understand how public value management can be implemented operationally. Again, these contributions are based on empirical evidence, in contrast to the predominant notion in public value management research of providing normative prescriptions.

This dissertation not only contributes to literature in the public sector, but also extends research on corporate entrepreneurship in general. It follows the call to apply the concept of corporate entrepreneurship outside the private sector (Phan, Wright, Ucbasaran, & Tan, 2009, p. 204). More specifically, this study contributes to research on organizational antecedents relevant at the middle management level (Hornsby et al., 2009; Hornsby et al., 2002; Kuratko et al., 2005) and the role of embeddedness and social networks (Floyd & Wooldridge, 1999; Simsek, Lubatkin, & Floyd, 2003). It confirms some of the constructs identified from prior research, and provides indications as to constructs that might require revision.

Besides these theoretical contributions, this study reveals interesting implications for management practice. More specifically, this study's results indicate how HR practices in selection/placement, appraisal, rewards, and career development/planning can be designed to support entrepreneurial orientation. From a general management perspective, this dissertation provides suggestions as to how management support and management control systems influence entrepreneurial orientation. This dissertation might thus guide top management in helping their organizations become more entrepreneurially oriented and thereby improve public value creation.

1.4 Dissertation Outline

This dissertation consists of eight chapters. In this first chapter, the study's context – entrepreneurship and public value in the public sector – has been introduced. This chapter also outlines the relevance of the research by describing the research gap and presents the study's research questions. Furthermore, I point to potential contributions to theory and practice.

Chapters 2 and 3 provide background on existing literature. Chapter 2 focuses on research conducted on entrepreneurship in the private sector. A frame is provided, which is then used to briefly depict the historical development of research on entrepreneurship. Thereafter, the chapter turns to research on entrepreneurship within existing organizations (i.e., corporate entrepreneurship). Chapter 2 continues by demonstrating the importance of the middle management level in such entrepreneurship. It is shown how the understanding of middle managers' role in strategy in general and in corporate entrepreneurship in particular has changed. Chapter 2 also contains a brief literature review on the antecedents and consequences of corporate entrepreneurship. In this

area, an extensive research stream has developed and, in certain areas, consensus has emerged.

In Chapter 3, I review existing research on entrepreneurship in the public sector. To do so, I first present differences between private and public sector organizations and provide definitions. Next, justifications for and limitations to the application of the concept of entrepreneurship in the public sector are provided. I then introduce literature on public value management and outline entrepreneurship's role in public value management and other approaches to public management. The review that follows highlights the foci and methods of existing literature on entrepreneurship in the public sector. Chapter 3 closes by summarizing existing literature, demonstrating the research gap, and reaffirming the research questions.

Chapter 4 covers the development of the theoretical model. Based on a research frame, 11 hypotheses on antecedents of department-level entrepreneurial orientation in the public sector and 1 hypothesis on the relationship of entrepreneurial orientation and public value orientation are developed. These hypotheses are summarized in the theoretical model at the end of the chapter.

Chapters 5 and 6 describe the empirical testing of the theoretical model and the test results. In Chapter 5, I explain the choice of research methods and show where and how data were collected. I then describe how the questionnaire was developed and which questions it contains. Finally, the analytical procedures, especially the process of testing hypotheses using structural equation modeling, are explained. Chapter 6 contains this study's empirical results. First, it describes the sample in detail, as well as procedures to prepare the data for the main analyses. Next, a number of measurement models are established, which are then used in structural equation models to test this study's hypotheses. Chapter 6 closes with a summary of the empirical results.

Chapter 7 contains this study's discussion. First, the empirical results are interpreted in detail and connections to existing literature are shown. Next, I explain how this study can contribute to the three research streams of public entrepreneurship, public value management, and corporate entrepreneurship, and to management practice. I then outline theoretical and methodological limitations of the study and point to avenues for future research. In the final chapter, I draw conclusions from this dissertation.

2 Private Sector Corporate Entrepreneurship

This chapter introduces research on entrepreneurship in existing private sector organizations in order to frame the discussion on public sector particularities. I first describe the concept of entrepreneurship within organizations. Thereafter, I present the current state of the literature in this field, first on the role of middle managers and then on antecedents and consequences.

2.1 The Concept of Entrepreneurship within Organizations

I begin this section by a categorization of literature to provide the reader with a better understanding of this study's context. Next, I present the historical development of the relevant literature stream. Then, the concept of entrepreneurial orientation and its dimensions are discussed in detail. Finally, the key terms are summarized.

2.1.1 Categorization of Literature

There is a vast number of terms to describe the concept of entrepreneurship within existing organizations (see Table 2.1 for examples). These terms include intrapreneuring/intrapreneurship (Antoncic & Hisrich, 2001; Kuratko, Montagno, & Hornsby, 1990; Pinchot, 1985), entrepreneurship (Miller, 1983), corporate entrepreneurship (Burgelman, 1983b; Guth & Ginsberg, 1990), internal corporate venturing (Burgelman, 1983a), corporate venturing (Biggadike, 1979), strategic renewal (Guth & Ginsberg, 1990), entrepreneurial posture (Covin & Slevin, 1991), entrepreneurial orientation (Lumpkin & Dess, 1996), and entrepreneurial intensity (Morris & Sexton, 1996). While some terms and associated definitions have been more popular than others, none has reached universal acceptance (Sharma & Chrisman, 1999, p. 16). This abundance of terms has led to confusion as well as some contradiction between or overlapping of definitions (Sharma & Chrisman, 1999, p. 11). Some authors even explicitly associate basically synonymous meanings with the above-mentioned terms (Antoncic & Hisrich, 2001, p. 497; Kearney et al., 2008, pp. 289–299; Zahra et al., 1999, p. 51).

Sharma and Chrisman (1999) have undertaken a major effort in clarifying the terms and definitions associated with entrepreneurship. I will rely on their definitions, where appropriate. Accordingly, starting with the broadest definition (based on Gartner, 1988; Schumpeter, 1926; Stopford & Baden-Fuller, 1994; Zahra, 1993a, 1995, 1996).

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Table 2.1: Definitions of Entrepreneurship within Private Sector Organizations

Study	Definition
Burgelman (1983a, p. 1349)	"Corporate entrepreneurship in this paper refers to the process whereby firms engage in diversification through internal development. Such diversification requires new resource combinations to extend the firm's activities in areas unrelated, or marginally related, to its current domain of competence and corresponding opportunity set."
Miller (1983, pp. 770–771)	"[…] entrepreneurship, the process by which organizations renew themselves and their markets by pioneering, innovation, and risk taking." "An entrepreneurial firm is one that engages in product-market innovation, undertakes somewhat risky ventures, and is first to come up with 'proactive' innovations, beating competitors to the punch. […] We can tentatively view entrepreneurship as a composite weighting of these three variables."
Burgelman (1984, p. 154)	"[…] corporate entrepreneurship: extending the firm's domain of competence and corresponding opportunity set through internally generated new resource combinations." (emphasis removed)
Pinchot (1985, p. ix)	"Intrapreneurs are any of the 'dreamers who do.' Those who take hands-on responsibility for creating innovation of any kind within an organization. They may be the creators or inventors but are always the dreamers who figure out how to turn an idea into a profitable reality."
Guth and Ginsberg (1990, p. 5)	"The topic of corporate entrepreneurship encompasses two types of phenomena and the processes surrounding them: (1) the birth of new businesses within existing organizations, i.e. internal innovation or venturing; and (2) the transformation of organizations through renewal of the key ideas on which they are built, i.e. strategic renewal."
Covin and Slevin (1991, pp. 7–10)	"[…] firms with entrepreneurial postures are risk taking, innovative, and proactive." "An entrepreneurial posture is reflected in three types of organizational-level behaviors: top management risk taking with regard to investment decisions and strategic actions in the face of uncertainty; the extensiveness and frequency of product innovation and the related tendency toward technological leadership; and the pioneering nature of the firm as evident in the firm's propensity to aggressively and proactively compete with industry rivals."
Lumpkin and Dess (1996, pp. 136–137)	"[…], new entry explains what entrepreneurship consists of, and entrepreneurial orientation describes how new entry is undertaken. […] An EO refers to the processes, practices, and decision-making activities that lead to new entry. […] The key dimensions that characterize an EO include a propensity to act autonomously, a willingness to innovate and take risks, and a tendency to be aggressive toward competitors and proactive relative to marketplace opportunities."
Morris and Sexton (1996, p. 7)	"Another term for the number of events (new products, service, processes) in which a firm becomes involved is entrepreneurial frequency. Similarly, the extent to which any one event is innovative, risky, and proactive can be termed the degree of entrepreneurship. Frequency and degree combine to form a variable we can label entrepreneurial intensity."
Antoncic and Hisrich (2001, p. 498)	"In this study intrapreneurship is defined as entrepreneurship within an existing organization. It refers to a process that goes on inside an existing firm, regardless of its size, and leads not only to new business ventures but also to other innovative activities and orientations such as development of new products, services, technologies, administrative techniques, strategies, and competitive postures."
Morris et al. (2008, p. 103)	"[…] entrepreneurial orientation or intensity, which is a reflection both of how many entrepreneurial things they are doing, and how innovative, risky, and proactive those things tend to be."
Ireland et al. (2009, p. 24)	"EO is an organizational state or quality that is defined in terms of several behavioral dimensions. Based on the pioneering work of Miller (1983), Covin and Slevin (1991) defined EO as implying the presence of organizational behavior reflecting risktaking, innovativeness, and proactiveness. Lumpkin and Dess's (1996) model of EO adds competitive aggressiveness and autonomy to this list of attributes."
Rauch et al. (2009, p. 763)	"EO represents the policies and practices that provide a basis for entrepreneurial decisions and actions. Thus, EO may be viewed as the entrepreneurial strategy-making processes that key decision makers use to enact their firm's organizational purpose, sustain its vision, and create competitive advantage(s)."
Zahra et al. (2009, p. 248)	"CE refers to the activities a firm undertakes to stimulate innovation and encourage calculated risk taking throughout its operations. These activities reinforce the company's position in existing markets while allowing it to enter new and perhaps more lucrative growth fields."

> *Entrepreneurship encompasses acts of organizational creation, renewal, or innovation that occur within or outside an existing organization. (Sharma & Chrisman, 1999, p. 17)*

Within entrepreneurship, Sharma and Chrisman distinguish between independent entrepreneurship and entrepreneurship within an organization. This distinction, which is also helpful in the context of this study, is based on Collins and Moore (1970).

> *Independent entrepreneurship is the process whereby an individual or group of individuals, acting independently of any association with an existing organization, create a new organization.*
>
> *Corporate entrepreneurship is the process whereby an individual or a group of individuals, in association with an existing organization, create a new organization or instigate renewal or innovation within that organization. (Sharma & Chrisman, 1999, p. 18)*[3]

Throughout the remainder of this study, I will use the term *corporate entrepreneurship* (CE) to refer to both the process and the literature on entrepreneurship within existing organizations. Next, I will present the historical development of the corporate entrepreneurship literature. Thereafter, I will focus on the key concept of *entrepreneurial orientation*.

2.1.2 Historical Development of Literature

Entrepreneurship has long been associated with risk-taking individuals starting a new business. The first known use of the term *entrepreneurship* is by Cantillon (1734), who describes entrepreneurship as self-employment with uncertain return (Sharma & Chrisman, 1999, p. 12). In today's literature, the Austrian economist Joseph Alois Schumpeter is often seen as the intellectual father of modern interpretation of entrepreneurship (Antoncic & Hisrich, 2001, p. 495; Bernier & Hafsi, 2007, p. 489; Burgelman, 1984, p. 164; Covin & Slevin, 1991, pp. 10–11; Lumpkin & Dess, 1996, p. 142; Miller, 1983, p. 770). Schumpeter defines an entrepreneur as a person "whose

[3] Sharma and Chrisman's (1999, p. 20) hierarchy of terminology in corporate entrepreneurship (CE) then further categorizes types of CE into *strategic renewal* and *corporate venturing* (based on Guth and Ginsberg (1990, p. 5)). Adopting this categorization is not appropriate for this study. First, they admit that not all existing definitions fit well within their framework (Sharma & Chrisman, 1999, p. 23). Specifically, they largely omit research on *entrepreneurial orientation* (also referred to as *entrepreneurial posture* or *entrepreneurial intensity*). Second, the categorization has not been uniformly adopted by other scholars (see Table 2.1). Finally, their categorization is specific to the private sector and does not help clarify entrepreneurship in the public sector.

function it is to carry out new combinations [of resources]" (1926, pp. 110–111) that result in new products, processes, markets, sources of supply, and re-organization (1926, pp. 100–101). These *new combinations* are at the heart of the evolutionary process *creative destruction*, in which existing structures are continuously replaced with new ones (Schumpeter, 1946, pp. 137–138). Resources are shifted from old combinations to the new ones, and entire industries are replaced (1926, pp. 102–103). This process is driven by entrepreneurs, who renew production structures by exploiting an invention or, more generally, creating an untested combination (1946, p. 214). Schumpeter thus established innovation as a key aspect of entrepreneurship (Lumpkin & Dess, 1996, p. 142).

The recognition that entrepreneurship is not limited to the creation of new organizations has spurred academic interest on a large scale in the nineteen-eighties.[4] The pioneering works have approached the emerging research field from different perspectives and provided a number of justifications for the increased focus on CE. Peterson and Berger (1971), whose article is often considered the first to scientifically research CE (Hornsby et al., 2002, p. 254; Zahra et al., 1999, p. 45), identify entrepreneurship as a *leadership style* for reacting to turbulent markets. Miller (1983, p. 770), who explicitly extends Schumpeter's logic to entire organizations, justifies the need for CE by the increasing size and complexity of organizations. Furthermore, Burgelman, who proposes a model of "internal corporate venturing" (1983a) and highlights the importance of autonomous strategic initiatives (1983b), associates the increased attention to CE with firms' need to continue existing or grow (1984, p. 164). Moreover, Kanter (1982; 1983; 1985), who proposes that organizational members be empowered (especially middle managers), views CE as a way to gain competitiveness. Similarly, Pinchot (1985), who coined the term *intrapreneurship* (Covin & Miles, 1999, p. 48), explains how employees can ensure innovation within organizations. Finally, Drucker even observes a "shift from a 'managerial' to an 'entrepreneurial' economy" in the United States (1985, p. 1). Drucker argues that innovation and entrepreneurship are essential in existing organizations, including business and public service institutions as well as in society and the economy (1985, p. 254).

[4] Schumpeter (1926, pp. 111–112) had already noted that new combinations can also be carried out by individuals within organizations.

Corporate entrepreneurship thus gained increasing acceptance as a way for organizations to innovate, fulfill their customers' needs, and stay competitive. Since then, CE has remained on the research agenda. CE has been analyzed from many different perspectives and at different levels. Within CE literature, the concept of *entrepreneurial orientation* is particularly widely accepted and a cumulative body of knowledge is developing around it (Rauch et al., 2009, p. 761).

2.1.3 Entrepreneurial Orientation

In this study, an organization exhibits *entrepreneurial orientation* (EO) when it is innovative, proactive, and risk-taking (Covin & Slevin, 1991, p. 7; also see Lumpkin & Dess, 1996, p. 138). In the next two sections, I review the origins of this concept and its underlying dimensions. The concept of EO can be traced back to Miller (1983). His oft-cited description of an entrepreneurial firm is "one that engages in product-market innovation, undertakes somewhat risky ventures, and is first to come up with 'proactive' innovations, beating competitors to the punch" (1983, p. 771). Most empirical studies in the field of CE have used measures based on this conceptualization (Zahra et al., 1999, p. 51). Miller's conceptualization has been most prominently elaborated by Covin and Slevin (1991) and Lumpkin and Dess (1996).

Covin and Slevin (1991) have developed a conceptual model of entrepreneurship as organizational behavior. Accordingly, this kind of entrepreneurship is an extension of Schumpeter's idea into the firm level (1991, pp. 10–11). Entrepreneurial firms have, as Covin and Slevin (1991, pp. 7–8) call it, an *entrepreneurial posture* and are innovative, proactive, and risk-taking. Entrepreneurial posture is affected by and may affect variables at the organization, environment, and individual levels (1991, p. 9). The extent to which an entrepreneurial posture is positively correlated with performance is contingent on the environment.

Lumpkin and Dess (1996) introduce the now commonly used term *entrepreneurial orientation* (other terms continue to be used). In their view, EO represents entrepreneurial processes, while *entrepreneurship* refers only to new entry.[5] Lumpkin and Dess (1996, p. 136) also identify dimensions that characterize entrepreneurial

[5] *New entry* is the entering of markets new to the firm either by setting up a new organization, through an existing firm, or via internal corporate venturing (Burgelman, 1983a).

processes and study the relationships between EO and company performance as well as possible moderators.

Recently, EO has been defined more broadly. According to a literature review by Rauch et al. (2009, p. 763), "EO represents the policies and practices that provide a basis for entrepreneurial decisions and actions. Thus, EO may be viewed as the entrepreneurial strategy-making processes that key decision makers use to enact their firm's organizational purpose, sustain its vision, and create competitive advantage(s)." In the next section, I discuss the dimensions of EO and then summarize the key terms as used in this study.

2.1.4 Dimensions of Entrepreneurial Orientation

Discussion on the dimensions of EO and their conceptual and empirical characteristics are ongoing. Miller (1983, p. 771) introduced the three (traditionally used) dimensions of innovativeness, proactiveness, and risk-taking so as to determine whether or not a firm is entrepreneurial (see citation above). Researchers have adopted this original approach (e.g., Covin & Slevin, 1989, 1991, pp. 7–8; Ireland, Kuratko, & Morris, 2006a, 2006b; Lumpkin & Dess, 1996; Zahra, 1991), although with nuances of their own. Authors often provide slightly differing definitions of the dimensions, with largely similar meanings. In the following paragraphs, I present the definitions from the paper that introduced the term *entrepreneurial orientation* (Lumpkin & Dess, 1996, where available) and from the recent literature review on EO (Rauch et al., 2009).

Innovativeness can "reflect […] a firm's tendency to engage in and support new ideas, novelty, experimentation, and creative processes that may result in new products, services, or technological processes" (Lumpkin & Dess, 1996, p. 142). As such, innovativeness represents a way to pursue not only product-market innovations (Miller, 1983, p. 771), but also technological innovations (Lumpkin & Dess, 1996, p. 143). More recently, innovativeness has been defined as "[…] the predisposition to engage in creativity and experimentation through the introduction of new products/services as well as technological leadership via R&D in new processes" (Rauch et al., 2009, p. 763).

Proactiveness (sometimes also pro-activity) can be defined as the "[…] processes aimed at anticipating and acting on future needs by 'seeking new opportunities which may or may not be related to the present line of operations, introduction of new products and brands ahead of competition, strategically eliminating operations which are in

the mature or declining stages of life cycle'" (Lumpkin & Dess, 1996, p. 147, based on Venkatraman, 1989, p. 949 and Webster's Dictionary). Proactiveness has also been referred to as pioneering (Miller, 1983, p. 770), initiative (Lumpkin & Dess, 1996, p. 146), or competitive aggressiveness (Covin & Slevin, 1991, p. 7; Lumpkin & Dess, 1996, p. 147).[6] More recently, proactiveness has been defined as "[…] an opportunity-seeking, forward-looking perspective characterized by the introduction of new products and services ahead of the competition and acting in anticipation of future demand" (Rauch et al., 2009, p. 763). Furthermore, it is suggested that proactiveness is closely linked to and covaries with innovativeness (Lumpkin & Dess, 1996, p. 148).

Risk-taking stems from the origins of the self-employed entrepreneur who engages in risks to start a business (Lumpkin & Dess, 1996, p. 144). Lumpkin and Dess (1996, pp. 144–146) fail to provide a clear definition, but refer to Miller and Friesen (1978, p. 923), who define risk-taking as "the degree to which managers are willing to make large and risky resource commitments – i.e., those which have a reasonable chance of costly failures." Covin and Slevin (1991, p. 7) associate risk-taking with "high-risk projects with chances of very high returns." Lumpkin and Dess (1996, pp. 145–146) emphasize that individual organization members' risk propensity may not be reflected at the organizational level relevant to EO. More recently, the dimension risk-taking has been conceptualized more broadly: "[r]isk-taking involves taking bold actions by venturing into the unknown, borrowing heavily, and/or committing significant resources to ventures in uncertain environments" (Rauch et al., 2009, p. 763).

Additional dimensions or alternative sets of dimensions have been suggested, none of which has achieved wide acceptance (Rauch et al., 2009, p. 779). Lumpkin and Dess (1996, pp. 40–148), for example, suggest adding *competitive aggressiveness* (i.e., direct challenge with rivals) and *autonomy* (i.e., independent idea development and implementation). The latter had previously been used by Burgelman (1983a, p. 241) and Mintzberg (1973). On the other hand, Stopford and Baden-Fuller (1994, p. 523) explicitly exclude risk-taking as an attribute of corporate entrepreneurship. Instead, they view proactiveness, aspirations beyond current capability, team orientation, capability to resolve dilemmas, and team learning capacity as attributes shared by all types of corporate entrepreneurship.

[6] Lumpkin and Dess (1996, p. 147) consider proactiveness as a separate factor.

Debate evolved around whether the dimensions of EO should be analyzed combined or separately. Originally, Miller (1983, p. 780) considered a firm entrepreneurial only if it scored high on all three traditional dimensions. This approach has been widely adopted (e.g., Covin & Slevin, 1991). On the other hand, Lumpkin and Dess (1996, pp. 149–151) argue for independently varying dimensions of EO. They regard the Miller/Covin and Slevin approach as too narrow to capture all types of entrepreneurial organizations. Rauch et al. (2009, pp. 763–764) recently noted that the majority of reviewed studies averaged the three traditional dimensions. Empirically, Rauch et al. (2009, pp. 774–778) find no statistical evidence for either accepting or rejecting the construct's multidimensionality. However – based on a relatively small sample – they suggest using a summed index of all EO dimensions (i.e., analyzing the dimensions combined). This is consistent with Miller's (1983, p. 780) original conceptualization.

In short, the most common view is the association of entrepreneurial orientation with the three dimensions of innovativeness, proactiveness, and risk-taking. In order to determine a firm's entrepreneurial orientation, these three dimensions are usually combined. Next, I provide working definitions of entrepreneurship in the private sector based on the literature reviewed.

2.1.5 Summary of Key Terms

For the purpose of this study, the term *corporate entrepreneurship* (CE) will refer to "the process whereby an individual or a group of individuals, in association with an existing organization, create a new organization or instigate renewal or innovation within that organization" (Sharma & Chrisman, 1999, p. 18). The term CE will also refer to literature on entrepreneurship within existing organizations. Within CE, this study will draw on the *entrepreneurial orientation* research stream, which is reasonably suitable for the public sector (see Chapter 3) and is characterized by cumulative knowledge build-up (Rauch et al., 2009, p. 763). The term *entrepreneurial orientation* will be used as originally defined by Covin and Slevin (1991, p. 7)[7]: a firm with entrepreneurial orientation is innovative, proactive, and risk-taking (also see Lumpkin & Dess, 1996, p. 138). The degree of entrepreneurial orientation varies between firms, but also between business units or areas within one company (Morris et al., 2008, p. 75; Sharma & Chrisman, 1999, p. 18). At an individual level, the term *entrepre-*

[7] Covin and Slevin (1991) originally used the term *entrepreneurial posture*; current literature uses the term *entrepreneurial orientation* to refer to the same concept.

neurial behavior will describe how CE is practiced (Kuratko et al., 2005, pp. 699–700).[8] These key terms are displayed in Figure 2.1. I will now address entrepreneurial behavior and the key players in the corporate entrepreneurship process.

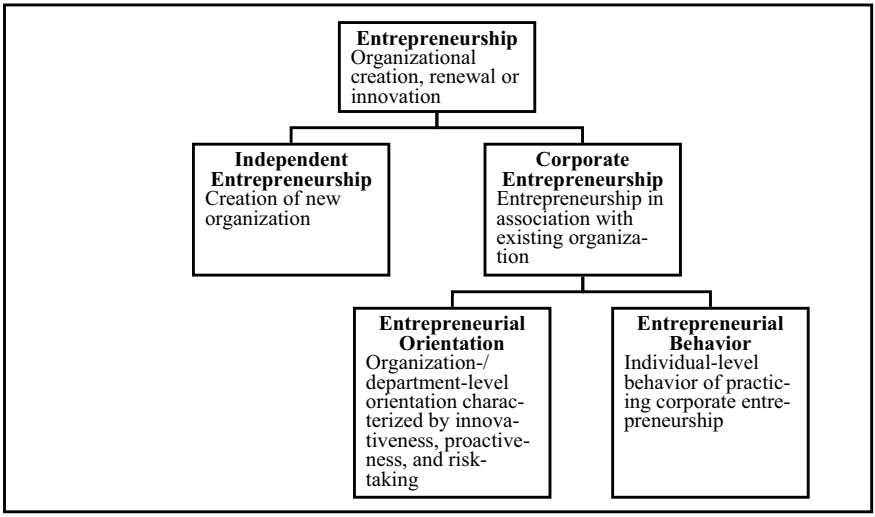


Figure 2.1: Key Entrepreneurship Terms

2.2 The Role of Middle Management

> *If one wants to study corporate entrepreneurship […]. The middle level is 'where the action is'. (Floyd & Wooldridge, 1999, p. 124)*

Managers take on different roles depending on their hierarchical level. Strategy scholars' view of these roles has changed over the past decades, particularly for middle managers. The following sections begin with a definition of middle managers and illustrate this changed view for strategy literature in general and then for CE literature in particular. Thereafter, I discuss the special role of middle managers in the CE process.

[8] Other scholars also use the term *entrepreneurial behavior* at the organizational level (including Lumpkin & Dess, 1996; Simsek, Lubatkin, & Floyd, 2003, p. 429).

2.2.1 The Role of Middle Management in Strategy

The Definition of Middle Managers

There is no clear, generally accepted definition of *middle managers* (Wooldridge et al., 2008, p. 1193). A number of definitions share the common element of the managers' position at the intermediate level of the corporate hierarchy: this level ranges from the level below top management to the first level of supervision (Dutton & Ashford, 1993, p. 398; Uyterhoeven, 1972, p. 75; Wooldridge & Floyd, 1990, p. 233; Wooldridge et al., 2008, p. 1193). As such, examples of middle managers in private sector organizations include "general line managers (e.g., divisional or strategic business unit heads), functional line managers (e.g., vice presidents of marketing) and team or project-based executives (e.g., leaders of strategic initiatives)" (Wooldridge et al., 2008, p. 1193). Other definitions focus on the *function*, rather than the *position*.

> *[…] middle management can be defined as the coordination of an organizational unit's day-to-day activities with the activities of vertically related groups. (Floyd & Wooldridge, 1992, p. 154 based on Likert, 1961)*

> *Middle managers are organization members who link the activities of vertically related groups and who are responsible for at least subfunctional work flow, but not the work flow of the organization as a whole. (Floyd & Wooldridge, 1992, p. 157 based on Pugh et al., 1968)*

For the purpose of this research, the hierarchical, position-based definition of middle managers will be used (Dutton & Ashford, 1993, p. 398; Uyterhoeven, 1972; Wooldridge & Floyd, 1990, p. 233; Wooldridge et al., 2008, p. 1193): middle managers are managers between top management and the first line of supervision. This definition is further specified for public sector middle managers in Section 3.3.4.

The Changing View of Middle Management's Role

The traditional view of strategy based on the *choice perspective* had a clear picture of how labor was divided among management levels. In the choice perspective, the top management team consciously decides on the strategy based on analyses. Middle management's primary role is to implement the top management team's decisions (Wooldridge et al., 2008, p. 1193). Mintzberg (1973, pp. 78–81), in his earlier work, identifies top management as the place for work associated with systematic change. Middle management's task is thereby restricted to operational planning and implementation, resulting in routine bureaucratic and supervisory tasks (Fulop, 1991, p. 26).

Subsequent literature granted middle management a much more active involvement. Five years later, Mintzberg (1978) criticizes the traditional division of labor of strategy creation and implementation. By analyzing how and why intended strategies differ from realized strategies, he identifies that, besides environmental influences, lower management levels are actively involved in shaping the realized strategy. Other studies applying the *social learning perspective*[9] underline this new understanding of roles. Descriptive case studies show how middle managers contribute to strategy (Bower, 1970) and to innovation (Kanter, 1982). Later, large-scale quantitative studies confirmed the influence of middle managers on planning and decision-making (Schilit, 1987) as well as the positive impact of their involvement in strategy formation on performance (Wooldridge & Floyd, 1990). A more detailed outline of the literature is provided in a recent literature review (Wooldridge et al., 2008, pp. 1193–1195), which also summarizes this development: "[…] the view of middle managers' place in strategy development has developed historically from one where they essentially take direction from, and provide input to, top management to one where they are at the center [of strategy development]" (2008, p. 1195).

The Middle Management Perspective

Middle management has taken a prominent role in research as a result of middle managers' function as interface and mediator. Middle managers connect otherwise unconnected groups and domains such as top management teams and front-line managers (Floyd & Wooldridge, 1999). In addition, they are better at addressing causal ambiguities between an organization's competencies and its performance than top management teams (King & Zeithaml, 2001). With this increased interest, a loosely connected research stream – called the *middle management perspective* – has evolved over the past decades (Wooldridge et al., 2008). The middle management perspective stands in stark contrast with upper echelon / top management team research (Hambrick & Mason, 1984). It acknowledges that large organizations cannot be managed by single persons or small groups, but rather require large groups of middle managers leading local/functional groups as mediators between groups (Wooldridge et al., 2008, p. 1191).

[9] In the social learning perspective, strategy is generated by multiple actors, who propose ideas, take initiative, and thereby change strategy in a complex environment. The social learning perspective thereby stands in sharp contrast to the choice perspective (Wooldridge, Schmid, & Floyd, 2008, p. 1193).

The middle management perspective has studied middle management from various angles and in terms of several phenomena. As noted by Wooldridge et al. (2008, p. 1191), these include strategy implementation (Balogun & Johnson, 2004), strategy making (Currie & Procter, 2005; Floyd & Lane, 2000), innovation and organizational learning (Kanter, 1982), and corporate entrepreneurship (Burgelman, 1983a). I will address the role of middle management in corporate entrepreneurship in the following section.

2.2.2 The Role of Middle Management in Corporate Entrepreneurship

Corporate Entrepreneurship – a Multi-level Phenomenon

Corporate entrepreneurship is a multi-level phenomenon, i.e. a phenomenon that involves multiple organizational hierarchy levels. Floyd and Lane (2000) have developed a comprehensive model that integrates much of the existing research on the roles of these levels. The authors focus on strategic renewal, a specific phenomenon of corporate entrepreneurship (Guth & Ginsberg, 1990, p. 5; Ireland et al., 2009, p. 23). However, the model has subsequently been used in broader research on entrepreneurial behavior and corporate entrepreneurship (e.g., de Clercq, Dimov, & Thongpapanl, 2010, p. 88; Hornsby et al., 2009, p. 236; Kuratko et al., 2005, p. 705). According to the model, strategic renewal takes place in an integrated cascading system of interactions between multiple management layers. While middle managers take the roles of championing, synthesizing, facilitating, and implementing, top managers ratify, recognize, and direct, and front-line managers experiment, adjust, and conform (Table 2.2).

Table 2.2: Management Levels and Strategic Roles

Management level	Strategic roles
Top management	Ratifying, recognizing, directing
Middle management	Championing, synthesizing, facilitating, implementing
Front-line management	Experimenting, adjusting, conforming

Note. Adapted from Floyd and Lane (2000, pp. 159–160).

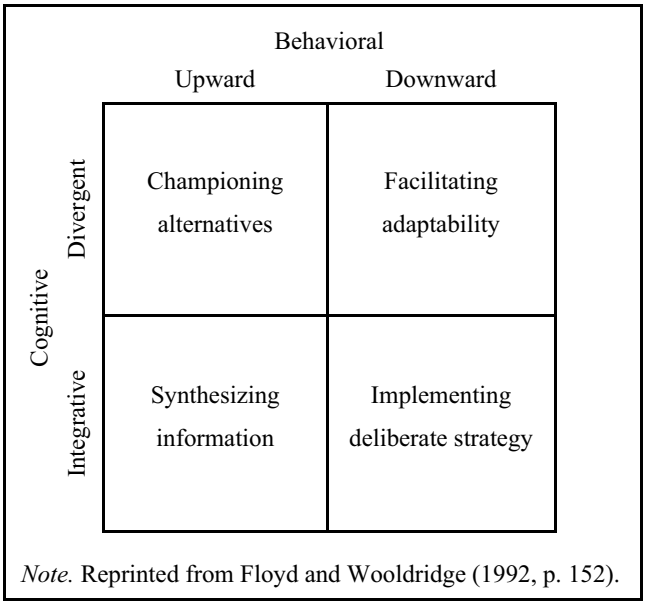
The multi-level character of corporate entrepreneurship is also highlighted by Burgelman's (1983a) work on the internal corporate venturing process: accordingly, front-line managers launch autonomous initiatives, middle managers draw implications for larger strategy, and top managers change corporate strategy in the light of successful initiatives. In this context, Hornsby et al. (2009) provide evidence that entrepreneurial action takes place at all three management levels. More specifically, in ideal organiza-

tional structures, top managers and middle managers engage in entrepreneurial action more often than front-line managers do.

While an integrated system involving all organizational levels is required for effective corporate entrepreneurship, middle managers are often viewed at its locus. Reiterating Floyd and Wooldridge, "if one wants to study corporate entrepreneurship […]. The middle level is 'where the action is'" (1999, p. 124), i.e. where the forces of change and inertia come together (1999, p. 138). I now address the roles and behaviors of middle managers in detail.

The Roles and Behaviors of Middle Managers

The above-mentioned middle manager roles (i.e., championing, synthesizing, facilitating, and implementing) were identified during a larger effort to theoretically develop and empirically test a typology of strategic middle manager roles (Floyd & Lane, 2000; Floyd & Wooldridge, 1992, 1996). The four roles (Figure 2.2) are distinguished along the two dimensions of behavior (upward/downward) and cognition (integra-



Note. Reprinted from Floyd and Wooldridge (1992, p. 152).

Figure 2.2: Middle Managers' Strategic Roles

tive/divergent). Championing alternatives – "the persistent and persuasive communication of strategic options to upper management" – and synthesizing information – "the interpretation and evaluation of information [affecting] top management perceptions" – are oriented upward. While facilitating adaptability – "fostering flexible organizational arrangements" – and implementing deliberate strategy – "managerial interventions that align organizational action with strategic intentions" – are directed towards subordinates (Floyd & Wooldridge, 1992, p. 155). The role most frequently sought by middle managers is *implementing strategy*, which includes integrative elements of linking organizational activities to top management intentions. Each of the abovementioned roles is associated with a set of managerial behaviors. Implementing strategy, for example, includes the behaviors implement, revise and adjust, motivate and inspire, and coach (Floyd & Lane, 2000, p. 159).

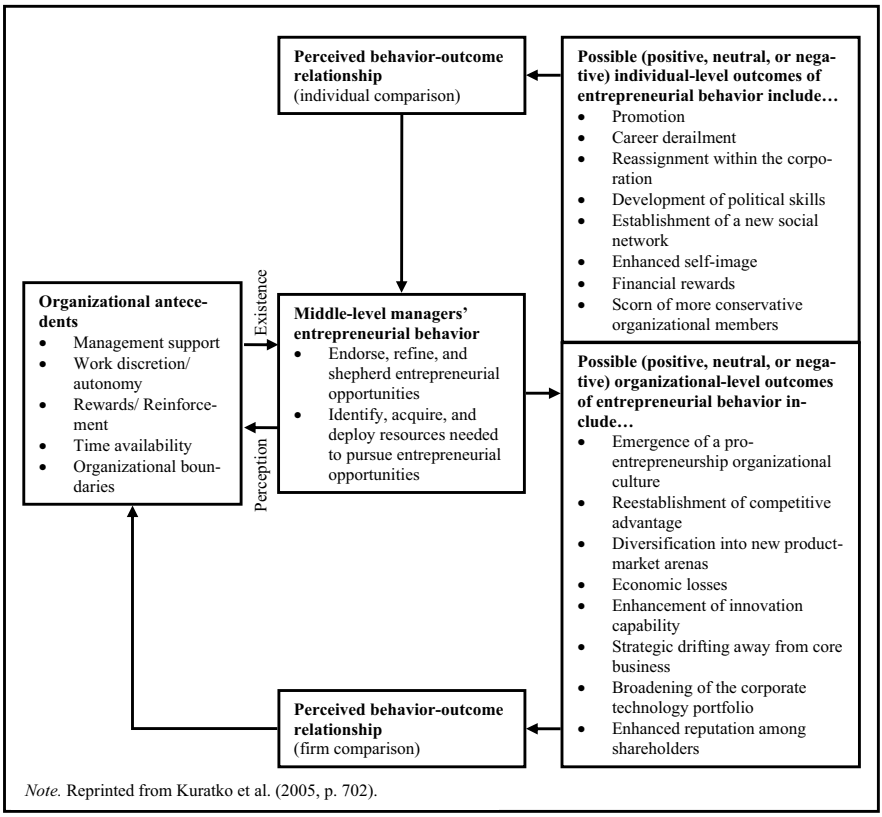
Other research on middle managers' entrepreneurial behaviors confirms the downward-oriented aspect. Bartlett and Ghoshal (1993, p. 29) allocate the development, support, and review of initiatives in the entrepreneurial process to middle management. Middle managers are thus a key resource for front-line managers, enabling them to act entrepreneurially. This view is in line with Hornsby et al. (2002, p. 255), who conclude that middle managers play a vital role in encouraging innovation and entrepreneurship. Pearce et al. (1997) study behaviors that separate entrepreneurial managers from non-entrepreneurial managers.[10] Their instrument, which measures such behaviors, includes items on middle managers' ability to cut red tape, their attempts to create an energetic work environment as well as visionary, change orientation, and innovation aspects (1997, p. 158). In contrast, other researchers (Hornsby et al., 2009; Kuratko et al., 2005) have reduced entrepreneurial behavior – at least in their measurement – to the number of new ideas suggested and/or implemented.

A Model of Middle Managers' Entrepreneurial Behavior

Kuratko et al. (2005) integrate the research on roles and behavior with related research in a conceptual model of middle manager's entrepreneurial behavior. They view middle managers' entrepreneurial behavior as closely linked to successful corporate entre-

[10]Pearce et al. (1997) sometimes use the term *entrepreneurial orientation* to characterize managers. To remain consistent with the terms used in this study, *entrepreneurial behavior* will only refer to the individual level; the term *entrepreneurial orientation* is reserved for the levels of department and organization.

preneurship, and a particularly important part in its implementation (2005, pp. 699–701). The model (Figure 2.3), which depicts organizational antecedents, middle managers' entrepreneurial behavior, individual and organizational outcomes and feedback loops, is next described in detail.



Note. Reprinted from Kuratko et al. (2005, p. 702).

Figure 2.3: Model of Middle Managers' Entrepreneurial Behavior

Kuratko et al. describe middle managers' entrepreneurial behavior based on existing literature and propose that "[…] middle managers endorse, refine, and shepherd entrepreneurial opportunities and identify, acquire, and deploy resources needed to pursue those opportunities" (2005, p. 705). These activities evolve around the concepts of opportunities and resources, and include those described above (i.e., Floyd & Wooldridge, 1992, p. 154). Possible outcomes of such behavior at the levels of the individual or the organization can be negative, neutral, or positive (Kuratko et al., 2005, p. 705). They can include promotion, career derailment, financial rewards as

well as changes in performance and culture. More prominent than these outcomes' description are their effects in the model. Accordingly, the *perceptions* of these outcomes are evaluated against previous expectations at the individual and organizational levels (2005, p. 710). Through a feedback mechanism, the outcomes thus affect entrepreneurial behaviors directly and indirectly through organizational antecedents. These antecedents, as depicted in the model, are based on work by Hornsby et al. (2002), which is discussed in the next section.

In this section, I have outlined how the view on middle managers' role in strategy and in corporate entrepreneurship has changed. Middle managers are now seen at the locus of corporate entrepreneurship. Middle managers' roles of championing, synthesizing, facilitating, and implementing make them a particularly interesting unit of analysis. Consequently, models of how they are embedded in the corporate entrepreneurship process have been established.

2.3 Antecedents and Consequences of Corporate Entrepreneurship

After having discussed corporate entrepreneurship and the role of middle managers in this regard, the following section presents research on antecedents and consequences of corporate entrepreneurship. It is mainly based on two explicit literature reviews – *The Antecedents and Consequences of Firm-Level Entrepreneurship* (Zahra et al., 1999), *Entrepreneurial Orientation and Business Performance* (Rauch et al., 2009), and one recent attempt to integrate work on corporate entrepreneurship in a new model (Ireland et al., 2009). No other recent or more extensive reviews were identified.[11] Some of the important studies included in the reviews and relevant work published since then are highlighted, where possible with a middle management focus. Further studies and their results are discussed in Chapter 4.

I will use Covin and Slevin's (1991, p. 8) categorization to discuss the antecedents of corporate entrepreneurship. They argue that variables at the levels of organization, environment, and individual should be considered when studying CE.[12] Other categoriza-

[11]Using the search term "review OR literature OR state OR meta AND 'corporate entrepreneurship' OR 'entrepreneurial orientation' OR 'entrepreneurial intensity' OR 'entrepreneurial behavior' OR 'entrepreneurial behavior' OR 'firm-level entrepreneurship'" on Google Scholar on June 27, 2010.

[12]I have chosen to use the following throughout: *organizational antecedent*, *environmental antecedent*, and *managerial antecedent*, rather than *organization-related antecedent*, *environment-related* (or *external*) *antecedent*, and *manager-related* (or *individual-level*) *antecedent*.

tions, such as Zahra et al.'s (1999, p. 52), which does not include individual-level variables, can be subsumed within the three categories. It should also be noted that moderators go beyond the scope of this study.

2.3.1 Organizational Antecedents

Organizational antecedents of corporate entrepreneurship are probably the most intensively studied antecedent type.[13] Studies in this category have often used inconsistent but overlapping constructs. Kanter (1985, pp. 53–59) studies job design, organizational structure, culture, incentives, and tools. Quinn (1985, pp. 77–80) focuses on atmosphere and vision, orientation to market, organizational structure, product development, and learning. Sathe (1989, pp. 26–31) mentions culture, controls, recognition, and experience-sharing. Guth and Ginsberg (1990, p. 7) include organization conduct/form (i.e., strategy, structure, process, and core values/beliefs) in their model. Covin and Slevin (1991, p. 10) research the role of top management values and philosophies, resources and competencies, culture, and structure. Miller (1983), an example for a large-scale empirical study, includes elements of the organization/structure (e.g., controls and centralization) as well as elements of the strategy / decision making (e.g., strategic integration and explicitness of product-market strategy) as antecedents (also see Miller & Friesen, 1982, pp. 3–5). Other empirical quantitative examples include structural congruence (Sykes, 1986), the effect of incentive practices (Block & Ornati, 1987), or – more recently – the effect of management control systems on the development of new ideas and initiatives (Marginson, 2002, p. 1027).[14]

Hornsby et al. (2000; also see Hornsby, Kuratko, & Montagno, 1999, Hornsby, Montagno, & Kuratko, 1992, Kuratko et al., 1990) have undertaken an integrative effort to condense findings on organizational antecedents at the middle management level. The authors build upon much of the work on organizational antecedents to develop the *corporate entrepreneurship assessment instrument* (CEAI). Using exploratory factor analysis, they identified five factors among the items reflecting the most actively discussed organizational antecedents. These factors are management support, work dis-

[13] Of the 45 empirical quantitative studies reviewed by Zahra et al. (1999), 20 studied organizational antecedents.

[14] In contrast to most scholars, Ireland et al. (2009) do not view *organizational architecture* as an antecedent, but rather as an element, of CE strategy. Their model depicts structure, culture (including management support and work discretion), resources/capabilities, and reward systems as part of such architecture.

cretion, rewards/reinforcement, time availability, and organizational boundaries (2002, p. 261). This assessment scale has been tested for internal validity and is being applied in empirical work (e.g., Adonisi, 2003; Brizek, 2003; Hornsby et al., 2009; Wood et al., 2008). The basic structure of the CEAI has also been taken up by Kuratko et al. (2005) in their model of middle managers' entrepreneurial behavior.

2.3.2 Environmental Antecedents

The pioneering studies in the field of CE have already identified the environment as a determinant of CE. Peterson and Berger (1971) even identify market turbulence as one main predictor of CE. Miller (1983, p. 781) follows this route and finds that the environment's dynamism, heterogeneity, and hostility have significant effects on EO in his overall sample. He argues that such environments require innovation and therefore foster entrepreneurial responses (1983, p. 775).

Most subsequent studies have included environmental antecedents in their analyses. Floyd and Lane (2000, p. 160), for example, include the environment in their model on strategic renewal. While for top managers, the macro-environment (i.e., capital markets, government, and society) is important, front-line managers are closer to the competitive environment (i.e., factor and product markets). Ireland et al. (2009, p. 28), as another example, identify competitive intensity, technological change, and evolving product-market domains as most prominent environmental antecedent of a CE strategy.

In an alternative view, Lumpkin and Dess (1996, p. 152) list environmental constructs as moderators of the relationship between EO and performance. Their list is rather general and, in terms of direction, follows Miller (1983): dynamism, munificence (profitability or growth in the organization's market), complexity, and industry characteristics. It must also be noted that some studies – for example, those focusing on individual behavior (Hornsby et al., 2009; Kuratko et al., 2005) – completely ignore the environment.

2.3.3 Managerial Antecedents

Managerial antecedents of corporate entrepreneurship have been studied from a number of perspectives. This section highlights findings on traits and social capital. The research on traits to explain (corporate) entrepreneurship seems interesting, but not very helpful. Van de Ven (1980, p. 86) warns entrepreneurship researchers to focus on

traits by drawing parallels to leadership research: this approach did not yield satisfying results. Instead, he suggests that one focus on behaviors and situational circumstances. Gartner (1988, pp. 22–23) substantiates Van de Ven's warning. Gartner bases his argumentation on empirical research that finds no differences between the psychological traits of entrepreneurs and non-entrepreneurs (Brockhaus, 1980; Brockhaus & Nord, 1979; Sexton & Kent, 1981). He adds that research on traits is tautological. The same notion is reiterated in corporate entrepreneurship research:

> *"[I]t is extremely difficult to link particular psychological or sociological traits causally to patterns of complex behavior, such as entrepreneurship [...] the literature suggests that no causal link can be established between any of the above-mentioned variables [e.g., locus of control, risk-tendency] and entrepreneurship" (Stevenson & Jarillo, 1990, p. 491).*[15]

On the other hand, Floyd and Wooldridge (1999), who again focus on middle managers, take a different perspective. By exploring the role of social structures and knowledge dynamics in corporate entrepreneurship, they develop a number of propositions on the capability development process. In using social network theory, Floyd and Wooldridge (1999, p. 133) argue that a longer tenure can enable individuals to become corporate entrepreneurs. Through the networks – mostly loose and informal contacts – individuals build inside and outside the organization, they can gain access to new information relevant to the CE process. (Floyd & Wooldridge) propose that this effect can overcompensate the effect of organizational experience, which might limit an individual's ability to recognize opportunities. At an organization level, bringing together groups through such social networks may help build organizational capabilities important for CE (1999, p. 130). In short, tenure, which might be seen negative, could also have positive effects on CE.

2.3.4 Consequences

A broad range of consequences of CE has been studied. Ultimately, most studies assume or show a positive effect of CE on organizational performance, which also justifies the research stream (Covin & Slevin, 1991, p. 9; Ireland et al., 2009, p. 34; Lumpkin & Dess, 1996; Rauch et al., 2009, p. 764; Zahra et al., 1999, p. 53). Rauch et al.'s

[15]The same also holds true for public entrepreneurship research (e.g., Bernier & Hafsi, 2007, p. 491).

(2009) meta-analysis of the relationship between EO and performance categorizes and highlights the consequences.[16]

Performance, here at the firm level, is commonly viewed as either financial or non-financial. Financial performance measures can be based either on growth (e.g., of sales) or profitability (e.g., return on investment). Both types have been used in studies either as perceptual or archival measures, or as a combination of both (Rauch et al., 2009, p. 764). On the other hand, non-financial consequences have been proposed and tested. Lumpkin and Dess (1996, pp. 154–155) suggest consequences beyond company performance, such as (shareholder) satisfaction[17], reputation, and employee commitment. Other, often related, non-financial organizational consequences include innovation and strategic renewal (Guth & Ginsberg, 1990, p. 7), capability development and strategic positioning (Ireland et al., 2009, p. 34), and changes in strategy (Burgelman, 1983a). Such a view beyond (financial) performance is consistent with Kuratko et al.'s (2005) model, which includes such consequences at the individual and firm levels (Section 2.2.2).

Rauch et al. (2009), who focus on EO's effect on firm-level performance, find evidence for a positive, moderately large effect (r = .242) based on a meta-analysis of 51 studies. This effect does not significantly differ, whether performance is measured based on perceptual financial, archival financial, or non-financial data. The relationship is significantly moderated by firm size and its technological intensity, but not moderated by national culture (measured at continent level). These results confirm the overall positive effect of EO in the private sector. Yet, many of the performance measures used in the private sector do not apply to the public sector.

2.4 Summary of Private Sector Corporate Entrepreneurship

In this chapter, I have reviewed how the concept of corporate entrepreneurship (CE), as "the process whereby an individual or a group of individuals, in association with an existing organization, create a new organization or instigate renewal or innovation within that organization" (Sharma & Chrisman, 1999, p. 18) is applied in private sec-

[16]Rauch et al. (2009) also include studies not using the term *entrepreneurial orientation*; for example, Zahra (1991), who use *corporate entrepreneurship*.

[17]A satisfaction approach is used, for example, by Covin and Slevin (1989, p. 79), who multiply the 'importance' of and the 'satisfaction' with nine performance criteria to obtain a performance index.

tor organizations. One key CE concept is *entrepreneurial orientation* (EO). A firm is entrepreneurially oriented when it is innovative, proactive, and risk-taking (Covin & Slevin, 1991, p. 7; Lumpkin & Dess, 1996, p. 138). At an individual level, corporate entrepreneurship is practiced through *entrepreneurial behavior* (Kuratko et al., 2005, pp. 699–700; Pearce et al., 1997, p. 147). Such entrepreneurial behavior is required not only from top management. The corporate entrepreneurship process is a multi-level phenomenon that involves individuals from all levels (Floyd & Lane, 2000). Various studies have identified the middle management as, 'where the action is' in the corporate entrepreneurship process (Burgelman, 1983b, p. 1349; Floyd & Wooldridge, 1999, p. 124; Kuratko et al., 2005). Middle managers fulfill a special role as interfaces and mediators by championing, synthesizing, facilitating, and implementing (Floyd & Wooldridge, 1992, p. 154).

Finally, I reviewed the CE literature with respect to antecedents and consequences. A wide range of studies has been devoted to exploring antecedents and consequences of corporate entrepreneurship and related concepts. In general, variables at the levels of organization, environment, and individual have been identified as antecedents (Covin & Slevin, 1991, p. 8). In addition, company performance has been shown as an important consequence of entrepreneurial orientation (Rauch et al., 2009). More specifically, with respect to middle managers' entrepreneurial behavior, consensus emerges: five organizational antecedents identified by Hornsby et al. (2002) have been used repeatedly and have been integrated into the model of middle managers' entrepreneurial behavior (Kuratko et al., 2005). Accordingly, middle managers are influenced in their entrepreneurial behavior by the perception of management support, work discretion/autonomy, rewards/reinforcement, time availability, and organizational boundaries (Hornsby et al., 2002) as well as by the perceived relationship between such behavior and outcomes (Kuratko et al., 2005). Outcomes of such behavior can be positive and negative at the levels of individual and organization (2005, p. 701). One key finding from this research stream is that "[p]erception and position do make a difference" (Hornsby et al., 2009, p. 237).

CE scholars repeatedly call for further research in different contexts and involving multiple levels. Zahra et al. (1999, p. 55) suggest CE research in different geographies and industries. More recently, Phan et al. (2009, p. 204) see non-commercial contexts as fruitful areas of further research. With respect to levels of analysis, Zahra et al. (1999, p. 55) identify the divisional level as under-researched, and Hornsby et al.

(2002, p. 270) see the need to study how the organizational antecedents they identified relate to individual entrepreneurial behavior and firm-level consequences. Wooldridge et al. (2008, p. 1216) reaffirm this need for studies considering multiple levels and organizational consequences. Overall, the field of corporate entrepreneurship in the private sector is relatively well researched. However, it is unclear to what extent these findings are applicable to the public sector.

3 Entrepreneurship in the Public Sector

As noted in the previous chapter, the concept of entrepreneurship in existing private sector organizations has been widely researched. At the same time, some research has been done on the concept of entrepreneurship in the public sector. However, much of this research has developed without integrating findings from private sector research. This chapter first discusses the concept of entrepreneurship in the public sector, key terms, and limitations in its applicability. I then present the emerging research stream public value management, in which entrepreneurship plays an important role. Next, I review conceptual and empirical research on entrepreneurship in the public sector. In this chapter's last section, the research gap as outlined in the introduction is sustained.

3.1 The Concept of Entrepreneurship in the Public Sector

3.1.1 Differences between Private and Public Sector Organizations

> *Governing is not the same as shopping or more broadly buying and selling goods in a market economy. (Stoker, 2006, p. 46)*

Stoker (2006) uses this overstatement to demonstrate the important distinction between management in the private and public sectors. Historically, much of organizational and management theory was developed for a generic organization, no matter whether public or private. Weber (1946; 1978), Taylor (1911), and Simon (1958; 1948; 1995) claim – whether implicitly or explicitly – that their findings apply to both sectors, because "public and private organizations have more similarities than differences" (Rainey, 2009, p. 60). This is not the only perspective, however. Pettigrew et al. (1992, p. 13), for example, call for a more detailed analysis of transferability from one sector to another due to important differences.

I will refer to private sector organizations and public sector organizations in this research as if there were a clear distinction. This represents an oversimplification. The distinction is not clear-cut as assumed by various differentiation attempts based on political and economic authority (Bozeman, 1987), on funding and ownership (Wamsley & Zald, 1973a, 1973b), or on a combination of ownership, funding, and mode of social control (Perry & Rainey, 1988, p. 196). Boundaries between the sectors are not always clear and there are overlaps between public, private, and non-profit sectors (Rainey, 2009, p. 62). For example, there are government-owned business-like organizations that generate revenues by selling products (e.g., many postal services). In this

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study, for the sake of conceptual clarity, *private sector organizations* will refer to privately owned firms that get most of their resources from private sources and are not subject to extensive government regulations; while *public sector organizations* will refer to government-owned and government-funded organizations (based on Rainey, 2009, p. 80).

Empirical evidence from literature reviews reveals important differences between the sectors. Public sector organizations are characterized, among others, by the absence of economic markets and its cost-reduction pressures; more intensive external political influences; unique expectations of fairness, responsiveness, honesty, openness, and accountability; goals beyond direct customer satisfaction; greater goal ambiguity, multiplicity, and conflict for managers; traditionally, less decision-making autonomy and flexibility for managers; fewer incentives; and risk/reward trade-offs that favor error avoidance (literature summaries by Bernier & Hafsi, 2007, p. 490; Currie et al., 2008, p. 990; Morris & Jones, 1999, pp. 77–78; Rainey, 2009, pp. 83–85; Yang & Pandey, 2009, p. 335). The culture of risk avoidance and the traditionally low decision-making autonomy and flexibility are particularly relevant in the context of entrepreneurship (Rainey, 2009, p. 86).

3.1.2 Definitions of Entrepreneurship in the Public Sector

In order to provide working definitions of entrepreneurship in the public sector, I present existing definitions, identify common elements among them, and discuss the dimensions of entrepreneurial orientation in the public sector.

Definitions Used in Literature

The existing definitions of entrepreneurship in the public sector are limited and diverse, and remain a subject of debate (see e.g., Boyett, 1997, p. 90; Currie et al., 2008, p. 989; Kearney et al., 2007, p. 276; Morris & Jones, 1999, p. 74; Morris et al., 2008, pp. 115–116; Roberts & King, 1991, p. 151). The selection of definitions provided in Table 3.1 confirms this claim. Each study seems to view the concept from a different perspective.

Table 3.1: Definitions of Entrepreneurship within Public Sector Organizations

Study	Definition
Concept	
Shockley et al. (2006, p. 205)	"Public sector entrepreneurship occurs whenever a political actor is alert to and acts on potential profit opportunities, thus moving the system in which the actor is embedded toward equilibrium."
Kearney et al. (2007, p. 277)	"Public sector entrepreneurship, which for the purpose of this research refers to state enterprise/civil service, is defined as an individual or group of individuals, who undertakes desired activity to initiate change within the organization, adapt, innovate and facilitate risk. Personal goals and objectives are less important than the generation of a good result for the state enterprise/civil service."
Holcombe (2002, p. 143)	"Political entrepreneurship occurs when an individual observes and acts on a political profit opportunity."
Roberts (1992, p. 56)	"Public entrepreneurship is defined as the generation of a novel or innovative idea and the design and implementation of the idea into public sector practice."
Currie et al. (2008, p. 989)	"[…], entrepreneurship is seen as the process of identifying and pursuing opportunities by individuals and/or organizations. Further, this process is often characterized by innovativeness, risk-taking and pro-activity (Miller 1983; Covin and Slevin 1991; Morris and Sexton 1996; Morris and Jones 1999)."[a]
Morris and Jones (1999, pp. 74–87)	"Public sector entrepreneurship is the process of creating value for citizens by bringing together unique combinations of public and / or private resources to exploit social opportunities." (based on Bellone & Goerl, 1992; Linden, 1990; Osborne & Gaebler, 1992) "Entrepreneurship implies an innovative, proactive role for government in steering society toward improved quality of life. This includes generating alternative revenues, improving internal processes, and developing novel solutions to inadequately satisfied social and economic needs."
Morris et al. (2008, p. 103)	"Organizations can be characterized, then, in terms of their entrepreneurial orientation or intensity, which is a reflection both of how many entrepreneurial things they are doing, and how innovative, risky, and proactive those things tend to be. The basic steps in this process identified [in the private sector] should be no different in a non-profit or public sector context."
Osborne and Gaebler (1992, p. xix)	"[Entrepreneurial institutions/public entrepreneurs] use resources in new ways to maximize productivity and effectiveness."
Roberts and King (1991, pp. 149–150)	"'Public entrepreneurship' is a process of introducing innovation to public sector practice."
Person	
Bellone and Goerl (1992, p. 131)	"Four important characteristics of public entrepreneurs – autonomy, a personal vision of the future, secrecy, and risk-taking – need to be reconciled with the fundamental democratic values of accountability, citizen participation, open policymaking processes, and concern for the long-term public good (stewardship)."
Ramamurti (1986, p. 143)	"[Public entrepreneur is] an individual who undertakes purposeful activity to initiate, maintain or aggrandize one or more public sector organizations." (based on Cole, 1959, p. 7)
Schneider et al. (1995, pp. 8–147)	"In addition to the central feature of alertness to opportunity, we also define entrepreneurs by two other factors: their willingness to take risky action in the pursuit of opportunities they see, and their ability to coordinate the actions of other people to fulfill their goals." "Political entrepreneurs – individuals who seek elective office to pursue their vision of change."
Roberts (1992, p. 56)	"Individuals who generate, design, and implement innovative ideas in the public domain are called public entrepreneurs." (based on Schumpeter; deliberately without risk, which the capitalist bears)
Currie et al. (2008, p. 989)	"Entrepreneurial [public] leaders expand the goals, mandates, functions and power of their organizations in ways not foreseen by their political masters. They build coalitions that knit together public and private interests to take advantage of opportunities for entrepreneurship."
Lewis (1980, p. 9)	"[…] a person who creates or profoundly elaborates a public organization so as to alter greatly the existing pattern of allocation of scarce public resources."
Bernier and Hafsi (2007, pp. 489–492)	"[…] a public entrepreneur [is an] entrepreneur who contributes to building a public organization or increasing its ability to deliver services and create value." "Proactive, innovative behavior and bold risk taking seem to be the hallmarks of entrepreneurial individuals who have emerged in the public sector."

[a]Currie et al. (2008) draw on this (private sector) entrepreneurship definition throughout their paper.

Definitions of entrepreneurship in the public sector have a number of elements in common. First, the dimensions of innovativeness, proactiveness, and risk-taking emerge repeatedly – for example, referred to in terms of "innovate", "initiate change", and "facilitate risk" (Kearney et al., 2007, p. 277). These dimensions correspond with private sector EO dimensions, which are also referenced in some public sector research (see Section 2.1.4). Second, some definitions incorporate value creation – for example mentioned as "value for citizens" (Morris & Jones, 1999, p. 74) or "ability to deliver services and create value" (Bernier & Hafsi, 2007, p. 489). Another common element, which is beyond the focus of this study, is the creation of new organizations.

Research on entrepreneurship in the public sector is, as some definitions show, not purely focused on members of public sector organizations. Roberts (1992, pp. 62–63) classifies public entrepreneurs into four types based on their formal positions: *political entrepreneurs* hold elected leadership positions in government; *executive entrepreneurs* hold leadership positions without having been elected; *bureaucratic entrepreneurs* are not elected, nor do they assume leadership; finally, *policy entrepreneurs* – in contrast to the other three types – do not hold formal positions in government. Table 3.1 contains definitions referring to all types of entrepreneurship. However, as the focus of this study is on public sector middle management, political entrepreneurs and policy entrepreneurs will not be discussed in detail.

In order to further improve the understanding of entrepreneurship in the public sector, Table 3.2 contrasts the independent entrepreneur, the corporate entrepreneur, and the public entrepreneur. This table has been referenced by a number of scholars (Kearney et al., 2008, p. 309; Morris & Jones, 1999, p. 80; Morris et al., 2008, pp. 120–121; Zerbinati & Souitaris, 2005, p. 47). As noted, risk-taking and value creation are important features of public entrepreneurship. In addition, the importance of politics is highlighted in the following comparison.

Table 3.2: Comparing Independent, Corporate, and Public Entrepreneurs

Category	Independent entrepreneur	Corporate entrepreneur	Public entrepreneur
Organizational type	New enterprise	Existing business	Public sector organization
Person	Independent founder	Corporate executive	Public officer
Main activity	Create and grow business	Create value within an innovate project	Create value for citizens by bringing together unique combinations of resources
Skills	Know business intimately, more business acumen than managerial or political skill	Strong technical skills or product knowledge; good managerial skills; weak political skills	Strong political skills; able to develop power sources beyond those formally assigned; adept at using public relations and the media to advantage
Focus	External, markets, and technology	Internal and external; builds internal networks and finds mentors or sponsors	Learns to co-opt or use external forces to accomplish internal change; builds constituencies of support among politicians, unions, the private sector, the media and the community
Risks and failure	Assumes considerable financial and personal risk: clearly identifies key risk factors and tries to minimize them, sees failure as learning experience	Likes moderate risks; principal risks are career related: sensitive to need to appear orderly within corporation; hides risky projects so can learn from mistakes without political cost of public failure	Calculated risk-taker; takes big organizational risks without taking big personal risks by managing the process by which risky decisions are made: tends to deviate from rules only slightly at first, then progressively more; since failure is harder to define, will manage events to promote positive outcomes
Courage and destiny	Self-confident, optimistic, and bold	Self-confident, optimistic, and bold; cynical about the system but believes he/she can influence/manipulate it	Self-confident, optimistic, and bold; high tolerance for ambiguity; uses ambiguity as a source of managerial discretion

Note. Adopted from Morris and Jones (1999, p. 80), Morris et al. (2008, pp. 120–121), Kearney et al. (2008, p. 309) and Zerbinati and Souitaris (2005, p. 47).

Dimensions of Entrepreneurial Orientation

The next paragraphs analyze whether the traditional EO dimensions of innovativeness, proactiveness, and risk-taking (Covin & Slevin, 1991; Miller, 1983; Section 2.1.4) also apply to public sector organizations. Two groups of researchers around Morris (Morris & Jones, 1999; Morris et al., 2008) and Currie (Currie et al., 2008) have conducted analyses of the dimensions' conceptual and empirical applicability. These researchers hold that the traditional dimensions do apply generally in the public sector, but with different foci – especially in risk-taking (Currie et al., 2008, pp. 989–990; Morris et al., 2008, p. 103).

The dimension *innovativeness* refers to "the quest for creative, unusual, or novel solutions to problems and needs, including new services, new organizational forms, and process improvements" (Currie et al., 2008, p. 989). In the public sector, the focus of innovativeness is mostly on new processes, rather than on services or organizational forms (Currie et al., 2008, p. 989; Morris & Jones, 1999, p. 86; Morris et al., 2008, p. 103). It is also suggested that public sector innovation is incremental, rather than radical (Morris et al., 2008, p. 117).

The dimension *proactiveness* is characterized by action orientation, implementation of ideas, adaptability, and the anticipation and prevention of problems (Currie et al., 2008, p. 989; Morris et al., 2008, p. 104). Currie et al. (2008, p. 989) add taking over responsibility for failure, while Morris et al. (2008, p. 104) add interpretation of rules as well as skills at networking and leveraging resources. The latter also emphasize that persistence and patience in implementing change are particularly important in the public sector in order to overcome resistance to innovation.

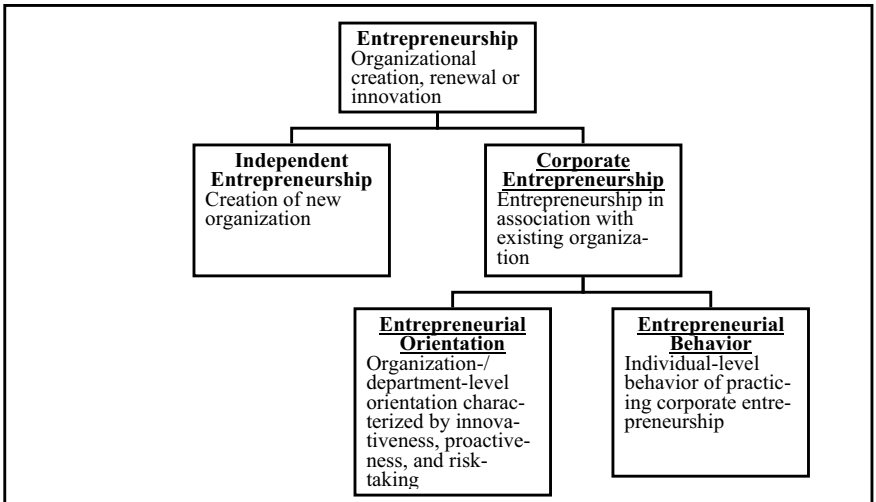
The dimension *risk-taking* "involves the willingness to take moderate risk in committing resources to address opportunities" (Currie et al., 2008, p. 989) or "[…] pursuing initiatives that have a calculated likelihood of loss or failure" (Morris et al., 2008, p. 104). This dimension differs most from its private sector equivalent. In the public sector, failure does not include bankruptcy. However, programs or organizational units can be discontinued, budgets can be cut, and services can be delivered poorly or not at all. Regarding personnel, attrition can rise and careers can be hampered (Morris et al., 2008, p. 104).

Empirically, Morris and Jones (1999, p. 86) find entrepreneurship in the public sector to be strongly associated with innovativeness and proactiveness, rather than with risk-taking. Morris et al. (2008, p. 104) suggest that stakeholder or public scrutiny might cause lower levels of risk-taking. Currie et al. (2008, pp. 996–1002) provide a similar justification – the public's intolerance of failure – and identify risk-aversion culture and lack of rewards for risky ventures as major obstacles in many public sector organizations. However, Currie et al. also identify public sector settings like education in which risk-taking is encouraged. These "calculated risks not reckless risks" are viewed in accordance with democratic governance (2008, p. 997; Section 3.1.4).

In short, the three dimensions of innovativeness, proactiveness, and risk-taking (Covin & Slevin, 1991; Miller, 1983) can be applied to the public sector, if adjusted. This study will follow this interpretation and rely on the definitions provided by Currie et al. (2008, p. 989).

Working Definitions of Entrepreneurship within Public Sector Organizations

In this study, entrepreneurship in the public sector will be referred to as *public entrepreneurship* – the process of identifying and pursuing opportunities (by groups and/or individuals) characterized by innovativeness, proactiveness, and risk-taking. This definition is in line with Currie et al. (2008, p. 989) and the use of EO in the private sector (Section 2.1.5). In the classification introduced above (Section 2.1.2), public entrepreneurship does not take the form of independent entrepreneurship, but of corporate entrepreneurship, i.e. always in association with existing organizations. When referring to a public department's or organization's extent of entrepreneurship, the term *entrepreneurial orientation* (EO) will be used. The strict focus on new entry Lumpkin and Dess (1996) associate with EO will be set aside in the public sector context, in which it appears less appropriate. When referring to an individual's behavior, the term entrepreneurial behavior will be used. The key terms of entrepreneurship research that also apply to the public sector are summarized in Figure 3.1.



Note. Concepts applicable in public sector as used in this study are underlined.

Figure 3.1: Key Entrepreneurship Terms Applicable in Public Sector

3.1.3 Justification for Entrepreneurship in the Public Sector

Inadequate current solutions (see Section 3.2) and turbulence (Bernier & Hafsi, 2007, p. 489; Morris et al., 2008, pp. 118–119) provide public entrepreneurs with opportunities to create (public) value.[18] Moore (1995, pp. 232–233) argues that an analysis of public sector organizations will usually reveal a number of what he calls *gaps*. These gaps, which represent an organization's current inability to fulfill its goals, require innovation. The extent to which an organization's performance can be improved depends on how well an organization is currently adapted (1995, pp. 232–233). Morris and Jones (1999, p. 75) use the term *opportunity* from entrepreneurship research to make the same point. They show such opportunities for entrepreneurship in a public university; these include: changed demographics, emergence of new market segments, process needs, new technologies, and funding and regulatory change. Pursuing such opportunities by means of entrepreneurship can improve internal processes and yield better solutions to social and economic problems (Morris & Jones, 1999, pp. 86–87).

[18] A justification for entrepreneurship in the public sector from a legal perspective is beyond the scope of this study.

Politics must not and cannot predefine all public sector organizations' operations.[19] While some legislation provides very explicit and detailed guidelines, others define objectives (Marx, 1965, pp. 227–228).[20] The onus is therefore on public entrepreneurs to act upon the above-mentioned gaps/opportunities and to initiate innovation (Moore, 1995, pp. 232–233; Morris et al., 2008, pp. 117–119). Bellone and Goerl (1992, p. 131) note that such public entrepreneurship can only gain legitimacy in democracies through the involvement of the public (also see Section 3.2.3).

However, similarly to the private sector, public entrepreneurship is not equally applicable in all cases (e.g., Covin & Slevin, 1989). Kelly et al. (2002, pp. 34–35) recognize that value in public sector organizations is created through entrepreneurial behavior in some areas, but through adherence to standards in others.

> *The 'centre' cannot specify how best a local agency providing a complex service can best go about boosting service satisfaction, improving outcomes and securing local legitimacy. However, this does not mean that in every instance public value should be equated with greater managerial discretion and looser accountability. In some circumstances an established process – a service template – can be used reliably to deliver an efficient service. Arguably, this approach would be beneficial in areas such as the paying of housing benefit […]. In these instances public value is likely to be created by ensuring that all service providers adhere to recognised best practice. (Kelly et al., 2002, pp. 34–35)*

Morris et al. (2008, pp. 105–106) argue along the same lines and provide examples of public entrepreneurship's adequacy in specific organizations: social security services (low), water departments (medium), and schools (high). In short, public entrepreneurship is not adequate in all situations. However, in many situations, there are opportunities that cannot be foreseen by central units or politicians.

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[19] In the context of Germany, *Ermessen* refers to discretion in public administration. It allows administrations to choose between predefined options or to decide within a specific area for an action or actions (Maurer, 2009, pp. 135–136). *Ermessen* is thus clearly distinct from entrepreneurship as defined in this study, in that *Ermessen* is not necessarily associated with opportunities and/or innovativeness, proactiveness, and risk-taking.

[20] The administration decides upon the operationalization of these objectives based on *Sachgerechtigkeit* (appropriateness), *Rechtmäßigkeit* (legality), *Unparteilichkeit* (impartiality), and *Wirtschaftlichkeit* (efficiency; Marx, 1965, pp. 227–228).

3.1.4 Limitations to Entrepreneurship in the Public Sector

From the literature, three broad themes emerge that limit the applicability of entrepreneurship to the public sector. These include some liabilities that apply equally to the private sector (deLeon & Denhardt, 2000, p. 92). First, for many critics, the engagement by public managers in innovative, proactive, and risk-taking activities represents a threat to democratic governance. The primary perceived problem is a lack of legitimacy. As public managers should act in accordance with consent established by elected politics, manipulation of the political will is considered undemocratic (deLeon & Denhardt, 2000, p. 95; Terry, 1998, p. 197). Morris and Jones (1999, p. 78) consider any devices designed to increase the power of public institutions and public managers as potential threats to democracy. There is a potential conflict between risk-taking and public managers' obligation to use public resources adequately (Bellone & Goerl, 1992, p. 132). Du Gay (2000, p. 12), being a defender of traditional bureaucracy, also highlights legitimacy problems, but – in drawing on Weber – goes further. He holds that entrepreneurial management and the public sector are inherently incompatible, due to different 'regime values' in the public and private sectors. Du Gay (2000, p. 146) therefore concludes his book as follows: "[r]epresentative democracy still needs the bureaucratic ethos." Even promoters of public entrepreneurship admit to difficulties in legitimizing entrepreneurship within public sector organizations, for example, when it includes breaking rules such as the reallocation of funds (Roberts & King, 1996, p. 208).

Second, public managers, just like private managers, might go too far in their entrepreneurship. Such 'rogue' entrepreneurs (Currie et al., 2008, p. 991) are described as pursuing self-interests, misusing public funds, dominating others, and implementing radical change, thereby ignoring tradition (Bellone & Goerl, 1992, p. 133; deLeon & Denhardt, 2000, p. 92; Terry, 1998, p. 198). DeLeon and Denhardt (2000, p. 95) even warn of exaggerated expectations from the public entrepreneur, whom they compare with an *Übermensch* – a superhero that could represent a similar danger as unchecked national leaders. Terry (1998) asserts that "values such as fairness, justice, representation, or participation are not on [the public entrepreneur's] radar screen" (1998, p. 198). Promoters of public entrepreneurship are also aware of these dangers; Schneider et al. (1995, p. 215) give the example of a 'public entrepreneur' ending up in jail due to the pursuit of personal benefits. However, as Roberts and King (1996, p. 154) note, these public servants might represent the exception, rather than the rule.

Alford (2008, p. 360) count on public sector managers' integrity in promoting their projects.

Third, entrepreneurial activities not completely in line with their organizations' objectives can result in unintended consequences. Such consequences include neglecting the core business or core responsibilities (Rhodes & Wanna, 2008, p. 368), competition with private or public sector organizations (Morris & Jones, 1999, p. 78), or overruns of budgets (Currie & Procter, 2005, p. 1340).

3.2 The Emergence of Public Value Research

This section will place public entrepreneurship in the boarder discussion on public management. This study will use the distinction between three general approaches (Kelly et al., 2002, p. 10) or paradigms (Stoker, 2006, p. 44) to public management.[21] These approaches are traditional public management (TPM), new public management (NPM), and public value management (PVM). Each approach emerged – at least partially – as a reaction to perceived deficiencies of the previous approach (Stoker, 2006, p. 42). Accordingly, perceived administrative inefficiencies of traditional public management based on the Weberian bureaucracy model led to the emergence of new public management. In turn, the alleged "narrowly utilitarian character" of NPM (Stoker, 2006, p. 42) led to the emergence of public value management. I will now characterize each of these three approaches and then compare them (for further elaborate discussion, see Schulze, 2010, pp. 17–38; Stoker, 2006).

3.2.1 Traditional Public Management

The traditional public management[22] approach is usually associated with Max Weber's idea of an ideal bureaucracy type (Pollitt & Bouckaert, 2004, p. 62; Stoker, 2006, p. 43). Weber (1946, pp. 196–198) characterizes such a bureaucracy as the desirable way to organizing public administration and, to a large degree, private administration. He goes as far as to state: "The decisive reason for the advance of bureaucratic organization has always been its purely technical superiority over any other form of organi-

[21] The term *approach* will be used as a neutral way to refer to these three management types.

[22] As suggested by Pollitt and Bouckaert (2004, p. 61), the term *traditional bureaucracy* was introduced by proponents of new public management to distinguish the new (and 'good') approach [NPM] from the old (a 'bad') approach [TPM].

zation" (1946, p. 214). The defining characteristics of an ideal bureaucracy are as follows.

> *I. There is the principles of fixed and official jurisdictional areas, which are generally ordered by rules, that is, by laws or administrative regulations. […]*
> *II. The principles of office hierarchy and of levels of graded authority mean a firmly ordered system of super- and subordination in which there is a supervision of the lower offices by the higher ones. […]*
> *III. The management of the modern office is based upon written documents ('the files'), which are preserved in their original or draught form. […] [I]n general, bureaucracy segregates official activity as something distinct from the sphere of private life. […]*
> *IV. Office management, at least all specialized office management […] usually presupposes thorough and expert training. […]*
> *V. When the office is fully developed, official activity demands the full working capacity of the official. […]*
> *VI. The management of the office follows general rules, which are more or less stable, more or less exhaustive, and which can be learned. Knowledge of these rules represents a special technical learning which the officials possess. (Weber, 1946, pp. 196–198)*

Accordingly, the abstract treatment of matters based on rules (as opposed to case-by-case treatments) ensures the equal and fair treatment of citizens and public officials. In contrast to many older forms of public administration, such as those based on monarchical power or charismatic leaders, the ideal bureaucracy is not prone to favoritism (Weber, 1946, p. 198). Weber (1946, pp. 214–216) associates bureaucracy with attributes such as precision, consistency, speed, and cost-efficiency (also see Rainey, 2009, p. 28; Schedler & Proeller, 2006, pp. 16–17; Stoker, 2006, p. 45). This form of bureaucracy, to differing degrees and in different variations, has been applied to large parts of public administration (Pollitt & Bouckaert, 2004, p. 62).

However, beginning in the late 1970s, bureaucracy increasingly came to be viewed as unsuitable in an environment that was said to be changing faster than ever (Hood, 1991, pp. 3–4). Points of criticism included inflexible structures, indifferent and bureaucratic staff, and the dehumanization of the organization (Hood, 1991, p. 7; Schedler & Proeller, 2006, pp. 17–18). Osborne and Gaebler have not one good word to say when describing previous public administrations: "They became bloated, wasteful, ineffective. And when the world began to change, they failed to change with it" (1992,

pp. 11–12). Accordingly, it was time to change public administration. This change was introduced under the heading of new public management.[23]

3.2.2 New Public Management

New public management[24] sought to improve management and processes by applying more private sector management techniques and market elements (Schedler & Proeller, 2006, p. 66). While reforms were not applied uniformly across countries or organizations (Pollitt & Bouckaert, 2004; Schedler & Proeller, 2003, p. 281), many reforms corresponded with NPM doctrines as identified by Hood (1991, pp. 4–5): (i) 'hands-on' professional management; (ii) explicit performance standards and measures; (iii) greater emphasis on output controls; (iv) disaggregation of units; (v) greater competition; (vi) an emphasis on private sector management practice styles; and (vii) an emphasis on greater discipline and parsimony in resource use. This shift also changed to role of public sector managers. "[A] good new public management system gives managers the freedom to manage. Politicians exist to set goals but then get out of the way" (Stoker, 2006, p. 46). The public manager's job thus became more like that of the private manager; they were to decide how best to achieve an outcome with a given amount of resources. Several scholars consequently considered public sector managers as entrepreneurs (Bernier & Hafsi, 2007, p. 488; Hafsi, Bernier, & Farashahi, 2007, p. 4; Osborne & Gaebler, 1992).

Any objective assessment of whether or not NPM's often high expectations were fulfilled is challenging (Pollitt & Bouckaert, 2004, pp. 103–104). There are often multiple ways of assessing results as well as contradicting information. However, even critics praise benefits such as improved consumer orientation, the clarification of objectives

[23]This criticism, in turn, is today often described as too undifferentiated in overstating negative aspects and neglecting the achievements of bureaucracy, such as fairness, continuity, and honesty (Pollitt & Bouckaert, 2004, pp. 62–63). Du Gay (2000) is a particularly fervent advocate of bureaucracy. In *In Praise of Bureaucracy*, he defends this organizational form, bureaucrats, and the bureaucratic ethos against those who dismiss it as outdated and irrelevant. Du Gay (2000, p. 8) questions the need for government to become entrepreneurial in order to fulfill the legal mandate. Instead, he views bureaucracy as necessary to secure democracy (2000, p. 146) and considers the re-definition of roles between politicians and bureaucrats under NPM as counterproductive (2000, p. 133). More generally, he opposes the application of concepts from the private sector to the public sector due to different 'regime values'. In his view, public sector organizations, in contrast to their private sector counterparts, have an ethical responsibly to fulfill public interest, which goes beyond simply meeting outcome objectives (2000, iv, 138-143).

[24]Other terms used to describe this approach include *reinventing government* and *entrepreneurial governance* (Du Gay, 2000, p. 5; Osborne & Gaebler, 1992).

and responsibilities, and the use of executive agendas and performance management systems (Kelly et al., 2002, p. 9; for an extensive discussion of results, see Pollitt & Bouckaert, 2004, pp. 103–142). Despite these benefits, NPM reforms are also associated with negative developments in public management. Kelly et al. (2002, pp. 9–10) and Alford and Hughes (2008, pp. 136–137) summarize these negative developments by pointing to NPM's narrow focus on measurable performance outcomes, which might lead to a neglect of what mattered to the public, as a primary problem. Further points of criticism include: viewing citizens as clients, the 'hidden agenda' of cutting costs, the neglect of the service needs of different client groups, the disposition towards small-scale versus large-scale improvement, and the non-involvement of citizens and stakeholder groups. For public value advocates, this situation set the stage for a paradigm shift.

3.2.3 Public Value Management

Mark Moore's book *Creating Public Value: Strategic Management in Government* (1995), a plea for entrepreneurial management in the public sector with the ultimate goal of creating public value, initiated a nascent research field and management approach concerned with public value (PV). PV can be described as "what the public values" (Horner, Fauth, & Mahdon, 2006, p. 6) or as "value for the public" (Meynhardt, 2009, p. 212). Having attracted very little attention the first years after publication, the concept of public value gained traction in Tony Blair's administration during the early 2000s (Crabtree, 2004, p. 55). From there, the concept of public value spread first to other Westminster systems, namely Australia and New Zealand, and then to Continental Europe (Meynhardt, 2008, pp. 457–458). In Europe, public broadcasters such as the British BBC, Germany's ZDF, and Austria's ORF, have been the most prominent appliers of public value (BBC, 2004; ORF, 2010; ZDF, 2006; also see Collins, 2007; Horner et al., 2006; Klein, 2009; Weißenbek, 2009). Increased academic debate is reflected in dedicated or special issues of the *Australian Journal of Public Administration* (vol. 63 / issue 4) in 2004, the *Public Money and Management* (vol. 28 / issue 3) in 2008 and, most recently, the *International Journal of Public Administration* (vol. 32 / issue 3&4) in 2009. Public value was welcomed by scholars and practitioners as a means to account for performance beyond financial and process indicators (Meynhardt & Metelmann, 2009, p. 298) and to overcome "the narrow and oversimplified" NPM approach (Kelly et al., 2002, p. 2). In the next sections, I will shortly review public value literature with a focus on aspects that help answer this study's research questions.

Definitions

Public value can be viewed in many different ways. It is thus not surprising that no widely accepted definition has emerged. This lack of clarity can be partially attributed to Moore's omission of a definition in *Creating Public Value*. He does not go much farther than stating that "[p]ublic managers create public value" (1995, p. 57) and that public value is hard to grasp (1995, p. 40). Some of the definitions, often mere descriptions, include Kelly et al. (2002, p. 4): "Public value refers to the value created by government through services, laws[,] regulation and other actions" or the description of PVM as "NPM plus co-production" (Collins, 2007, pp. 7–8).[25] In Germany, where PV is associated with *Gemeinwohl*, Schuppert (2002, p. 67) outlines the purpose of *Gemeinwohl* as the "reason for and boundary of" any public sector activity.[26] The final report of the public value consortium of the British think tank The Work Foundation provides a definition that is finding increasing acceptance.

> *From whichever point of view one understands the term public value, all of these answers point to a common theme:* public value is what the public values*, and it is the role of public managers to help determine through the democratic processes of deliberation and public engagement what social outcomes are desirable. (Horner, Lekhi, & Blaug, 2006, p. 6, emphasis added)*

Other definitions also focus on interaction with citizens. While not strictly a definition, Smith states that "[p]ublic value is defined and redefined through social and political interaction" (2004, p. 68). Stoker describes the justification of public sector organizations as "[…] public value, that is valued social or economic outcomes" (2006, p. 47). At first sight, Meynhardt (2009, p. 212) seems to follow The Work Foundation almost literally. However, he takes a different approach insofar as he clarifies public value and related terms on the basis of philosophical, psychological, and economic concepts.

> *Public value is value for the public. Value for the public is a result of evaluations about how basic needs of individuals, groups and the society as a whole are influenced in relationships involving the public. Public value then is also value from the public, i.e., "drawn" from the expe-*

[25] Collins (2007, pp. 7–8) adds that "[a] 'soft' version would refer to the importance of what Davies (2005:130) called the elements which 'cannot so easily be valued, or even sensibly be valued at all' and which may be under-represented and thus under-provided in NPM type public service delivery."

[26] German original: "Das Gemeinwohl fungiert also – so können wir festhalten – als Grund und Grenze staatlichen Handelns" (Schuppert, 2002, p. 67).

> *rience of the public. The public is an indispensable operational fiction of society. Any impact on shared experience about the quality of the relationship between the individual and society can be described as public value creation. Public value creation is situated in relationships between the individual and society, founded in individuals, constituted by subjective evaluations against basic needs, activated by and realized in emotional-motivational states, and produced and reproduced in experience-intense practices. (Meynhardt, 2009, p. 212)*

Meynhardt goes further than Moore (1995, p. 52), who describes values as rooted in individuals' desires. According to Meynhardt, it is possible to evaluate public value according to the four basic human needs dimensions: moral-ethical, hedonistic-aesthetical, utilitarian-instrumental, and political-social (derived from needs theory). A summary is provided in Table 3.3. On the basis of psychology, Meynhardt (2008, pp. 461–462) also warns against the misinterpretation of the term *public value creation*, which might suggest a causal production process as in transforming a good into another good with higher value. Instead, subjective evaluation processes such as attitudes, opinions, doubts, and presumptions are relevant.[27]

Table 3.3: Relationship between Basic Needs and Basic Value Dimensions

Basic need for…	Translation into a motivation for… (examples)	Basic value dimension
…positive self-evaluation	…positive self-concept and self-worth …consistent relationship between self and environment …feeling of high self-esteem (in social comparison)	Moral-ethical
…maximizing pleasure and avoiding pain	…positive emotions and avoidance of negative feelings …flow-experience …experience of self-efficacy due to action	Hedonistic-aesthetical
…gaining control and coherence over one's conceptual system	…understanding and controlling environment …predictability of cause and effect relationships …ability to control expectations to cause desired outcomes	Utilitarian-instrumental
…positive relationships	…relatedness and belongingness …attachment, group identity …optimal balance between intimacy and distance	Political-social

Note. Reprinted from Meynhardt (2009, p. 203); Meynhardt and Metelmann (2009, p. 277), adapted from Meynhardt (2004, p. 168) and Meynhardt and Stock (2009, p. 56).

[27] German original: "[Der Begriff 'Public Value Creation' ist] auch irreführend, denn Resultate subjektiver Bewertungsprozesse in Form von Einstellungen, Meinungen, Zweifel, Ahnungen etc. entziehen sich einer linear-kausalen 'Produktionsweise' im Sinne einer systematischen Transformation eines Gutes in ein Gut mit einem höheren Nutzen" (Meynhardt, 2008, pp. 461–462).

What is Public Value?

Scholars taking up the idea of public value have used it in very different ways. This initiated a debate over whether public value is an empirical theory, a normative prescription, or something else (Alford & O'Flynn, 2009, p. 174; Rhodes & Wanna, 2007, p. 408). Mark Moore's original intention is outlined in the introduction to his book: "[…] I develop a normative (rather than positive) theory of managerial (rather than organizational) behavior" (1995, p. 2). The book is thus written for managers, rather than for academia striving to build theory.[28] The Work Foundation lists a total of five answers to the question *What is public value?* in their final report (Horner et al., 2006, p. 6), while Alford and O'Flynn (2009, pp. 178–185) provide a similar list of four public value categories. I will use a combination of the two and distinguish between public value as a system of networked governance, as paradigm, as narrative, as rhetoric, and as performance.

Public Value as a System of Networked Governance

The notion of seeing PV as a system of networked governance is not without overlaps with the other categories, but deserves special attention here as it lays the foundation for understanding managers' changed role in PVM. The networked governance (also network governance; Gains & Stoker, 2009, p. 440) approach sees the involvement of different actors as a legitimate way of decision-making. Networked governance relies on dialogue, exchange, and bottom-up approaches to decision-making (Stoker, 2006, p. 41). The actors to be involved may include politicians, users, other public sector organizations, businesses, third sector organizations, and the public (Gains & Stoker, 2009, p. 443; Horner et al., 2006, pp. 6–7; Stoker, 2006, pp. 47–56). Networked governance is also referred to as co-production (Collins, 2007): "collaboration between public sector/public service provider and users to produce public value outcomes" (Collins, 2007, p. 54).[29] In short, this approach views public value management as a way to involve different actors in the decision-making process to create public value.

[28]The strategic triangle (a framework for public managers) being a key element of the book confirms this target audience (Alford & O'Flynn, 2009, p. 173; Moore, 1995, pp. 70–72).

[29]Moore (1995) also addresses the concept in terms of co-production. However, he views co-production as a means to achieve *managers'* objectives: "It becomes essential to find ways to engage loose networks of professions, interest groups, political association, and the media in efforts to co-produce the managers' goals." (1995, p. 118).

In recent debates, this approach has been found to be only partly applicable. Based on vast primary and secondary research in the UK, Gains and Stoker (2009, p. 451) argue that this approach is best applied in local settings, rather than in central government functions. Accordingly, at a local level, it is particularly important for organizations to react creatively to local circumstances and to involve local actors in the decision-making process. Examples provided by other scholars seem to confirm this analysis. Co-production is practiced successfully in local-level projects like recycling initiatives or Neighborhood Watch (Kelly et al., 2002, p. 27).[30] On the other hand, existing structures at the nation-wide British Broadcasting Corporation prevent the direct implementation of co-production; here, co-production can only be implemented as a 'softer' form of consultation and conversation (Collins, 2007, p. 54).

Public Value as a Paradigm

The 'public value as a paradigm' view considers public value as a successor to traditional public management and new public management. Stoker (2006) is very clear in stating how PVM can be a corrective for NPM. Other scholars publishing on public value largely argue along the same lines (Kelly et al., 2002, p. 10; O'Flynn, 2007). Furthermore, even scholars less directly involved in the public value debate acknowledge the potential of PVM to replace NPM (e.g., Schuppert, 2010, p. 153; also see Christensen & Lægreid, 2007, p. 122).

In fact, the term *paradigm* is only used by a few authors (O'Flynn, 2007; Stoker, 2006), given the reasonable doubts as to the appropriateness of its use in this context. Grüning (2000, pp. 419–423) already objects to the notion of a *paradigm shift* from TPM to NPM in the way Kuhn (1970) introduced it. Furthermore, Meynhardt (2008, p. 458) explicitly opposes the view that PV represents a paradigm in the strict sense of the word (also see Körber, 2009, pp. 38–41).

Public Value as a Narrative

Using public value as a narrative or story appears a useful way of thinking about public value, with some acceptance even among critics. Public value in this sense is "a story of the world of public managers" (Alford & O'Flynn, 2009, p. 182). Stoker

[30] Kelly et al. (2002, p. 27) provide additional examples (home school contracts in schools, public health programs, and Territorial Army), which might partly apply co-production at a non-local level.

(2006, p. 56) does this in his article title *Public Value Management: A New Narrative for Networked Governance?*, portraying the two perspectives on PVM as a paradigm and a narrative. Moore (1995, p. 57) uses the word *story*, but not very prominently, while Smith (2004, pp. 68–69) uses *story* as a primary theme to argue for public value. In their discussion of PV's relationship to public interest, critics note that "[…], if public value has meaning, it is a shared meaning that operates within a narrative and its associated tradition. The shared meaning develops iteratively and collaboratively; it emerges through dialogue and reconfirmation in society." (Rhodes & Wanna, 2007, p. 416).

Public Value as a Rhetoric Strategy

Some critics view public value as nothing more than a rhetorical strategy used to protect bureaucrats' interests and their organizations. They criticize (i) PV's use in organizations such as the BBC as a PR strategy to gain or retain public support and funding (Elstein, 2004, p. 14); (ii) PV's use by governments as an argument to sell reforms ("Public value: who could possibly be against it?"; Crabtree, 2004, p. 55); or (iii) PV as a way to increase bureaucrats' power in which the real characters and interests of public managers are ignored (Alford & O'Flynn, 2009, p. 180; Roberts, 1995, pp. 289–299).

Public Value as Performance

Public value can also be seen as a performance measurement or management framework. Some of the clearest statements in this respect are formulated by Kelly et al. (2002, p. 4), who consider public value a yardstick with which to evaluate public sector policies and organizations, decide on resource allocation, and select the appropriate delivery systems. They even conclude their report by depicting public value as a means of measurement (2002, p. 35). Attempts by consultants (Cole & Parston, 2006, pp. 83–110) to use the term *public value* in combination with an assessment instrument is exposed by Alford and O'Flynn (2009, p. 185) as marketing NPM ideas under a new label.

Problems and Criticism

The PVM approach is not always received with enthusiasm. One key criticism is related to PV's unclear definition, the many different ways in which it is used, and the difficulty of operationalizing it. Rhodes and Wanna (2007, p. 408) argue that public

value can therefore become arbitrary and mean "all things to all people." Moore is aware of such problems including unclear causality, different measurement standards, and lack of clarity over PV's meaning (1995, pp. 21–40). Other public value scholars also agree on the difficulties of assessing or measuring PV (Collins, 2007, pp. 7–8). While evaluating public value along the basic value dimensions (Meynhardt, 2009, p. 203) does present a promising option, it seems questionable whether public value can be included in quantitative KPI systems. Adding qualitative measures might be more promising (Meynhardt & Vaut, 2007, p. 75).

The most serious criticism refers to the increased powers of public managers and legitimacy, which partly resembles the criticisms of public entrepreneurship (Section 3.1.4). Rhodes and Wanna "[…] criticize the notion that public managers should play the role of Platonic guardians deciding the public interest" (2007, p. 407). They are concerned that public value could be used as a way to defend or increase bureaucratic power (Alford & O'Flynn, 2009, p. 180; Roberts, 1995, p. 304). Even advocates are aware of such potential abuse. Accordingly, they warn that PV should not be used as a *carte blanche* for arbitrariness (Meynhardt & Vaut, 2007, p. 75). Moore (1995, p. 38) reminds us that politics, rather than management, are the legitimate final arbiter of public value, while Kelly et al. (2002, p. 6) attribute the function of determining what public value is to the public, rather than the manager. While this criticism holds for all democratic contexts, it might be particularly relevant for Westminster administrations, for which the public value concept was not originally intended (Rhodes & Wanna, 2007, p. 411).

3.2.4 Comparison of Approaches

The three approaches to public management (i.e., TPM, NPM, and PVM) are distinct; however, there is disagreement over the types of differences. Meynhardt (2009, p. 194) interprets the rise of public value as a reaction to NPM concepts, which have been implemented too mechanically. Kelly et al. (2002, pp. 9–10) represent an extreme view in this regard and portray the three approaches as *competing*. Stoker (2006, p. 55) notes that it is possible to combine approaches. In an elaborate comparison of the three public management approaches, Schulze (2010, pp. 39–46) disagrees that the approaches are contradictory. Instead, he proposes suitability to context, depending on the country context, as the decisive factor. He considers PVM as suitable for Germany, and considers NPM more suitable for the Anglo-American context based on the characteristics of the public administration systems in these countries (Pollitt

& Bouckaert, 2004, pp. 39–64; Schulze, 2010, p. 51). The differences in the three management approaches identified by other authors can be summarized in Table 3.4 and the subsequent statement.

Table 3.4: Approaches to Public Management

	Traditional public management	**New public management**	**Public value management**
Key objectives	Politically provided inputs; services monitored through bureaucratic oversight.	Managing inputs and outputs in a way that ensures economy and responsiveness to consumers.	The overarching goal is achieving public value that in turn involves greater effectiveness in tackling the problems that the public most cares about; stretches from service delivery to system maintenance.
Role of managers	To ensure that rules and appropriate procedures are followed.	To help define and meet agreed performance targets.	To play an active role in steering networks of deliberation and delivery and maintain the overall capacity of the system.
Definition of public interest	By politicians or experts; little in the way of public input.	Aggregation of individual preferences, in practice captured by senior politicians or managers supported by evidence about customer choice.	Individual and public preferences produced through a complex process of interaction that involves deliberative reflection over inputs and opportunity costs.
Approach to public service ethos	Public sector has monopoly on service ethos, and all public bodies have it.	Skeptical of public sector ethos (leads to inefficiency and empire building); favors customer service.	No one sector has a monopoly on public service ethos; maintaining relationships through shared values is seen as essential.
Preferred system for service delivery	Hierarchical department or self-regulating profession.	Private sector or tightly defined arms-length public agency.	Menu of alternatives selected pragmatically and a reflexive approach to intervention mechanisms to achieve outputs.
Contribution of the democratic process	Delivers accountability: Competition between elected leaders provides an overarching accountability.	Delivers objectives: Limited to setting objectives and checking performance, leaving managers to determine the means.	Delivers dialogue: Integral to all that is undertaken, a rolling and continuous process of democratic exchange is essential.

Note. Reprinted from Stoker (2006, p. 44), adapted from Kelly et al. (2002, p. 10).

> *Traditional public administration is keen on establishing core bureaucratic disciplines; new public management believes that certain set systems of allocating contracts and money, once established, will bring benefits. Public value management emphasizes the role of reflection, lesson drawing, and continuous adaptation. Permanence and stability – traditional administrative attributes – are less dominant in the thinking of public value management. Instead, the emphasis is on challenge and change. (Stoker, 2006, p. 49)*

Similarly to NPM, PVM calls for "entrepreneurial thinking" and decentralization (Schulze, 2010, p. 40). However, PVM requires a different type of manager. Instead of focusing on (measurable) performance, PVM managers are expected to maximize public value. Moore even equates managerial success with "initiating and reshaping public sector enterprises in ways that increase their value to the public in both the short and the long run" (1995, p. 10). In this view, managers have the discretion to set objectives and select the means to best satisfy the public's needs. However, these managers also need to leverage networks, access resources outside their domain (Stoker, 2006, p. 41), and develop ideas with relevant actors across institutional boundaries (Meynhardt, 2008, p. 459). Managers' tasks thus also include managing the network and taking into consideration the public's opinion through dialogue (see Section Public Value as a System of Networked Governance).

In short, entrepreneurship is least appropriate in the TPM approach, while it is expected in the two more recent approaches (i.e., NPM and PVM). In NPM, entrepreneurship is focused mostly on improving (measurable) performance and finding creative ways to achieve targets; on the other hand, in PVM, entrepreneurship is focused on public value creation by incorporating stakeholders and managing networks. Next, the literature on public entrepreneurship – regardless of the public management approach – is reviewed.

3.3 Literature Review on Entrepreneurship in the Public Sector

The following section assesses to what degree antecedents of public entrepreneurship have been researched. First, a categorization and a framework for the literature review are introduced, and the relevant literature is then presented and summarized.

3.3.1 Categorization

This study focuses on middle managers and therefore applies a categorization that allows for the identification of the research gap at this level. Table 3.5 displays a catego-

rization of public entrepreneurship literature based on method and type of entrepreneur. The method dimension distinguishes between conceptual/theoretical work and empirical work. Empirical work can be either qualitative (often case studies) or quantitative (Punch, 2005, p. 1). In reviewing the literature, it became clear that many quantitative empirical studies do not apply inferential statistics, but rather rely on the cross-tabulation of data and/or descriptive statistics (Punch, 2005, pp. 127–129). These types are therefore also distinguished. The second dimension – type of entrepreneur – relies on the classification of public entrepreneurs (Roberts, 1992, pp. 62–63; Section 3.1.2). This classification is similar to the unit of analysis. However, some studies use the organization as a unit of analysis and some the individual, while others remain unclear about their unit of analysis. The categorization therefore represents an inherently

Table 3.5: Categorization of Public Entrepreneurship Literature

Method[a]	**Type of public entrepreneur**[b] **(individual)**				
	Policy (outsider)	**Political (politician)**	**Executive**[c] **(top manager)**	**Executive (middle manager)**	**Bureaucratic (front-line manager / staff)**
Empirical Quantitative (inferential)	Mack et al. (2008)	Schneider and Teske (1992) Schneider et al. (1995)	Teske and Schneider (1994) Moon (1999) Kim (2007)	-	Wood et al. (2008)
Empirical Quantitative (descriptive)	*Included above*	*Included above*	Morris and Jones (1999) Borins (2000)	-	*Included above*
Empirical Qualitative (mostly case study)	Roberts and King (1991)	Osborne and Gaebler (1992)	Lewis (1980) Osborne and Gaebler (1992) Moore (1995) Zerbinati and Souitaris (2005) Currie et al. (2008)	Meynhardt and Metelmann (2009) Currie and Procter (2005)	Bernier and Hafsi (2007)
Conceptual/ Theoretical	*Included above*	Roberts (1999)	Bellone and Goerl (1992) Ramamurti (1986) Kearney et al. (2008)	*Included above*	*Included above*

Note. Depicting foci of studies.
[a]Empirical studies often include conceptual aspects.
[b]Based on Roberts (1992, pp. 62–63).
[c]Column includes studies with the organization as a whole as unit of analysis.

imperfect attempt to identify the focus of each study and present it accordingly.[31] Next, I discuss the studies in terms of method, unit of analysis, and key findings. Appendix 1 provides a tabulated overview of the studies reviewed in this section.

3.3.2 Outsiders and Politicians

This dissertation focuses on entrepreneurship within existing organizations (corporate entrepreneurship). However, I also present several studies that make use of the public entrepreneurship concept that focus on individuals outside public sector organizations. Roberts and King (1991), for example, explicitly focus on the activities of policy entrepreneurs – individuals working from outside the formal governmental system. Finding little literature and no conceptual model to build on, they use a grounded theory approach based on multiple data sources, mostly interviews. Their study of six policy entrepreneurs identifies a structure of basic activities (creative/intellectual, strategic, mobilization and execution, and administrative and evaluative). It thereby provides a conceptual model, but since then, little research has built on this work.

Mack et al. (2008) also focus on individuals involved in public innovation. Their study of two health care networks is based mostly on interviews (using the snowball sampling technique) and some quantitative data collected during these interviews to identify public entrepreneurs. Individuals identified as public entrepreneurs include staff of public sector organizations as well as outsiders. Experience in the specific field of the innovation, participation in formal discussions, memberships in local organizations, and preference for local community affect the likelihood of someone engaging in entrepreneurial behavior. Their study thus adds some quantitative evidence to public entrepreneurship literature, although with a focus that is mainly outside any one specific organization.

Studies of politicians as entrepreneurs are mainly qualitative or conceptual. Roberts (1999), for example, uses one short illustrative example of entrepreneurship by politicians (auto safety legislation) in a primarily conceptual study. An exception are works by Teske and Schneider (Schneider & Teske, 1992; Schneider et al., 1995; Teske & Schneider, 1994), who use a large-scale dataset on entrepreneurship in local gov-

[31] Other, broader categorizations do exist. Morris et al. (2008, pp. 115–116), for example, classify the literature in terms of works on leaders, political movements and new organizations, strategic management application, reinventing government, and privatization.

ernments. In the first work based on this dataset (Schneider & Teske, 1992), they focus on predictors of political entrepreneurs and find slack budgetary resources to be the most relevant one. Additional information on their work is provided in Section 3.3.3 and in Appendix 1.

The book *Reinventing Government* (Osborne & Gaebler, 1992), which became a best-selling and widely discussed plea for entrepreneurial government (deLeon & Denhardt, 2000, p. 89), is directed at elected and non-elected officials. It could therefore be classified as focused on politicians and top executives. Based on the authors' own experience and anecdotal evidence, it presents 10 principles that underlie entrepreneurial governments (1992, p. xvii). Similar to Moore (1995) in terms of method, this work lacks systematic, large-scale evidence on how entrepreneurship within public sector organizations can be fostered.

3.3.3 Top Managers and whole Organizations

This section includes studies focusing on top managers as well as entire public sector organizations. Some of these studies generically discuss entrepreneurship in public sector organizations.

Conceptual and Qualitative

A first group of studies uses success stories to derive or illustrate concepts. Lewis's (1980) oft-cited book *Public Entrepreneurship* is a good example of studies focusing on strong individuals at the top of organizations. Lewis uses the biographies of Hyman Rickover, J. Edgar Hoover, and Robert Moses – each of which shaped an entire organization – to outline his ideas on a public entrepreneur, "a person who creates or profoundly elaborates a public organization so as to alter greatly the existing pattern of allocation of public resources" (1980, p. 9). Conceptually, he develops a three-stage model of entrepreneurship, which consists of early entrepreneurship, the leap, and mature entrepreneurship. In reviewing the book, Burgelman (1985) criticizes this focus on extreme cases of top managers and points to the forces at the middle of the organization.

> *[...] public entrepreneurs, like corporate entrepreneurs, are the driving force of change in their organizations. Like corporate entrepreneurs, they are usually not situated at the top but, rather, are deep in the organization where their technical prowess and opportunistic alertness provide the basis for acting in radically new and strictly autonomous ways*

> *(Daft and Becker, 1978; Peterson, 1981; Burgelman, 1983), while still remaining embedded in their organizations.(Burgelman, 1985, pp. 595–596)*

Moore (1995) bases *Creating Public Value* on experience from teaching at Harvard's Kennedy School of Government as well as anecdotes. The book illustrates how 'heroic entrepreneurs' change their organizations, striving to create public value. Yet, it also largely focuses on top managers and does not provide clues as to how entrepreneurship at the middle of the organization could be fostered.

Similarly, Ramamurti (1986) focuses on successful public top managers and compares the motives of private and public managers. He argues that potential roadblocks to public entrepreneurship can best be overcome by managers trained in the public sector. In addition, he warns against potential abuse of power. However, the study provides no evidence beyond the short portraits and some anecdotes.

Kearney et al. (2008) develop a conceptual model of *public sector corporate entrepreneurship* based on literature. The model includes *internal antecedents* (structure/formalization, decision-making/control, rewards/motivation, culture, risk-taking, and proactivity) and *external antecedents* (politics, complexity, munificence, and change). The outcomes are organizational performance in growth, development, and productivity. Interestingly and in contrast to a very similar paper by the same authors (Kearney et al., 2007) and most CE conceptualizations (Sections 2.1.4 and 3.1.2), Kearney et al.'s (2008) concept of CE only includes innovativeness. Risk-taking and proactiveness are labeled as antecedents, without any adequate justification for the changed role. Kearney et al. (2008) do not go beyond the conceptual work, nor has their model been tested empirically.[32]

Zerbinati and Souitaris (2005) use a European Union funding program to study entrepreneurship in the public sector. Ten case studies of Italian and UK local governments are used to test whether an entrepreneurship model can be applied to the public sector. The authors identify entrepreneurial patterns in their cases and –similarly to Roberts (1992, pp. 62–63; Section 3.1.2) – develop a typology of entrepreneurs in the public sector: professional politician, spin-off creator, business entrepreneur in politics, ca-

[32]None of the nine studies citing Kearney et al. (2008) identified by Google Scholar on June 21, 2010 does so.

reer-driven public officer, and politically ambitious public officer. Yet, their study does not investigate the antecedents or outcomes of entrepreneurship.

Finally, Currie et al. (2008, p. 988) research public entrepreneurship in the UK public sector. They first describe the concept of public entrepreneurship conceptually, based on the literature. They also further specify characteristics of public entrepreneurship, based on qualitative data from 51 interviews with top managers from the National Health Service, from further education, and from secondary schools. Currie et al. (2008, p. 988) conclude that public entrepreneurs may take different roles ('entrepreneurial agency', 'political agency', and 'stakeholder agency') when pursuing entrepreneurial opportunities.[33]

Quantitative (Descriptive)

Two reviewed studies focusing on top managers and whole organizations go beyond conceptual or qualitative work. Morris and Jones (1999) discuss the applicability of entrepreneurship in the public sector by incorporating public administration and private CE literature. Conceptually, they find that entrepreneurship (specifically the frequency and degree of entrepreneurship), its process nature, and the three underlying dimensions of innovativeness, proactiveness, and risk-taking apply at the organizational level. In addition, they survey 152 public managers in South Africa on personal and organizational characteristics of entrepreneurship, the importance of entrepreneurship in certain areas, and obstacles. Their mainly descriptive analyses indicate, among others, that entrepreneurship is applicable at an individual and an organizational level, that middle managers are the most entrepreneurial group of individuals, and that key obstacles are difficulty of defining customers, high public visibility, reward system, and multiplicity of goals. The study therefore provides important theoretical foundations and empirical indications; however, it does not use inferential statistics to identify antecedents of entrepreneurship in the public sector.

Borins (2000) uses empirical data to determine how desirable public entrepreneurship is. He descriptively analyzes 321 applications to a public sector innovation award from 1990-1994 and 1995-98. Results from the latter period include an identification of the

[33]Strictly speaking, Currie et al. (2008) do not apply a case study approach; however, their study will be mentioned as such throughout this dissertation in order to contrast it with studies based only on own experience and/or anecdotes.

initiators: middle managers are by far the largest group of initiators (43%), followed by top managers (28%), front-line staff (27%), and politicians (27%; more than one answer possible). These results further justify the focus of this study on public sector middle managers and are in line with Morris and Jones's (1999) findings. Furthermore, Borins (2000) analyzes data on the type of innovation, conditions leading to innovations, supporters, and obstacles and tactics to overcome them. He concludes that the data support proponents of public entrepreneurship: public entrepreneurs creatively solve problems, act proactively, and build organizational support.

Quantitative (Inferential)

Three studies were identified that use inferential statistics and focus on top managers or whole organizations. Teske and Schneider (1994) go beyond biographical or anecdotal data to identify predictors of entrepreneurial city managers. To do so, they use mail questionnaires completed by city clerks of 956 communities in the United States in a multinomial logit analysis (i.e., regression analysis with nominal dependent variable). Apart from regional differences, they find that local groups and local politicians affect the emergence of entrepreneurial city managers. Their study is thus one of the few to provide large-scale evidence in public entrepreneurship, although with a focus on top managers and mostly environmental antecedents. The same dataset is also analyzed in two other works (Schneider & Teske, 1992; Schneider et al., 1995), which include more theoretical framing and additional analyses, for example, on politicians.

In a doctoral thesis, Kim (2007) uses a large-scale mail survey to test a model of determinants of public entrepreneurship and its effects on organizational performance. The 45 hypotheses on the effects of structural antecedents, managerial antecedents, cultural antecedents, and environmental antecedents on dimensions of public entrepreneurship (i.e., innovativeness, proactiveness, and risk-taking) are tested using survey data from 299 U.S. state government departments. The author's interpretation of results does not allow for a concise identification of the most relevant antecedents of public entrepreneurship.

Moon (1999) studies *managerial entrepreneurship* in the public sector. "Managerial entrepreneurship broadly refers to managerial as well as properties that promote innovations and changes that improve performance with respect to organizational products, processes, and behaviors" (1999, p. 31). In contrast to the widely accepted dimensions of innovativeness, proactiveness, and risk-taking, he uses the self-developed dimen-

sions of product-based entrepreneurship (enhancing customer satisfaction), process-based entrepreneurship (reducing the level of red tape), and behavior-based entrepreneurship (promoting the propensity for risk-taking). Data from 164 public and private managers are used to test the influence of structural, cultural, and environmental characteristics on the nature and level of these dimensions. Regression analysis indicates that elements of structural characteristics, size, culture, and environment are significantly correlated with the self-developed dimensions of entrepreneurship in different ways. The data and measures are drawn from a research project, the National Administrative Studies Project, which was not specifically designed to measure entrepreneurship. The results are therefore difficult to build on and compare with other research.

3.3.4 Middle Managers

This dissertation bases the identification and definition of public sector middle managers on Rainey (1983). Accordingly, middle managers are "persons in a supervisory position below the level of vice president or assistant agency head, yet with at least one supervisory position below him or her" (1983, p. 215). Very few studies focus on entrepreneurship at this level of public management. Morris and Jones (1999) and Borins (2000) include questions on the role of middle managers in their descriptive studies, but use top managers or program descriptions as a source of data. The following two studies apply a qualitative approach.

Currie and Procter (2005) conducted three intensive case studies on middle managers' strategic roles in the UK health system. Based on 100 interviews and observations, they describe how middle managers experience role conflicts and role ambiguity caused by inconsistent expectations from key stakeholders. The role conflicts and role ambiguity result in less autonomous, less strategic roles. Among the factors supporting more strategic roles (despite role conflict and/or role ambiguity) are investment in management, contact with the environment, and a broad strategy. While the authors do not explicitly study entrepreneurial behavior, they draw on the Floyd and Wooldridge (1992, p. 154) typology of middle management involvement in strategy, which in turn is partly based on the concept of corporate entrepreneurship (Burgelman, 1983a, 1983b). The study therefore provides important empirical evidence on the roles of public sector middle managers.

Meynhardt and Metelmann's (2009) explorative case study based on qualitative interviews at Germany's Federal Labor Agency (FLA) is unique in that it yields a model

specific to public value. Meynhardt and Metelmann (2009, p. 296) identify internal and external antecedents of public sector middle managers' public value creation. The internal antecedents are management control system, management capabilities, and role security, while the external antecedents are legal obligations, multitude of expectations, superior bureaucracy/ministry, and external reputation. They suggest using these qualitatively identified antecedents in broader research, including quantitative testing (2009, p. 305).

3.3.5 Front-line Managers and Staff

Two studies from distinct research fields are reviewed that analyze public entrepreneurship at a front-line manager or staff level. From a public administration perspective, Bernier and Hafsi (2007) propose viewing today's entrepreneurship as systematic, i.e. as becoming institutionalized and involving teams, rather than being led by a heroic individual. Based on anecdotal evidence and drawing on literature, they propose conditions under which the two types of entrepreneurship are more likely to occur. Among others, individual entrepreneurship is more likely to occur in new organizations or organizations engaging in completely new activities. In contrast, systematic entrepreneurship is more likely in large, mature organizations. This type of entrepreneurship is associated with incremental and process-based innovation with lower visibility in society (2007, pp. 495–498). In their study, Bernier and Hafsi also discuss the role of actors at different organizational levels and highlight the importance of middle managers.

> *The actors at the top safeguard the operations of the system as a whole and manage all other actors' willingness to cooperate. The actors at the bottom innovate, while those in the middle reconcile managers' desire to innovate at the bottom with the orientations and concerns at the top. This process is similar to what happens in large diversified firms […] Middle managers are a major – though not the only – source of organizational creativity in public entrepreneurship […]. (Bernier & Hafsi, 2007, p. 494)*

Bernier and Hafsi (2007, p. 499) conclude by encouraging those organizations that are in favor of innovation to allow for entrepreneurship. However, they also lack empirical evidence on what fosters such entrepreneurship.

From a strategic management perspective, Wood et al. (2008) use a quantitative approach to test a model with organizational antecedents, corporate entrepreneurship,

and outcomes. The theoretically developed model is tested with the unadjusted private sector instrument of Hornsby et al. (2002) for organizational antecedents, and an adjusted version of the Covin and Slevin (1989) instrument to measure CE. The data from 113 employees (presumably mostly non-managers) from seven departments are not aggregated, but rather analyzed at the individual level.[34] Wood et al. (2008, pp. 128–129) find rewards systems, management support of entrepreneurship, a simple structure, and tolerance for calculated risks positively correlated with perceived CE. They do not find a significant effect of resource availability (the instrument mostly measured time availability) on perceived CE. While the results can be used as an indication, method-related limitations make generalizations difficult.

3.4 Summary and Open Questions

In summarizing this chapter, this section reaffirms the research gap and restates the research questions. Differences in public and private sector organizations – such as greater external political influences, higher outside expectations, more goal ambiguity, and a less favorable risk/reward ratio – require a careful examination of the applicability of entrepreneurship in the public sector. Based on the private sector equivalent of CE, this study refers to entrepreneurship in the public sector as *public entrepreneurship* (PE). PE refers to the process of identifying and pursuing opportunities by groups and/or individuals, characterized by innovativeness, proactiveness, and risk-taking. The extent of public sector departments' or organizations' entrepreneurship is referred to as entrepreneurial orientation (EO).

While entrepreneurship in the public sector is considered as vital, it is not without criticism and limitations. 'Rogue' entrepreneurs, threats to the democratic governance, and unintended consequences (such as the neglect of the core business) are among the primary concerns. Yet, high efficiency or good services cannot always be delivered in changing and locally distinct environments when processes or services are defined centrally and upfront. Public entrepreneurship is often seen as necessary to achieve public sector organizations' ultimate goal.

[34] The analysis thereby ignores the observations' non-independence. This limitation is not mentioned in the paper, but guarded against to some extent by explicitly focusing on *individual perceptions/mindsets*.

This ultimate goal can be referred to as public value creation, a central concept of public value management (PVM). Viewed in the broader context of public management approaches, PVM has recently emerged as a reaction to deficiencies in new public management (NPM). NPM had largely replaced traditional public management by introducing private sector management principles and tools. PVM has emerged as an attempt to compensate for NPM's "narrowly utilitarian character" (Stoker, 2006, p. 42). In contrast, PVM is associated with increased dialogue, the steering of networks, and a focus on public value – "value for the public" (Meynhardt, 2009, p. 212). While focusing on different aspects, NPM *and* PVM call for entrepreneurship in public sector organizations.

The literature review revealed that the concept of PE is still little researched, despite its increasing importance. With respect to the unit of analysis, research on heroic managers at the top of organizations long dominated the debate, while research on other actors is only slowly developing. With respect to method, most studies either apply a purely conceptual approach (Bellone & Goerl, 1992; Kearney et al., 2008; Ramamurti, 1986; Roberts, 1999) or rely on own experience and anecdotal evidence (Bernier & Hafsi, 2007; Moore, 1995; Osborne & Gaebler, 1992; Roberts & King, 1991). Few studies apply a more rigorous approach in conducting case studies (Currie et al., 2008; Currie & Procter, 2005; Meynhardt & Metelmann, 2009; Zerbinati & Souitaris, 2005). Those using quantitative data either remain descriptive (Borins, 2000; Morris & Jones, 1999) and/or focus on units of analysis other than middle managers (Kim, 2007; Mack et al., 2008; Moon, 1999; Schneider & Teske, 1992; Schneider et al., 1995; Teske & Schneider, 1994; Wood et al., 2008). Overall, there appears to be a general lack of theory testing with rigorous methods in the study of PE. This interpretation is in line with Morris and Jones (1999, p. 87), Zerbinati and Souitaris (2005, p. 46), and Currie et al. (2008, p. 988).

Middle managers are identified in various studies as crucial to public entrepreneurship, but empirical research on them is even scarcer. Morris and Jones (1999, p. 83) find that middle managers are the most entrepreneurial. Borins (2000, p. 500) identify middle managers as by far the largest group of initiators. Bernier and Hafsi (2007, p. 494) describe middle managers as a major source of creativity in public entrepreneurship. Burgelman (1985, pp. 595–596) asserts that, like corporate entrepreneurs, public entrepreneurs can be found "deep in the organization" rather than at the top. In studying public sector middle managers, Currie and Procter (2005) observe entrepreneurial be-

havior focusing on role ambiguity and role conflict. In the context of public value management, Meynhardt and Metelmann (2009) develop a model, which includes antecedents of public value creation.

With respect to antecedents, the biographies of successful individuals may provide some indications of personal traits, but cannot provide a solid basis for the study of antecedents (see Section 2.3.3; Bernier & Hafsi, 2007, p. 491; Currie et al., 2008, p. 988). Moon (1999, p. 40) show that some antecedents apply to both private and public sector organizations, but the differences between these organizations do not allow for a general transfer of concepts without detailed and careful evaluation. Some studies indicate public sector relevant antecedents (Currie & Procter, 2005; Kearney et al., 2008; Kim, 2007; Meynhardt & Metelmann, 2009; Moon, 1999; Morris & Jones, 1999; Ramamurti, 1986; Teske & Schneider, 1994; Wood et al., 2008), but an integrative model and a rigorous test in the public sector middle management is missing.

With respect to outcomes, public value – despite its increasing prominence – has not been studied systematically as an outcome of public entrepreneurship. Due to the lack of widely accepted outcome measures, researchers have alternatively evaluated job satisfaction, commitment, memory orientation (Wood et al., 2008), performance relative to similar organizations (Kim, 2007), or no explicit outcome beyond entrepreneurship at all (Borins, 2000; Mack et al., 2008; Moon, 1999; Morris & Jones, 1999; Teske & Schneider, 1994). In contrast, Meynhardt and Metelmann's (2009, p. 296) model uses public value creation as an outcome variable.

In short, entrepreneurship in the public sector is considered vital, but evidence on its antecedents is largely lacking. Middle managers are particularly important in the entrepreneurship process; they play a crucial role in determining the entrepreneurial orientation of their departments. While conceptual, qualitative, and quantitative studies have researched public entrepreneurship, no study has tested antecedents of department-level EO, a level of analysis that has repeatedly been called for (Morris, Allen, Schindehutte, & Avila, 2006, p. 488; Zahra et al., 1999, p. 55). Furthermore, it has not been researched how the ultimate objective of public managers, public value creation relates to department-level EO. It is beyond the scope of this study to operationalize public value creation. Yet, in an attempt to reduce the gap, *public value orientation* (PVO) is introduced. PVO will refer to an organization's or department's posture toward public value creation, as conceptualized by Meynhardt (also see Section 4.5). Hence, the following two research questions appear relevant and unanswered.

RQ1: Which antecedents explain department-level entrepreneurial orientation in the public sector?

RQ2: How is department-level entrepreneurial orientation related to public value orientation?

This study continues by developing hypotheses based on the literature to answer these questions. The hypotheses are integrated in a theoretical model, which is then tested empirically.

4 Hypotheses and Theoretical Model

In this chapter, a theoretical model with specific hypotheses is developed to close the research gaps identified above. To do so, I present the thesis' main argumentation and a research frame in the following section. Then, detailed justifications based on literature are developed. At the end of the chapter, the theoretical model incorporating all hypotheses is presented.

4.1 Research Frame

With the implementation of NPM and PVM, calls increased for more entrepreneurial behavior and orientation in public sector organizations. Using the two management approaches for framing, antecedents of entrepreneurial orientation are identified and the relationship between EO and PVO is explored. New public management relies on the explicit assumption that private sector concepts can be transferred to the public sector. Following this view, organizational antecedents from private sector research (Hornsby et al., 2002) are included in this research (namely management support, work discretion, rewards/reinforcement, and resource availability). Yet, the rise of NPM and PVM has shed light on additional antecedents particularly interesting in the public sector context. These additional antecedents are identified based on works of Stoker (2006) and Meynhardt and Metelmann (2009): management control system, multitude of expectations, legal mandate, job insecurity, and localism. The following statement summarizes the thesis' main argumentation using a categorization of the antecedents.

> *This thesis explores how established private sector antecedents and untested public sector-specific antecedents affect department-level EO. It is argued that organizational, environmental, and managerial factors influence department-level EO. In addition, I argue for a positive relationship between entrepreneurial orientation and public value orientation.*

Figure 4.1 illustrates the overall research frame used in this thesis. The frame is mainly influenced by the model of middle managers' entrepreneurial behavior (Kuratko et al., 2005) and the model of antecedents of public value creation (Meynhardt & Metelmann, 2009, p. 296). In line with Covin and Slevin (1991, p. 9), the model includes the organization, the environment, but also manager characteristics, which

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influence manager's behavior. The managers' behavior in turn will influence their departments.[35]

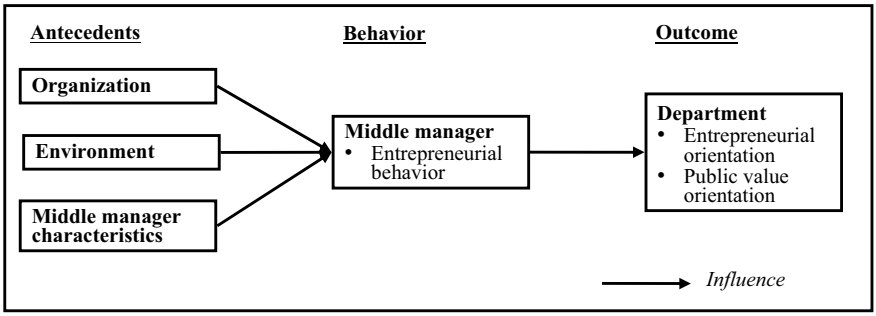

Figure 4.1: Research Frame

The research frame and the following hypotheses are based on two assumptions. First, for middle managers to act in a certain way, their perception of a factor is more important than its actual existence. This is consistent with Marginson's (2002, p. 1027) distinction between managers' perception (or interpretation) versus 'objective existence' of management control system elements. Second, this study assumes a direct effect of middle managers' entrepreneurial behavior on their departments' EO. Middle managers entrepreneurial behavior is a core aspect of corporate entrepreneurship (Hornsby et al., 2009; Hornsby et al., 2002; Kuratko et al., 2005). Furthermore, Pearce et al. (1997) find evidence of managers' entrepreneurial behavior in a firm implementing a corporate entrepreneurship strategy. Given these indications, the study does not analyze middle managers' behavior, but focuses on department-level EO and PVO instead.

The next sections present the antecedents identified from literature and refined in this study's qualitative pretest (Section 5.3.1) to ensure a research context and sector-specific selection. For each of the antecedents, a definition is given, indications for its influence from literature are provided, the expected mechanism is explained, and a testable hypothesis is presented.

[35]Not shown in the figure is the direct influence some antecedents might have on the department's EO and PVO without mediation by middle managers' behavior. Staff, for example, will also perceive the environment entrepreneurially and will behave entrepreneurially to some degree, partially independent of their superiors' behavior.

4.2 Organizational Antecedents of Entrepreneurial Orientation

In the private sector, academics have recently used a fairly stable set of organizational antecedents outlined by Hornsby et al. (2002; Section 2.3.1). They have identified the perception of management support, work discretion, rewards/reinforcement, time availability, and organizational boundaries as being relevant (2002, p. 261). Alternative models (e.g., Antoncic, 2007; Kearney et al., 2007; Kuratko et al., 2005; Marginson, 2002; Morris et al., 2006) are similar to the model developed by Hornsby and colleagues. In many cases, concepts vary only slightly in definition and content. For example, resources are subsumed under *management support* by Kuratko et al. (2005, p. 703) and under *top management style* by Macmillan et al. (1986, p. 184), while Antoncic and Hisrich (2001, p. 502) use the label *organizational support* to summarize all organizational antecedents of corporate entrepreneurship. In this study, Hornsby et al.'s (2002) structure is used as a basis to discuss established private sector antecedents.[36] Elements of the management control system (MCS) are added, as the MCS was identified as the most relevant antecedent in the NPM/PVM context (Meynhardt & Metelmann, 2009).

4.2.1 Management Support

In this thesis, management support is defined as the extent to which one perceives that higher-level managers support, facilitate, and promote entrepreneurial behavior (adapted from Hornsby et al., 2009, p. 238). This can take a number of forms, including championing or adapting innovative ideas, recognizing employee ideas, supporting small projects, providing expertise, and institutionalizing entrepreneurial activity within the company's system and processes (Hornsby et al., 2009, p. 238; Hornsby et al.,

[36]The concept of *organizational boundaries* is not included in this study. Organizational boundaries are "boundaries, real and imagined, that prevent people from looking at problems outside their own jobs" (Hornsby, Naffziger, Kuratko, & Montagno, 1993, p. 32); the construct is sometimes also referred to as *organizational structure*, a structure that fosters "the administrative mechanisms by which ideas are evaluated, chosen, and implemented" (Hornsby, Kuratko, & Zahra, 2002, p. 253). The measures for this construct are not reliable (Hornsby, Kuratko, Shepherd, & Bott, 2009, p. 240), and overlap with other constructs in this study in terms of content. In addition, the concept refers to operation procedures and job descriptions that are standardized in this research context and are not expected to vary between the units of analysis.

2002, p. 259; Hornsby, Naffziger, Kuratko, & Montagno, 1993, p. 32; Kuratko et al., 2005, p. 703).[37]

Numerous empirical studies provide qualitative and quantitative evidence for the positive effect of management support on EO (or related constructs) in private sector organizations. Hisrich and Peters (1986, pp. 308–311) identify managerial support, allowing for mistakes and failure, and encouraging new ideas (among others) as antecedents for successful new business venture units, in a study using mail questionnaires and in-depth personal interviews. Sathe (1989) studies management's efforts to promote EO at the business unit and divisional level, based on interviews, observations, and archival work. He notes that "top management needs to make a sustained commitment to policies and practices that may fly in the face of conventional wisdom" (1989, p. 20). Macmillan et al. (1986, p. 184) consider lack of management support as a major obstacle to successful venturing, based on survey data from 31 experienced corporate line managers. Management support (Quinn, 1985, pp. 77–78) and managerial attitude towards change (Damanpour, 1991, p. 551) are also identified as important antecedents of the EO-related concept of innovation, based a multi-year research project and a meta-analysis of 46 publications. Hornsby et al. (2009) recently found a positive effect of management support on the number of ideas implemented – one aspect of entrepreneurial action. They show that the effect varies among management levels, but is positive for front-line, middle, and top managers. One study even provides an initial indication for a similar mechanism in the public sector. Wood et al. (2008, p. 126) reveal perceived management support as the strongest organizational predictor of perceived corporate entrepreneurship in a survey of 113 military and civilian employees (presumably mostly non-managers) of seven innovative US Air Force departments.

In the public sector, as much as in the private sector, middle managers are more likely to engage in entrepreneurial behavior when they perceive support for such behavior. In contrast, middle managers are less likely to behave entrepreneurially when higher-

[37]The provision of financial and non-financial resources, which is occasionally also mentioned as part of management support (Hornsby, Kuratko, Shepherd, & Bott, 2009, p. 238; Hornsby, Kuratko, & Zahra, 2002, p. 259; Kuratko, Ireland, Covin, & Hornsby, 2005, p. 703), is included in the resource availability construct in this study so as to avoid overlapping concepts. For the same reason, recognizing people with good ideas (Hornsby, Naffziger, Kuratko, & Montagno, 1993, p. 32) is classified as part of rewards/reinforcement.

level managers discourage innovative, proactive, and risk-taking behavior. At the level of departments, management support from direct superiors is especially important. These superiors can be members of top management at headquarters, but also other, more senior middle managers in a regional or divisional unit. Therefore:

> *H1a: Public sector middle managers' perception of management support is positively related to their departments' entrepreneurial orientation.*

4.2.2 Work Discretion

In this thesis, *work discretion* is defined as higher-level managers' commitment to "tolerate failure, provide decision-making latitude and freedom from excessive oversight, and to delegate authority and responsibility to middle-level managers" (adapted from Kuratko et al., 2005, p. 704). Work discretion is provided when members of an organization have the leeway to decide how to perform their work in the way they believe to be most effective. Such discretion can be achieved if they are not punished or criticized for making mistakes while experimenting (Hornsby et al., 1993, p. 32).[38]

Numerous empirical studies indicate that a certain degree of autonomy is required for entrepreneurial behavior in private sector organizations. Quinn (1985, p. 83) observes that successful innovation managers set goals and allow teams to decide how to achieve them within defined constraints. *Entrepreneurial management* is facilitated under conditions where there is the leeway of deciding how a task is performed (Kanter, 1985, p. 53) and where those with knowledge have the authority to experiment (Kanter, 1985, p. 55). In the development of a process model, Burgelman (1983a, p. 232) identifies autonomy from current strategy as a key characteristic. These *autonomous strategic initiatives* (Burgelman, 1983a, p. 241) drive the corporate entrepreneurship process. They emerge spontaneously unless management suppresses them (Burgelman, 1983b, p. 1361). Other scholars encourage a certain degree of autonomy and tolerance, but warn of excessive use. "Managers must have the freedom to proceed on the basis of their personal convictions" (Sathe, 1989, p. 23), but top managers must still oversee the provided freedoms to avoid misuse. Sathe (1989, p. 27) also recommends that failure should be regarded as normal and as an invitation to learning, but

[38] Work discretion is often listed in combination with autonomy and is closely connected with *risk-taking and tolerance for failure*, which refers to "an environment that encourages calculated risk taking while maintaining reasonable tolerance for failure" (Hornsby, Kuratko, & Zahra, 2002, pp. 253–254).

advises managerial punishment for irresponsible behavior. Sykes (1986, pp. 277–278) identifies autonomy in decision-making as the counterpoint of control, when comparing internally financed and externally financed ventures of a large energy conglomerate. Negative effects are most likely if control is excessive in early stages or too low in growth stages (Sykes, 1986, pp. 277–278). Just like for management support, Hornsby et al. (2009, p. 237) find varying, but positive relationships between work discretion and entrepreneurial action at all management levels; and Wood et al. (2008, p. 126) find initial evidence for the same relationship in the public sector.

In the public sector, as much as in the private sector, middle managers are more likely to engage in entrepreneurial behavior when they perceive discretion in their work. Managers encouraged to decide how to achieve goals will find more creative ways of doing so. They are more likely to experiment and innovate when fewer strict rules and procedures are in place. What is specific to the public sector is the area in which and the extent to which discretion is appropriate. In certain cases, centrally set or legally binding goals and procedures are inevitable (Section 3.1.3). In many other cases, work discretion will allow managers to engage in more entrepreneurial behavior. Therefore:

> *H1b: Public sector middle managers' perception of work discretion is positively related to their departments' entrepreneurial orientation.*

4.2.3 Rewards/Reinforcement

In this thesis, *rewards/reinforcement* is defined as "systems that reward based on performance, highlight significant achievements, and encourage pursuit of challenging work" (Kuratko et al., 2005, p. 703). Various similar definitions of rewards, reinforcement, or appropriate use of rewards are found in corporate entrepreneurship literature. These definitions incorporate "rewards based on entrepreneurial activity and success" (Hornsby et al., 2009, p. 239); the consideration of "goals, feedback, emphasis on individual responsibility, and results-based incentives" (Hornsby et al., 2002, p. 253); or "making the ideas of innovative people known to others" (Hornsby et al., 1993, p. 32).

In the private sector, numerous empirical studies provide evidence on the positive effect of rewards/reinforcement on EO and the success of corporate ventures. Kanter's (1985) comparison of innovative and less innovative companies results in the recommendation of a *culture of pride*. Such a culture should expect and reward high achievement levels and assume that investments in people pay off (1985, p. 55). Sathe

(1989, p. 26) also recommends reinforcing by promoting success stories and champions through a combination of small monetary incentives and great recognition. Studies in the field of corporate ventures show a mixed picture. Block and Ornati (1987, p. 42) surveyed Fortune 500 managers, but find no significant effect of performance incentives on successes/failures. Their recommendations on compensation include a focus on results and achievability. On the other hand, Hisrich and Peters (1986) find evidence for performance goals and appropriate reward systems as antecedents of successful new business venture units in a study using mail questionnaires and in-depth personal interviews. Sykes (1992) uses case studies of corporate ventures to examine compensation schemes and recommends using equity reward schemes to retain and recruit important organization members, especially corporate entrepreneurs. Of the five sets of human resources management practices identified by Morris and Jones (1993) in a study of 112 companies, two are related to rewards. More entrepreneurial companies reward individual performance, focus on long-term outcomes, and explicitly encourage entrepreneurial behaviors. In their compensation practice, these companies also favor job security over higher compensation (1993, p. 888). In their study with military and civilian employees, Wood et al. (2008, p. 126) provide initial evidence of a positive correlation between the appropriate use of rewards and corporate entrepreneurship.

Rewards and reinforcement motivate middle managers to engage in entrepreneurial behavior by enhancing their willingness to assume the risks associated with it (Hornsby et al., 2002, p. 259; Hornsby et al., 1993, p. 32). Risks such as forfeited payments or promotions are relevant in both the private sector and public sectors. However, traditionally, rewards (at least financial ones) were not available to public sector managers. This is no longer an obstacle to implementing rewards/reinforcement in the public sector. First, limited financial and non-financial rewards are now available to incentivize public sector managers in many organizations (see Markowski & Hall, 2007, p. 273 for associated difficulties). Second, reinforcement in the form of formal recognition (e.g., award ceremonies or badges; Kanter, 1985, p. 55) might be even more important than financial rewards (Sathe, 1989, p. 26). Therefore, a relationship that is similar to that in the private sector is hypothesized:

> *H1c: Public sector middle managers' perception of rewards/reinforcement is positively related to their departments' entrepreneurial orientation.*

4.2.4 Resource Availability

In this thesis, *resource availability* is defined as the perceived "availability of resources for innovative activities" (Hornsby et al., 2002, p. 253), including financial resources, time availability, and human resources. Covin and Slevin (1991) use a broad definition of *organizational resources and competences* as an antecedent of entrepreneurial behavior. They include "monetary resources, plant and equipment, personnel, functional-level capabilities (e.g., manufacturing flexibility), organizational-level capabilities (e.g., the ability to get a new product to the market in a timely fashion), and organizational systems (e.g., marketing research systems)" (1991, p. 15). In contrast to the concept of *slack resources*, which refers to *excess* resources (Cyert & March, 1992, p. 42), resource availability here refers to the *accessibility* of resources. In the analysis of organizational antecedents of EO, resources and *time availability* are discussed separately in a number of studies, and combined in others (see Hornsby et al., 2002, who empirically uncover time availability without conceptually introducing it). For hypothesis building, this study follows Kuratko et al. (2005, p. 280), who first present the two as combined.

In the private sector, there is anecdotal evidence of the importance of resource availability. Two prominent examples are 3M and Google. At 3M, the development of Post-It Notes is attributed in part to the 15% of time in which researchers are allowed to work on projects of their choice (Fry, 1987, p. 5). At Google, researchers can spend *innovation time off* on their own projects. Approximately 50% of Google's new products originate from that 20% of time (Mayer, 2006). Hisrich and Peters (1986, p. 319) identify company resources as an antecedent of successful new business venture units, in a study using mail questionnaires and in-depth personal interviews. In his meta-analysis of 46 publications, Damanpour (1991, p. 574) identifies slack resources as a weak predictor of the EO-related construct organizational innovation. He attributes the low correlation to a lack of differentiation in types of slack, and suggests using *absorbed slack* (excess costs) and *unabsorbed slack* (excess and uncommitted liquid resources). Quinn (1985, p. 76) observes the importance of team commitment and quality in venture capitalists' decision to finance entrepreneurs. Finally, Kanter (1985,

p. 56) notes that discretionary time and discretionary resources can be managed flexibly, used for experimentation, or reinvested in new approaches.[39]

In the public sector, empirical work yields mixed results. Rosner (1968) shows that *slack resources* can be a predictor of innovations in the public sector (hospitals). Specifically, he finds that hospitals' bed occupancy rate is weakly correlated with the *frequency* of drug trials, and strongly correlated with the *promptness* of drug trials (1968, p. 624). Slack resources, measured by "the difference between the payments required to maintain the organization and the revenue obtained from the environment" (1968, p. 615), determine whether or not an organization can afford innovation. They allow for purchasing innovations, absorbing failures, bearing the costs of instituting innovations and exploring new ideas prior to specific needs. On the other hand, Wood et al. (2008) find no significant correlation between time availability and perceived corporate entrepreneurship. Without providing detailed justification, they even hold that time *constraints* might spur corporate entrepreneurship (2008, p. 6).

In the public sector, as much as in the private sector, middle managers who perceive the availability of resources for innovative activities are more likely to experiment and take risks (Hornsby et al., 2002, p. 253). In the public sector, financial resources will be relevant in terms of budget flexibility. With such flexibility, middle managers can swiftly provide seed funding for initiatives. However, financial resources are not enough. Managers need time to oversee, develop, and enhance experiments. Sufficient human resources are also necessary. Initiatives can be launched much easier with sup-

[39]Interestingly, a number of studies cited as justifications for resource availability as an antecedent of EO provide no such evidence. In their conceptual paper, Slevin and Covin (1997) primarily demonstrate the need for rapid change in entrepreneurial firms. In the introductory paragraph, they also point to time as a resource rather than a constraint (1997, p. 53). However, this paper is now often cited by corporate entrepreneurship scholars when introducing time availability as an organizational antecedent of CE (Hornsby, Kuratko, Shepherd, & Bott, 2009; Hornsby, Kuratko, & Zahra, 2002). Incorrectly, a second article (Das & Teng, 1997) that also studies the relationship of time and entrepreneurship (in this case, entrepreneurial risk behavior) is often cited as a justification for time availability. However, this article does not discuss *time availability*, but rather *time horizons* (the risk horizon and the individual future orientation). Furthermore, Sykes and Block (1989) and Katz and Gartner (1988) are cited incorrectly repeatedly. The former argue that traditional ways of managing resources (i.e., managing for efficiency and return on investment) are inappropriate for new ventures. The latter define *emerging organization* as the creation of new companies, and use resources as one dimension of this definition. Specifically, they name human and financial capital, property, and credit (Katz & Gartner, 1988, p. 431); the study is thus largely unrelated to antecedents of EO.

port from motivated, innovative employees. Therefore, a relationship that is similar to that in the private sector is hypothesized:

> *H1d: Public sector middle managers' perception of resource availability is positively related to their departments' entrepreneurial orientation.*

4.2.5 Management Control System

Organizational control can be defined as "any mechanism that managers use to direct attention, motivate, and encourage organizational members to act in desired ways to meet an organization's objectives" (Long, Burton, & Cardinal, 2002, p. 198). However, there are many other definitions of control, and *management control system* (MCS), *control mechanism*, and *control system* are often used interchangeably (Kreutzer, 2008, p. 13). This study will use MCS consistent with Marginson (2002), who classifies management control systems in terms of belief and boundary systems, administrative controls, and performance measurement systems. Other classifications (e.g., Kreutzer, 2008, p. 24) use a distinction between formal controls (i.e., behavior control, output control, and input control) and informal controls (i.e., norms, values, culture, and internalization of goals) controls. Marginson (2002) develops a number of propositions of the influence of MCS on management behavior, but calls for further research on the complex interplay.

> *The results of this exploratory study also indicate the need for further work into the effects that MCS have on the development of new ideas and initiatives within the firm. (2002, p. 1027)*

Evidence from the literature confirms this need. Especially in the public sector, there is controversy about how MCS influence entrepreneurial orientation. Meynhardt and Metelmann (2009) use Marginson's definition and classification of MCS, and consider them "the major and most important antecedent for public value creating action of middle management" (2009, p. 296). Three aspects of MCS emerge as particularly relevant from their study, from the NPM/PVM literature (Kelly et al., 2002; Stoker, 2006), and from this study's qualitative pretest (Section 5.3.1). Specifically, I now address the use of key performance indicators (KPIs) by direct superiors in the form of KPI focus and KPI interpretation as well as goal ambiguity, which refers to goals set by top management.

Management Control System: KPI focus and KPI interpretation

In this thesis, *KPI focus* is defined as the extent to which one perceives that higher-level managers manage by means of KPIs. KPI focus thus describes how much focus higher-level managers place on the quantifiable aspect of management by objectives (MbO; Drucker, 1993, pp. 119–134). In the public sector, MbO at the organization level is also referred to as governance by targets (Bevan & Hood, 2006).

In this thesis, *KPI interpretation* is defined as the extent to which one perceives that higher-level managers interpret and use KPIs appropriately. This includes aspects such as fully understanding KPI implications, taking specific conditions into account and encouraging entrepreneurial action. It thus draws on what Sathe (1988, p. 405) refers to as *constructive control* or *good control*, which confines the risks of entrepreneurship. Such perceived appropriate control is essential in the promotion of entrepreneurship.

I will first present general observations of the effect of KPIs on EO or related constructs and then focus on public sector particularities. In Marginson's (2002, p. 1026) classification, KPIs constitute the element *performance measurement systems*, which are used by management to monitor organizational performance. He finds no effect of KPI use that discourages the development of initiatives and new ideas (Marginson, 2002, p. 1026). Other authors distinguish between *good/appropriate* control and *excessive* control. Antoncic and Hisrich (2001, p. 502) argue for a positive effect of formal controls monitoring entrepreneurial activities (e.g., initiatives) on corporate entrepreneurship. Sathe (1988, p. 407) stresses that management should encourage (rather than demand) entrepreneurial action without focusing on strict rules. Furthermore, Kuratko et al. (2005, p. 32) emphasize that appropriate evaluation and control are as important in corporate entrepreneurship as in traditional management. Formal controls are seen as an integral part of CE project selection (Kanter, 1989).

On the other hand, excessive control discourages entrepreneurial behavior. Control can be viewed as the counterpoint of autonomy and work discretion (Sykes, 1986, pp. 277–278). Sykes (1986, pp. 277–278) argues for using the *right level* of control, depending on the project's development stage (see above). An exploratory study (Zahra, 1991) confirms that formal controls may have a negative correlation with corporate entrepreneurship in the private sector. Yet, Barringer and Bluedorn (1999), who studied the effect of strategic control practices on CE, find no support for a negative

effect of financial control on CE. However, they find a positive effect of planning flexibility and strategic control on CE. In short, the type of control appears to determine the effect of control on entrepreneurial orientation and related constructs.

NPM reforms in the public sector have increased the focus on measurable results in many organizations (Pollitt & Bouckaert, 2004, p. 90). The use of KPIs has helped many public organizations to focus and to improve their customer orientation (Pollitt & Bouckaert, 2004, p. 92). With respect to EO, the diverse effects of controls are also recognized (Kearney et al., 2008, p. 303). Formal output controls, which have been intensified in many organizations during the introduction of NPM, are particularly relevant in recent discussions. The occasionally mechanistic implementation of output/outcome measuring tools, with very strong focus on quantifiable measures is drawing criticism (Meynhardt & Metelmann, 2009, p. 297). In their study of middle managers in the German Federal Labor Agency, Meynhardt and Metelmann find evidence of excessive control by KPIs.

> *[T]he predominant approach in the 'steering system' (the FLA's term for management control system) of planning and controlling based on hard key figures narrows the individual degrees of freedom for creative managerial action. (Meynhardt & Metelmann, 2009, p. 296)*
>
> *It is the actual stress of the FLA's top management team on performance indicators […] that restricts possible actions – and partly finds itself trapped in the performance paradox. (Meynhardt & Metelmann, 2009, p. 298)*

Bevan and Hood (2006) even compare governance by targets as practiced in the UK in the 2000s with the terror of Soviet regimes. They argue that two necessary assumptions for managing public sector organizations by measures are systematically flawed and, to some degree, unsolvable. First, a focus on measures leads to the problem of synecdoche (i.e., letting a part represent a whole), while problems of measurement are neglected. Second, problems of gaming by managers can result in organizations "hitting the target, but missing the point" (2006, p. 512). In other words, the measured targets are fulfilled or even over-fulfilled, but performance does not improve when managers neglect unmeasured or immeasurable areas. Bevan and Hood (2006, p. 533) find evidence for their skepticism in NHS data. They suggest introducing more uncertainty into the process as well as more face-to-face communication, among others (2006, p. 533). In my view, this could also increase the likelihood of adequate KPI interpretation.

Based on these discussions, KPI focus and KPI interpretation are identified as particularly relevant to public sector middle manager behavior. A strict focus on formal controls, in this case KPIs, will restrict the leeway for entrepreneurial behavior. It will force managers to focus on directly measurable indicators and thereby restrict their value-creating behavior. Yet, if KPIs are used well by higher-level managers, middle managers will be encouraged to engage in entrepreneurial behavior (rather than experience such restrictions). Therefore:

> *H1e: Public sector middle managers' perception of the extent of KPI focus is negatively related to their departments' entrepreneurial orientation.*
>
> *H1f: Public sector middle managers' perception of the extent of KPI interpretation is positively related to their departments' entrepreneurial orientation.*

Management Control System: Goal Ambiguity

In this thesis, *goal ambiguity* is defined as the extent to which organizational goals are perceived as ambiguous and numerous (adapted from Ramamurti, 1986, p. 150). Specifically, organizational goals will refer to personally relevant targets (as opposed to goals relevant to the whole organization). As the term suggests, goal ambiguity is the opposite of goal clarity, and is "characterized by a multiplicity of, conflict among, and vagueness of organizational goals" (Pandey & Garnett, 2006, p. 38; also see Rainey, 1993, p. 129).

The effect of goal ambiguity (or clarity) on personal and organizational outcomes has been studied extensively (see Chun & Rainey, 2003; Rainey, 1993 for literature reviews). Goal clarity has been identified as an important determinant of employees' feelings of obligation and loyalty to their organization (Yang & Pandey, 2009, p. 340), increased organizational commitment (Buchanan, II, 1974; Moon, 2000, p. 188), perceived red tape (Rainey, Pandey, & Bozeman, 1995, p. 569), and perceived risk-taking culture (Bozeman & Kingsley, 1998, p. 115). Goal clarity has become a key element in the fostering of public sector organization effectiveness (Rainey, 2009, p. 153). However, organizational goal ambiguity can also lead to managerial role ambiguity (Pandey & Wright, 2006), which invokes the *role theory* research stream.

The literature on goal ambiguity has emerged from role theory research (Rainey, 1983, p. 218; Rizzo, House, & Lirtzman, 1970). Tubre and Collins's meta-analysis (2000) on

the relationships between role ambiguity, job performance, and role conflict illustrates the interest in this research. The analysis contains 74/54 correlations and sample sizes of 11,698/9,910. For the impact of role ambiguity on job performance, the authors find a negative relationship, which varies depending on origin of rating and type of job. For role conflict, they do not find a significant relationship.

Public sector middle managers appear particularly prone to role conflicts. Middle managers generally experience particularly high levels of role conflicts (Floyd & Lane, 2000). In a study of middle managers in public health organizations, Currie and Procter (2005) observe middle managers' role conflicts and role ambiguity resulting from inconsistent expectations from executive managers, government policy-makers and doctors. They identify an effect of inappropriate role enactment, which "discourages middle managers from undertaking a role transition towards a more strategic one" (Currie & Procter, 2005, p. 1349). Furthermore, in public sector organizations, goals tend to be particularly vague, intangible, numerous, and conflicting (Rainey, 2009, p. 149).

With regard to EO, the role of goal ambiguity is unclear. Several scholars regard goal ambiguity as an antecedent of, and others as an obstacle to, EO. Ramamurti (1986, p. 151) identifies goal ambiguity as one of six "well-known" barriers to entrepreneurship in the public sector, because conflicting goals could paralyze managers. However, he also points out that entrepreneurial managers can deal with conflicts and use undefined areas to broaden organizational tasks "beyond what was originally intended" (1986, p. 151). These undefined areas can be seen as discretion. Fernando (2005, p. 15) takes up specific aspects of Ramamurti's argument and holds that entrepreneurial actions can be designed more effectively if goals are clear. Monsen and Boss (2009) study a similar relationship, but argue for reverse causality. They hypothesize that all dimensions of department-level EO (i.e., innovativeness, proactiveness, and risk-taking) are positively related to role ambiguity (2009, p. 79). However, they do not find empirical support for all EO dimensions. For middle managers, innovativeness is negatively correlated, proactiveness is not significantly correlated, and risk-taking is positively correlated with role ambiguity (2009, p. 93). Acknowledging opposing views, I argue along the lines of Floyd and Lane (2000) and Currie and Procter (2005). Unclear organizational goals will increase middle managers' role conflict, preventing them from taking a more strategic (i.e., a more entrepreneurial) role. Therefore:

H1g: Public sector middle managers' perception of goal ambiguity is negatively related to their departments' entrepreneurial orientation.

4.3 Environmental Antecedents of Entrepreneurial Orientation

In private sector research, a number of environmental (i.e., external) antecedents of EO have been studied. Most of them refer to private sector-specific conditions such as competition or customer markets: competitive rivalry (Antoncic, 2007), external perceived competition (Kim, 2007), and environmental munificence (i.e., dynamism, technological opportunities, industry growth, and the demand for new products; Antoncic, 2007, pp. 311–312; Zahra, 1993b). This study therefore focuses on non-market conditions.

Researchers in the public sector stress the importance of the external environment in studying organizations and management (Rainey, 2009, p. 77). In the NPM/PVM context, Meynhardt and Metelmann (2009) identify four environmental antecedents that affect public sector middle managers: superior bureaucracy/ministry, external reputation, multitude of expectations, and legal obligations. External reputation will be excluded from this study due to unclear causality (Meynhardt & Metelmann, 2009, pp. 304–305), and superior bureaucracy will be excluded as it does not directly affect middle managers, but rather through strategy implementation by top management (Meynhardt & Metelmann, 2009, p. 304). The next sections will explain why multitude of expectations and legal mandate are expected to affect EO.

4.3.1 Multitude of Expectations

In this thesis, *multitude of expectations* is defined as the perceived variety and diversity of external local actors' expectations. Local actors refer to vocal groups in society that affect middle managers, such as employer associations, trade unions, local authorities, politicians, and welfare institutions. In contrast to the above-mentioned concept of goal ambiguity, multitude of expectations refers to external (rather than internal) aspects. Furthermore, multitude of expectations focuses on *diversity* and *level* of expectations (rather than *contradiction* and *ambiguity* of goals).

Multitude of expectations has not been identified as an antecedent in private sector corporate entrepreneurship research. However, the related construct of environmental scanning, which refers to gathering feedback from customers and employees (Anton-

cic, 2007, pp. 311–312; Antoncic & Hisrich, 2001; Khandwalla, 1977), is identified as a predictor of CE in cross-cultural contexts.

Local actors, their expectations, and their views of public institutions play a prominent role in the shift from NPM to PVM. In PVM, accountability is based on the involvement of citizens who exchange ideas and get into dialogue with networked governance structures (Section 3.2.3; Gains & Stoker, 2009; Stoker, 2006, pp. 53–56). "One must involve many stakeholders to make good decisions and to get a grip on delivery and implementation" (Stoker, 2006, p. 56). When comparing managerial goals in NPM and PVM, O'Flynn (2007) identifies a shift from achieving "agreed performance targets [to considering] multiple goals including responding to citizen/user preferences, renewing mandate and trust through quality services, steering network" (2007, p. 361). In addition, Kelly et al. (2002, pp. 25–26) highlight the importance of adequate citizen involvement in public sector organizations so as to ensure public value creation (Section 3.2.3).

The effects of *multitude of expectations* in public sector middle management are studied empirically by Currie and Procter (2005) and Meynhardt and Metelmann (2009). Both identify expectations as factors that influence middle managers' behavior. In the German FLA context, two governance structures (federal government and local/regional actors) influence middle management (Meynhardt & Metelmann, 2009, p. 302). Accordingly, *multitude of expectations* captures the multi-lateral accountability of public sector organizations and is thereby distinct from the stakeholder perspective (Meynhardt & Metelmann, 2009, p. 302). Furthermore, Teske and Schneider (1994) find evidence for the impact of local groups on EO in the public sector. They analyze the strength of local interest groups as predictors for entrepreneurial city managers and find that weak taxpayer groups and weak unions are correlated with the emergence of entrepreneurial city managers. In addition, entrepreneurial politicians are more likely when neighborhood groups are particularly strong. Teske and Schneider (1994, p. 331) conclude that city managers act more entrepreneurially when "local citizens demand or local conditions require change and when local politicians do not provide innovative policies to meet these demands."

The more diverse and varied the local actors' expectations are, the more creative managers must become in order to fulfill these expectations. However, in contrast to internal organizational goals (H1g), managers are not obliged to fulfill all the external expectations of all the stakeholders. Instead, the manager can deprioritize some unsuita-

ble expectations and use others as an inspiration to identify opportunities not evident from within the organization. Therefore:

> *H2a: Public sector middle managers' perception of multitude of expectations is positively related to their departments' entrepreneurial orientation.*

4.3.2 Legal Mandate

In this thesis, *legal mandate* is defined as middle managers' perception of the extent to which the legal framework demands and allows for entrepreneurial behavior. It reflects the EO aspect of what Meynhardt and Metelmann (2009) refer to as *legal obligations*.

The legal conditions (including laws and regulations) are an important part of the environmental conditions encountered by public sector organizations (Rainey, 2009, pp. 78–79). Legal obligations are highly relevant to middle managers in their daily work (Meynhardt & Metelmann, 2009, p. 301). With respect to EO, Moon (1999, p. 36) notes that extensive legal constrains prevent organizations from taking the best possible routes to achieve an outcome. In his empirical study, he finds support for the hypothesis that lower levels of legal constraints are positively correlated with managerial entrepreneurship (1999, p. 40). Due to the importance of legal conditions, the perception of the legal mandate will have an important influence on middle managers. Only if they think that the law provides sufficient discretion for entrepreneurial behavior will they act accordingly. Therefore:

> *H2b: Public sector middle managers' perception of legal mandate is positively related to their departments' entrepreneurial orientation.*

4.4 Managerial Antecedents of Entrepreneurial Orientation

The level of entrepreneurship within an organization has been proposed to "critically depend on the attitude of individuals within the firm, below the ranks of top management" (Stevenson & Jarillo, 1990, p. 24). A large number of attitudes and personal characteristics have been studied (see Bird, 1988; Stevenson & Jarillo, 1990, p. 24). This research focuses on two antecedents that are particularly relevant to public sector middle manager entrepreneurship, identified in prior research and during the qualitative pretest phase: job insecurity (Currie & Procter, 2005; Heaney, Israel, & House, 1994, p. 1431; Meynhardt & Metelmann, 2009) and localism (Morse & Gordon, 1974;

Pierce & Delbecq, 1977; Roof, 1972). Additional manager characteristics are included as control variables (Section 5.3.8).

4.4.1 Job Insecurity

In this thesis, *job insecurity* is defined as a middle manager's "perception of a potential threat to continuity in his or her current job" (based on Heaney et al., 1994, p. 1431). Job insecurity is thus distinct from the actual loss of a position or job. Job insecurity has also been defined as "a discrepancy between the level of security a person experiences and the level she or he might prefer" (Hartley, 1991, p. 7). Hellgren et al.'s (1999) differentiation between quantitative and qualitative job insecurity helps to further specify the kind of job insecurity relevant to public sector middle managers. Quantitative job insecurity refers to concerns about losing the job itself (Sverke, Hellgren, & Näswall, 2006, p. 10). It is therefore also referred to as employment security (Laine, van der Heijden, Wickström, Hasselhorn, & Tackenberg, 2009, p. 422). Qualitative job insecurity refers to perceptions of potential loss of important job features, such as poor salary development, worsening of working conditions, and lack of career opportunities (Laine et al., 2009, p. 422; Sverke et al., 2006, p. 10). In the public sector, managers are not likely to lose their employment, but rather their position, which is why Meynhardt and Metelmann (2009) call the opposite of this construct *role security*. Using Hellgren et al.'s (1999) terminology, qualitative job insecurity is thus relevant in the public sector.

There is extensive research on job insecurity; however, its effects on EO have not yet been studied in detail empirically. Sverke et al. (2002) and Sverke et al. (2006) provide meta-analyses and literature reviews on job insecurity antecedents, moderators, and general effects. These include situational cues, individual characteristics, organizational context, social context as well as attitudinal, behavioral, and health-related reactions (Sverke et al., 2006, p. 21). In strategy research, job insecurity has been partly overlooked, as noted by Currie and Procter (2005, p. 1344). According to them, job insecurity prevents middle managers from transitioning to a more strategic role. Middle managers are "'almost paralyzed' […] about making suggestions upwards to executive management about necessary strategic change" due to fear of losing their jobs (2005, p. 1338). Meynhardt and Metelmann (2009, p. 300) add that "a safety net may stimulate entrepreneurial spirit, but is also a moral hazard, e.g., fostering complacency."

I argue that job security/role security allows managers to take risks and launch long-term initiatives without the fear of losing their jobs/positions. The continuity offered by a job will increase the likelihood of managers engaging in entrepreneurial behavior. In contrast, job insecurity will discourage them from doing so. Therefore:

> *H3a: Public sector middle managers' degree of job insecurity is negatively related to their departments' entrepreneurial orientation.*

4.4.2 Localism

In this thesis, *localism* is defined as middle managers' willingness and desire to fulfill the local community's needs. In contrast to Roof (1972), who conceptualizes localism as part of the dichotomy localism versus cosmopolitanism (below), I consider localism to be unipolar.

> *The local-cosmopolitan distinction is used to denote an individual's scale of social experience and participation. Viewed as an orientational proclivity of an individual, involving cognitive as well as evaluative components, the local-cosmopolitan dimension may be conceptualized as a measure of communal reference ranging from one's immediate social environment to the broader national society. (Roof, 1972, pp. 3–4)*

It seems that localism has been neglected in recent research on CE. Related constructs have been used with inconsistent names and measures in the past decades. Early studies have found a positive correlation between a *cosmopolitan orientation* and *innovation* (Pierce & Delbecq, 1977, p. 30). These studies (e.g., Kaluzny, Veney, & Gentry, 1974, p. 67) use involvement in professional organizations to measure the degree of cosmopolitanism. Damanpour (1991, pp. 589–590) uses *external communication* to represent "an organization's ability to be in contact with and scan its task environment […] typically measured by the degree of organization members' involvement and participation in extraorganizational professional activities involving various elements of the task environment." Furthermore, Tushman (1977, pp. 1–5) holds that innovative organizations are in regular contact with their environment so as to effectively exchange information. In an early work on corporate entrepreneurship based on eight case studies, Sathe (1988) emphasized the need to develop managers with sound knowledge of the relevant areas. Managers should therefore remain in positions long enough to get to know the industry and their department as well as to develop relevant external contacts. "Playing musical chairs with managers does not help" (1988, p. 407). Sathe suggests that jobs should be rotated selectively after a few years (he

suggests a minimum of five years). Managers should then move to related areas to gain from the benefit of contrast. Sathe (1988, p. 406) also stresses the need for personal external contacts and networks.

With regard to the public sector, Mack et al. (2008, p. 245) study the effect of situational attributes on whether someone is involved in public innovations. They find that entrepreneurship is positively correlated with the number of local social/service organization memberships as well as positively correlated with a preference for local community, but negatively correlated with memberships in local business organizations. In an exploratory study, Corwin (1975, p. 10) find that teachers' professional organization memberships are positively correlated with school innovations. Schneider et al. (1995) conclude that public entrepreneurs are motivated by their desire to respond to local community needs and local politics. They also characterize public entrepreneurs as embedded in social networks. This embeddedness helps them discover opportunities and find support to implement ideas (Schneider et al., 1995, p. 216). Similarly, Mintrom (2000, p. 282) identifies the importance of networking in order for policy entrepreneurs to succeed. He points out that entrepreneurs can earn stakeholder trust and learn their preferences.

Social capital (Coleman, 1988), which Floyd and Wooldridge (1997) identify as an important antecedent of entrepreneurial behavior by members of an organization, thus forms an important part of localism and the logic behind its proposed influence on EO. Middle managers can exchange information with local stakeholders and fulfill their needs. However, middle managers will be more likely to do so if they have the desire to create value for local communities. These interrelated characteristics are combined in the following hypothesis.

> *H3b: Public sector middle managers' degree of localism is positively related to their departments' entrepreneurial orientation.*

4.5 Entrepreneurial Orientation and Public Value Orientation

There are very few empirical studies on the outcome of entrepreneurial orientation in the public sector. Due to the lack of widely accepted outcome measures, researchers have evaluated alternative outcomes such as job satisfaction, commitment, memory orientation (Wood et al., 2008), or perceived relative performance to similar organizations (Kim, 2007). In doing so, they fall short of evaluating Moore's (1995) concept of public value.

In this thesis, *public value orientation* (PVO) will be defined as an organization's or department's posture toward public value creation, as conceptualized by Meynhardt (2009, p. 212): "Public value is value for the public […]" (Section 3.2.3). Public value orientation does not seek to capture actual public value creation. Instead, it reflects an organization's or department's objective to create value in a certain way.

It is the implicit objective of public sector organizations to create public value. Therefore, all public sector organizations and their departments *should* have a high public value orientation. An analogy to the private sector, where all organizations and their departments should create shareholder value, puts this statement in perspective. Just like in the private sector, where not all businesses always create shareholder value, not all public sector organizations and their departments always create the 'highest possible' public value. The key question as to how public value orientation can be achieved remains controversial.

Entrepreneurial behavior by public sector managers as a means to create value for the public is contested (Section 3.1.4). Moore's seminal work (1995) largely relies on managers seeking public value creation opportunities and acting entrepreneurially on them. Yet, Rhodes and Wanna (2007) are opposed to allowing public managers act entrepreneurially and to decide on where and how to create value. They refer to the risk of neglecting the core business or manager responsibilities. In turn, their view is contested (Alford, 2008), and even Moore attributes the final call to politicians, who "remain the final arbiter of Public Value just as private consumption decisions remain the final arbiter of private value" (Moore, 1995, p. 38). An extensive literature review yielded no empirical work on how the main subjects in this debate – the public managers – view the relationship between EO and public value orientation.

I argue that middle managers can increase public value orientation by identifying local needs and acting entrepreneurially upon opportunities. Middle managers' entrepreneurial behavior results in more innovative, proactive, and risk-taking departments, which in turn will strive to create higher public value. Therefore:

> *H4: Department-level entrepreneurial orientation is positively related to department-level public value orientation.*

4.6 Summary of Hypotheses and Theoretical Model

In this chapter, I have identified constructs that are expected to influence middle managers' entrepreneurial behavior and thereby department-level EO in the public sector. While the first four organizational antecedents (management support, work discretion, rewards/reinforcement, and resource availability) are drawn from an established private sector model, all other antecedents are to some extent public sector-specific. Three organizational antecedents (KPI focus, KPI interpretation, and goal ambiguity) cover the influence of management control systems, which in many public sector organizations have been modified during NPM reforms. Two environmental antecedents identified by Meynhardt and Metelmann (2009) are included in the set of hypotheses: multitude of expectations and legal mandate. Also, drawing on Meynhardt and Metelmann (2009), job insecurity is considered a managerial antecedent. Managers' localism is added as a final public sector-specific antecedent, based on its importance in the sector. Finally, a positive relationship between EO and PVO is hypothesized. The resulting theoretical model, including the hypotheses, is presented in Figure 4.2. Alternative relationships between the constructs presented in this study might be plausible, but go beyond the scope of this study (see Section 7.4 for related limitations).

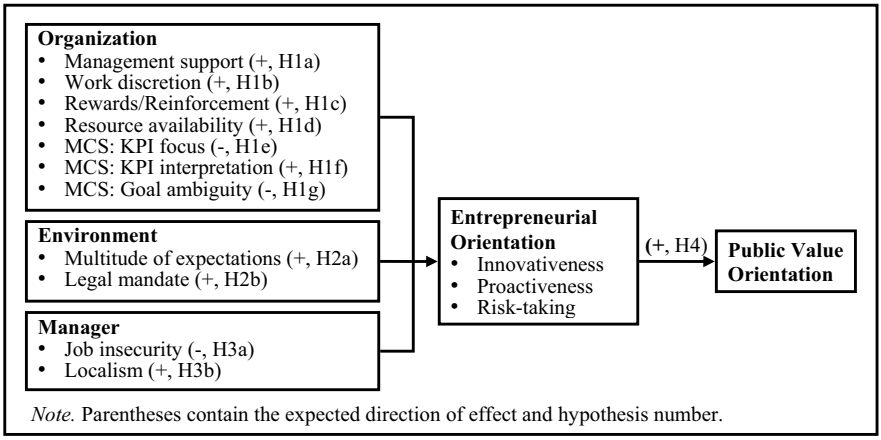

Figure 4.2: Theoretical Model

5 Research Methods

This chapter describes the research methods used to test the theoretical model developed in the previous chapter. First, the choice of using a quantitative approach is substantiated. Then, I justify the sample selection and show how a questionnaire with relevant measures was developed. Finally, the analytical procedures are outlined.

5.1 Choice of Research Methods

To ensure a logical fit between the component parts (Punch, 2005, p. 247) of this research project, Edmondson and McManus's concept (2007) is used for method selection. They show "[…] that fit is achieved by logical pairings between methods and the state of theory development" (2007, p. 1177). The further a theory is developed, the more suitable quantitative methods are; conversely, the less an area is understood, the better qualitative approaches are. Combining both methods has the greatest potential for high-relevance output when theory development is at an intermediate state (2007, p. 1160). Applying this framework requires an assessment of the state of research.

There has been little research on the specific research questions outlined in Section 3.4. However, research in related fields allows for classification into *states of prior theory and research*: these can be *nascent*, *intermediate*, or *mature* (Edmondson & McManus, 2007, p. 1158). The relevant research fields of corporate entrepreneurship in the private sector, public entrepreneurship, and public value management differ largely in their states. The state of corporate entrepreneurship research in the private sector – especially with regard to organizational antecedents – can be classified as *mature*: researchers develop models and use established instruments to test them (see literature reviews Rauch et al., 2009; Zahra et al., 1999; Chapter 2). The state of public entrepreneurship research can be classified as *nascent* to *intermediate*: while theories and initial models do exist, few concepts have been operationalized and even fewer theories have been tested (Chapter 3). The state of public value management can be classified as *nascent*: a number of propositions and hypotheses have been developed, but even fewer concepts have been operationalized and tested (Chapter 3). As a result, the state of research for this study's research questions can be considered *intermediate*. Following Edmondson and McManus (2007), an approach that combines qualitative and quantitative methods would thus be most suitable.

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This study is part of a larger research project on public value management. In the first phase, Meynhardt and Metelmann (2009, p. 280) worked qualitatively, applying a case study approach. Their study resulted in a model that identified relevant antecedents of middle managers' public value creating behavior. This study builds on that model (and adds untested hypotheses derived from other research). Therefore, further qualitative research seems unnecessary. Instead, the theoretical model developed in Chapter 4 is tested with a quantitative approach.

5.2 Sampling and Data Collection

In this section, I will explain the rationale to collect data from a single organization and why the German Federal Labor Agency (FLA) was selected. I then provide background information on the FLA, including its historical development, current situation, and its organizational structure. Furthermore, I describe the data collection procedure in detail.

5.2.1 Context: The German Federal Labor Agency as a Single Case

The Choice of a Single Case

The in-depth study of a single organization has repeatedly been called for by CE scholars, and the FLA appears especially suited for testing this study's theoretical model. In their study of the effects of control systems on corporate entrepreneurship, Morris et al. (2006, p. 488) note that, "[r]icher insights might be found by not only examining the organization as the unit of analysis, but particular units or departments, especially given that various aspects of the control system may not be universally applied in a given firm." Furthermore, to my knowledge, few authors have followed Zahra et al.:

> *To date, and perhaps predictably, the literature has focused on overall firm level activities. Greater attention should be given to entrepreneurship at the divisional (strategic business unit) level of the analysis. A great many entrepreneurial activities occur at the level of organizational divisions […]. (1999, p. 55)*

The FLA provides an appropriate setting for studying organizational units with varying degrees of entrepreneurial orientation and public value orientation. The following paragraphs illustrate the FLA's historical development (based on a self-description; Bundesagentur für Arbeit, 2010b), current situation, and organizational structure.

The FLA's Historical Development and Current Situation

The FLA was established in 1927 as the *Reichsanstalt für Arbeitsvermittlung und Arbeitslosenversicherung* (English: Reich Institute for Labor Placement and Unemployment Insurance). Its main task was to support over six million unemployed people during the Great Depression. From 1933 to 1945, the organization lost its independence under Nazi control. In 1952, the institution was renamed *Bundesanstalt für Arbeitsvermittlung und Arbeitslosenversicherung* (English: Federal Institute for Labor Placement and Unemployment Insurance). At the same time, self-administration was reestablished, incorporating representatives from social partners, local public corporations, labor unions, and employer associations. In 1969, another renaming – to *Bundesanstalt für Arbeit* (English: Federal Labor Institute) – coincided with a change in strategy. Fostering professional formation was added to the existing tasks of career guidance, placement service, and unemployment insurance. The new focus was to provide for a quantitative and qualitative equilibrium of supply and demand in the labor market.

At the end of the 20th century, a stronger responsibility of both the unemployed and the employers was assumed, and the labor-market financial aid was decentralized. In 2003, the first recommendations of the government-initiated *Hartz Commission*, named after its head Peter Hartz, were implemented. Its goals were to make the German labor market more effective and the labor agency more efficient. The institution was subsequently renamed the *Bundesagentur für Arbeit* (English: Federal Labor Agency). In 2005, the unemployment and social security benefits were pooled and most municipalities began to cooperate with the FLA in caring for the needy.

In 2009, the FLA employed about 113,000 people (FLA internal data), making it one of Europe's largest public service providers. The FLA currently provides two primary services: it coordinates *transfer payments* such as unemployment benefits and family allowances, and it offers *labor market services* like career consultation, professional development, placement service, and employer consulting (Bundesagentur für Arbeit, 2010a).

The Appropriateness of FLA for Studying Entrepreneurial Orientation

Reforms based on new public management principles (Hood, 1991; Schedler & Proeller, 2006; Section 3.2.2) have been introduced at the FLA in recent years. The efforts included the introduction of new management principles based on impact und efficiency, target agreements among organizational levels, the introduction of a de-

tailed controlling system, and the standardization of processes and organizational structures (Bender et al., 2006, pp. 5–7). This introduction of private sector tools was accompanied by calls for a more entrepreneurial orientation.

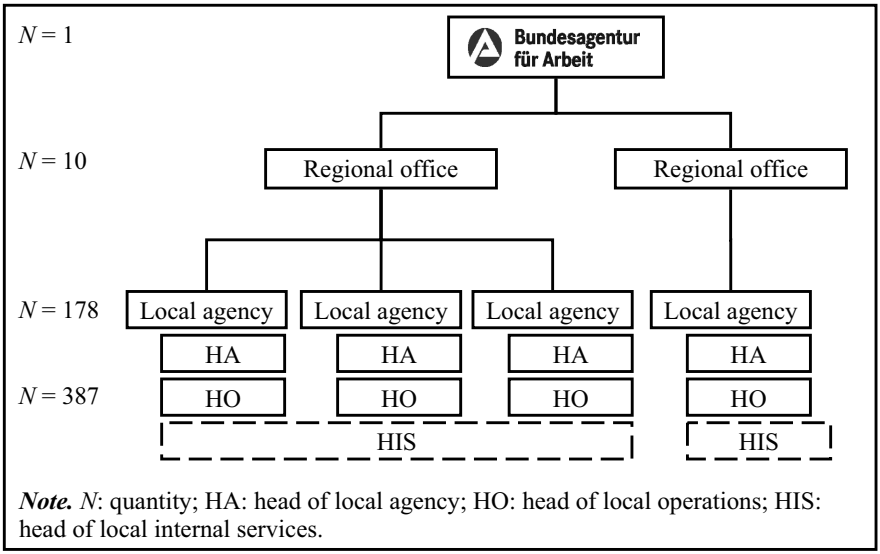
> *On a managerial level the reform was intended to increase leadership capacity by strengthening an entrepreneurial culture with a greater degree of freedom in deciding on how to achieve goals, and creating a stronger performance culture by means of a change in appraisal systems and compensation. (Meynhardt & Metelmann, 2009, p. 280)*

However, entrepreneurial orientation is not equally relevant in all parts of the public sector (Section 3.1.3). In the FLA, EO is considered important within the *labor market services* area. The fragmented labor market, with its locally distinct characteristics and a rapidly changing environment, requires entrepreneurial actions. On the other hand, the FLA's *transfer payment* area requires adherence to predefined procedures to ensure equal treatment of recipients. Entrepreneurship is less appropriate in this area (see Schulze, 2010, p. 45). The FLA's transfer payment area is therefore explicitly excluded from this study.

The FLA's Organizational Structure

The FLA's organizational structure includes headquarters in Nuremberg as well as 10 regional offices across Germany. These mid-level offices are responsible for the regional labor markets. They closely coordinate their tasks with the state governments. On a lower level, local agencies (German: *Arbeitsagenturen*) operationally perform the tasks to fulfill the FLA's legal mandate. Between 7 and 30 local agencies report to each of the 10 regional offices (Bundesagentur für Arbeit, 2010c). While strategy is determined centrally, strong regional differences in the labor market require adaptations. These regional differences result in regional variation in the interpretation and application of central directives: this is the case, for example, for the centrally developed cost accounting system, which is not used in all regions (as of November 2008).

The local agencies are headed by three types of middle managers. The heads of the local agency (HA; German: *Vorstand der Geschäftsführung*) are responsible for overall coordination and outside representation (Bender et al., 2006, p. 61; Meynhardt & Metelmann, 2009, p. 281). In addition, the heads of local agency negotiate target agreements with the regional office and ensure their fulfillment at the local level (Bundesagentur für Arbeit, 2008). The heads of local operations (HO; German: *Ge-*



Note. *N*: quantity; HA: head of local agency; HO: head of local operations; HIS: head of local internal services.

Figure 5.1: The Organizational Structure of Germany's FLA

schäftsführer Operativ) manage all operations regarding clients (e.g., reception, placement, and employer assistance) and the introduction of new products (Bender et al., 2006, pp. 61–62). They are accountable for fulfilling the legal mandate and achieving business objectives in the operations (Bundesagentur für Arbeit, 2006b, p. 2). Internal services such as finance, human resources management, and infrastructure for an average of four districts are partly centralized in 45 internal service centers (Bundesagentur für Arbeit, 2006a). These centers are managed by the heads of local internal services (HIS; German: *Geschäftsführer Interner Service*), who also bear overall responsibility for the agencies' budget, planning, controlling, and analyses such as benchmarking. Each HIS is organizationally affiliated with one local agency.

The local agencies face very different local labor market conditions. Therefore, the FLA uses a classification system to ensure comparability among local agencies, for example, for internal performance benchmarks. Every agency is a member in one of five *strategy groups*. Districts (the geographical region corresponding to an agency) in one strategy group exhibit similar labor market conditions and are therefore comparable. Strategy group I includes urban districts characterized by good labor market conditions. Urban districts characterized by high unemployment are clustered in strategy group II. Rural districts are part of strategy group III or IV, depending on whether they have high or low unemployment rates. Finally, strategy group V mostly covers dis-

tricts in the eastern part of Germany with poor labor market conditions (Dauth, Hirschenauer, & Rüb, 2008).[40]

In short, the FLA set-up seems well suited for this research. It is a public sector organization demanding EO from its middle management. All of its 178 departments (agencies)[41] fulfill the same legal mandate, but vary in important aspects, including EO. Thus, a comparison of the departments – as anticipated by Morris et al. (2006, p. 488) – is possible.

5.2.2 Data Collection Procedure

This study uses primarily managerial perception data to test the hypotheses.[42] In the choice of data sources, I follow established guidelines. First, the persons most knowledgeable about the constructs of interest are selected (Huber & Power, 1985, pp. 174–175). This choice is based on the analysis of the organizational structure, the results from a prior study of this organization (Meynhardt & Metelmann, 2009), and its authors' knowledge gained from consulting experience with the FLA. Second, data from up to four individuals per unit of analysis (the department) are collected to offset unique bias, lack of knowledge, and to gain additional perspectives (Huber & Power, 1985, p. 175).

Specifically, this study uses perceptional data from the department managers, perceptional data from the regional office supervisors, and demographic data from FLA databases. All department managers (i.e., HA, HO, and HIS) were asked to provide information on the independent variables (i.e., the antecedents) and dependent variables (i.e., EO and PVO). Due to their daily work at the top of the departments, these managers are the most knowledgeable individuals with respect to this study's constructs. The regional office supervisors provided information on the dependent variable EO to check for common method bias (Section 6.1.3). They were chosen for their special position: they oversee the departments' work and have regular contact with the department managers. At the same time, they are usually familiar with a large number of departments without actually working in one of them. The regional office supervisors

[40] At a lower level, 13 *comparison groups* further classify the districts. The comparison groups are distinguished by labor market characteristics, industry type, urbanity, population density, and seasonal dynamics. This study focuses on the level of strategy groups.
[41] Hereafter, I will refer to the local agencies (German: *Arbeitsagenturen*) as departments.
[42] See Lyon et al. (2000) for a detailed discussion of measurement issues in CE research.

therefore have a potentially more impartial perspective. Their questionnaires contained the same wording as the department managers' questionnaire so as to avoid inconsistent interpretations. Furthermore, information on gender, function, department (anonymous), department size, strategy group, and region was drawn from FLA databases.

The main data collection instrument is an online questionnaire (Appendix 2). This medium was chosen for three reasons. First, the managers regularly participate in online surveys administered by the FLA's survey department and are thus familiar with the method. Second, the FLA's survey department, which administered the survey, was able to ensure anonymity and provide important demographic data at the same time. Third, the online survey offered a number of benefits over traditional paper or telephone-based surveys such as cost efficiency and flexibility (Hollaus, 2007).

The data were collected during three weeks in June and July 2009. The following tactics were used to increase response rates to the online survey as recommended by Simsek and Veiga (2000, pp. 107–108). In the week prior to the survey, a personalized announcement letter was sent to all potential participants. The announcement letter, which was signed by a board member, encouraged participation. It contained background information on the overall research project, the survey's contents, its goals, its timing and modalities, as well as a note on the privacy policy. The invitation to the survey itself included another short description of the survey's content and goals, another note on the privacy policy and the researchers' contact information for questions. The invitation was signed by an FLA manager for authenticity. One week before the end of the survey, a reminder with similar contents was sent to all potential participants.

All middle managers at the department level (i.e., all HA, HO, and HIS), a total of 347 individuals, were invited to participate in the survey.[43] As a secondary source for the dependent variables, I sent e-mails to all 10 regional office supervisors to solicit their view on the departments in their region. Instead of one survey per department, they received a template based on an Excel spreadsheet. For this group, personal follow-up calls were conducted.

[43] The same survey – with wording adapted to the regional level – was also sent to 40 members of regional offices. This study focuses on the department level and uses the regional-level data in the analysis of missing values (Section 6.1.4) only.

5.3 Measurement Instruments

5.3.1 Questionnaire Development

In social sciences, the use of existing, tested scales for construct measurement is recommended, mainly to ensure comparability of results and to avoid time and resource-intensive item development (Kirchhoff, Kuhnt, Lipp, & Schlawin, 2003, p. 19). Wherever possible, I followed this advice and relied on existing scales. However, in many cases, no such scales suited the German public sector setting. Therefore, I adjusted existing scales and developed new ones following recommended steps for scale development (Carmines & Zeller, 1979; DeVellis, 2003; Hinkin, 1995; Kirchhoff et al., 2003; Porst, 2008; Spector, 1992). Specifically, Spector (1992) recommends five steps: define construct, design scale, pilot test, administration as well as item analysis, and validate and norm.

Based on construct definitions (Chapter 4) and the existing research, I generated and translated items to German supported by two researchers familiar with the FLA settings and terminology.[44] The process followed rules suggested by Porst (2008), such as to avoid ambiguous terms and double negations. The initial item pool contained 152 items.

The next step consisted of an extensive qualitative pretesting phase (Porst, 2008) with 13 FLA experts and 7 academics in workshops, via mail correspondence, and in personal and telephone interviews (Table 5.1). The interviews (averaging ~80 minutes) were mostly semi-structured and included a short introduction, verbal descriptions of the constructs, and an intensive testing of the items' comprehensibility. In the first interviews, I also asked interview partners for additional items describing the specific constructs. Furthermore, another scholar involved in the research project collected feedback from FLA top management and ensured questionnaire quality. This phase resulted in a questionnaire containing 101 items (including variables on demographics and data not reported in this study[45]).

[44] My thanks to Timo Meynhardt and Jörg Metelmann.

[45] Additional data not reported in this study were collected on value dimensions, management and control system, reputation, role interpretation, and public value initiatives.

Table 5.1: Interview Partners Qualitative Pretest

Date	Field	Function/Level	Mode	Duration (in hours)
2 / 19 / 2009	Scholar	Research fellow	Personal	2.7
3 / 6 / 2009	FLA	Head of local agency	Workshop	1.5
3 / 6 / 2009	FLA	Consultant	Workshop	1.5
3 / 6 / 2009	FLA	Consultant	Workshop	1.5
3 / 18 / 2009	Scholar	Ph.D. student	Personal	2.0
3 / 24 / 2009, 4 / 22 / 2009	FLA	Former head of local operations	Personal, telephone	1.7, 1.3
3 / 24 / 2009	FLA	Manager service center	Personal	1.5
3 / 24 / 2009	FLA	Manager regional office	Personal	2.2
3 / 25 / 2009	FLA	Manager employer division	Personal	2.2
3 / 26 / 2009	FLA	Consultant	E-mail	-
3 / 31 / 2009	Scholar	Research fellow	Personal	0.7
4 / 6 / 2009	FLA	Consultant	Personal	3.0
4 / 7 / 2009	FLA	Head of local agency	Telephone	0.7
4 / 8 / 2009	Scholar	Ph.D. student	Personal	2.0
4 / 13 / 2009	Scholar	Master student	Personal	2.7
4 / 20 / 2009	Scholar	Ph.D. student	Telephone	0.6
4 / 20 / 2009	FLA	Head of local operations	Telephone	1.2
4 / 22 / 2009	FLA	Head of local agency	Telephone	0.5
4 / 22 / 2009	FLA	Head of local operations	Telephone	0.6
4 / 26 / 2009	Scholar	Research fellow	E-mail	-

Next, the preliminary questionnaire was pretested quantitatively (Hair, Money, Samouel, & Page, 2007, p. 258) on a random sample of 40 department managers. The pretest is thus applied to the relevant group and the sample size of 29 (78% response rate) is large enough to make meaningful inferences (Hair et al., 2007, pp. 278–279). The resulting data were analyzed descriptively, with bivariate correlations, and tested for normal distribution, item difficulty, and construct reliability (Bühner, 2009). In addition, I conducted exploratory factor analysis on the pretest data. Based on these results, adjustments were made to the items (e.g., by making items more difficult) and additional items were created for constructs with few reliable items. These adjustments were discussed in one workshop (lasting ~1.5 hours) with two FLA executives, and in two telephone calls with one executive and one consultant (lasting ~1 hour each). The final questionnaire contained 121 items (including variables on demographics and data not reported in this study).

5.3.2 Measurement Scale Dimension

Debate on the scale dimension evolves around using either an even or an uneven number of response categories (Bortz & Döring, 2006, p. 180; Greving, 2007, p. 71; Porst, 2008, pp. 81–82). An odd number of response categories allows participants to be indifferent, while an even number does not (Hair et al., 2007, p. 238; Netemeyer, Bear-

den, & Sharma, 2003, p. 101). This study uses a 6-point Likert-like scale for three reasons: First, the research project team preferred respondents to take a stand without having the middle category as an indecisive option. Second, the elimination of a middle category minimizes the ambivalence-indifference problem: the difficulty in determining whether a respondent uses the middle category due to ambivalence or due to not having a clear opinion (Bortz & Döring, 2006, p. 180; Kaplan, 1972). Greving (2007, p. 71) even suggests, respondents might use the middle category due to laziness – to finish the survey more quickly. To avoid forcing unknowledgeable respondents to falsely respond to a question, participants were not required to answer all questions before continuing the survey (Greving, 2007, p. 71). Third, the use of six response categories ensured consistency with an established internal FLA policy and higher familiarity for the participants.

Most questions used anchored categories with 1 representing *strongly agree* and 6 representing *strongly disagree*. The intermediate steps were numbered 2-5, without labels. Scholars' views on the use of such rating scale data in parametric techniques vary largely (Bortz & Döring, 2006, pp. 181–182). Purists regard rating scale data as not interval scaled and therefore – as is argued – disapprove of the use of parametric techniques. Pragmatists, on the other hand, argue that violations are minor when using rating scales and therefore do allow parametric techniques. As pointed out by Bortz and Döring, opponents falsely assume that parametric techniques require interval scale data. The famous statement in Lord's anecdote on football numbers, "numbers don't remember where they came from" (1953, p. 751) reminds us that any data can be used as long as the assumptions associated with the analysis technique are fulfilled.

Gaito (1980) dismisses the assumption that parametric techniques require at least interval scale data.[46] Instead, Gaito argues for a clear distinction between measurement theory and statistical theory: "measurement scales are not related to statistical techniques" (1980, p. 564). Whether intervals between rating numbers are equal is thus a measurement problem and is more relevant in the interpretation of results than in data analysis. For structural equation modeling, the main statistical technique used in this study (Section 5.4), Bentler and Chou (1987, p. 88) conclude that variables with four

[46]Gaito (1980) traces this misconception back to the introduction of the scale types nominal, ordinal, interval, and ratio (Stevens, 1946, p. 678).

or more categories can be used "with little worry." The use of the rating scale data in this study is therefore considered appropriate.

In the following sections, I present the items of the measurement instruments included in the final questionnaire. Where available, I also present existing instruments and judge their appropriateness in the context of this study.

5.3.3 Entrepreneurial Orientation

Whereas in the private sector, a reliable and valid measure of EO has been developed during the past 30 years, no equivalent measure was found for the public sector. Entrepreneurial orientation, represented by the three dimensions of innovativeness, proactiveness, and risk-taking has mostly been measured by the measurement instrument *ENTRESCALE* or one of its derivatives (Knight, 1997; Rauch et al., 2009; Zahra et al., 1999, p. 51). The ENTRESCALE is based on a study by Khandwalla (1977), was refined by Miller and Friesen (1982; 1983), and adjusted by Covin and Slevin (1989). Other researchers subsequently developed alternative versions (Kaiser, 2007, p. 180): Knight (1997) developed a cross-culturally reliable and valid version; Zahra (1993b) proposed an alternative scale and Antoncic and Hisrich (2001) combined existing scales.

However, an analysis of these scales reveals their inappropriateness for the public sector. Particularly the dimensions innovativeness and proactiveness are private sector-specific. They have a strong market focus (e.g., "In dealing with its competitors, my firm … typically seeks to avoid competitive clashes, preferring a 'live-and-let-live' posture"; Covin & Slevin, 1989, p. 86) or a strong product focus (e.g., "How many new lines of products or services has your firm marketed in the past 5 years?"; Covin & Slevin, 1989, p. 86). The risk-taking dimension of established scales proves less sector-specific. Morris and Jones (1999, p. 87) argue along the same lines and identify a need to adapt existing private sector measures of EO to public sector particularities.

A recent meta-analysis shows no sacrifice in validity when the Covin and Slevin scale is carefully modified (Rauch et al., 2009, pp. 778–779). The authors even encourage such adaptations. As a result, I created new items for the innovativeness and proactiveness dimensions, and adapted existing items for the risk-taking dimension. The resulting 13 items used in the questionnaire are provided in Table 5.2.

Table 5.2: Measures for Entrepreneurial Orientation

Construct (dimension)	Item text (1-6 = "strongly disagree/agree")	Item name	Adapted from / Inspired by
	My department in its entirety…		
Innovativeness	is open to innovations.	innovativeness1	Covin and Slevin (1989, p. 86)
	is creative.	innovativeness2	
	is innovative.	innovativeness3	
	often implements new approaches to meet its responsibilities.	innovativeness4	
Proactiveness	rarely behaves hesitant.	proactiveness1	Covin and Slevin (1989, p. 86)
	responds to [labor/training][a] market changes as they occur.	proactiveness2	
	responds mostly actively to [labor/training][a] market changes.	proactiveness3	
	often approaches external groups to initiate projects.	proactiveness4	
Risk-taking	also implements promising but risky projects.	risk-taking1	Covin and Slevin (1989, p. 86)
	also implements projects with no direct effect on the control system's KPIs.	risk-taking2	
	often gets involved even if the outcome is initially uncertain.	risk-taking3	
	often enters ventures to promote particularly promising projects.	risk-taking4	
	is especially careful in its course of action. (reverse)	risk-taking5	

[a]Included to suit FLA context.

5.3.4 Public Value Orientation

There are attempts afoot to operationalize public value or related constructs. Most of these attempts are unsuitable to measure public value orientation in the context of this study. Beck Jørgensen (2007, p. 370), for example, uses a survey to identify *which* values matter in the public sector (for similar approaches, see Beck Jørgensen & Bozeman, 2007). Moore (2003, pp. 22–27) proposes *categories* for a public value scorecard, such as benefits delivered to clients, media reputation, and organizational efficiency. Yet, one instrument – developed by Meynhardt et al. (2010, pp. 6–7) within the larger research project on public value management at the FLA – proved suitable. This instrument measures the FLA's public value creation in the eyes of its stakeholders (i.e., opinion leaders and policy-makers). For this study, those items that represent public value orientation (as defined in Section 4.5) were selected and adapted. The adapted items are displayed in Table 5.3.

Table 5.3: Measures for Public Value Orientation

Construct	Item text (1-6 = "well below/above average")	Item name	Adapted from / Inspired by
Public value orientation	In view of the above evaluated entrepreneurial orientation, how do you rate your department in comparison to other departments? Public value. My department in comparison to other departments…		Meynhardt et al. (2010, pp. 6–7)
	consistently focuses on public value.	public_value1	
	creates high public value beyond figures and data within the legal mandate.	public_value2	
	contributes sustainably to public value.	public_value3	
	is a reliable cooperation partner in the region.	public_value4	
	is a trustworthy institution.	public_value5	
	significantly shapes public opinion regarding the labor market.	public_value6	

5.3.5 Organizational Antecedents

Private sector CE research has recently mainly used the *corporate entrepreneurship assessment instrument* (CEAI) developed by Hornsby et al. (2002) to measure organizational antecedents of EO at a middle manager level (Section 2.3.1). The CEAI measures management support, work discretion, rewards/reinforcement, time availability, and organizational boundaries (2002, p. 254). Since its creation, the CEAI has enjoyed wide popularity, with 27 citations listed on SSCI (2010) and 160 citations listed on Google Scholar (2010), including various studies applying it (e.g., Adonisi, 2003; Brizek, 2003; Hornsby et al., 2009). Wood et al. (2008, p. 125) even applied the CEAI in the public sector.

However, similarly to EO measurement instruments, many aspects of the CEAI proved unfeasible in the FLA context. Both academics and practitioners judged the CEAI unsuited for content and language-related reasons during this study's qualitative pretesting phase (Section 5.3.1). One example of a content misfit is the item "During the past year, my immediate supervisor discussed my work performance with me frequently" (2002, p. 265) – regular performance discussions with all FLA managers are ensured by a review system. Also, the use of the *innovation process* (2002, p. 264) – a process unknown to FLA managers – is unsuitable. Regarding language, the use of *risk-taker* (2002, p. 264) was judged unsuited when referring to managers spending public money. Therefore, I adapted CEAI items to the FLA context wherever possible. For KPI focus and KPI interpretation, items were created based on the knowledge gained during the larger research project on public value management (Meynhardt & Metelmann, 2009) and during the process described above (Section 5.3.1). For goal ambiguity, items where adapted from existing scales on goal clarity (Pandey & Garnett, 2006,

p. 42; Rainey, 1983, p. 237) and role conflict (Rizzo et al., 1970, pp. 155–156). Where relevant, items were referenced to the interaction with the regional office to capture the anticipated variation at that level. The resulting items are displayed in Table 5.4.

Table 5.4: Measures for Organizational Antecedents

Construct	Item text (1-6 = "strongly disagree/agree")	Item name	Adapted from / Inspired by
Management support	My regional office…		Hornsby et al. (2002, pp. 264–265), Kuratko et al. (1990, p. 56)
	is receptive to my ideas and suggestions.	support1	
	provides backing even in difficult situations.	support2	
	supports the departments by removing obstacles.	support3	
Work discretion	My regional office…		Hornsby et al. (2002, pp. 264–265), Kuratko et al. (1990, p. 56)
	rarely restricts leeway at the department level.	discretion1	
	reacts constructively to the department's mistakes.	discretion2	
	promotes the departments' local responsibility.	discretion3	
Rewards/ Reinforcement	My regional office…		Hornsby et al. (2002, pp. 264–265), Kuratko et al. (1990, p. 56)
	acknowledges my performance.	rewards1	
	discusses my performance with me in excess of LEDi [the obligatory regular performance evaluation].	rewards2	
	facilitates professional development based on performance.	rewards3	
	The monetary incentives available in the FLA motivate me on the job.	rewards4	
Resource availability	I have enough time to do my work well.	resources1	Hornsby et al. (2002, pp. 264–265), Kuratko et al. (1990, p. 56)
	I have enough time to develop longer-term business strategies.	resources2	
	I can allocate funds flexibly within my budget.	resources3	
	I have enough staff to quickly implement creative ideas.	resources4	
	My staff very often goes the extra mile.	resources5	
	My staff often proposes good ideas.	resources6	
	My staff is often willing to take on additional jobs.	resources7	
KPI focus	My regional office…		Meynhardt and Metelmann (2009)
	intensively follows up on KPIs.	KPI_focus1	
	assesses performance primarily on the basis of KPIs.	KPI_focus2	
	manages mainly by KPIs.	KPI_focus3	
	places heavy emphasis on KPIs.	KPI_focus4	
	only places emphasis on activities directly affecting KPIs.	KPI_focus5	
KPI interpretation	My regional office…		Meynhardt and Metelmann (2009)
	appropriately questions the materialization of KPIs.	KPI_interpretation1	
	appropriately takes into account local peculiarities in the interpretation of KPIs.	KPI_interpretation2	
	takes justifications for the materialization of the KPIs very seriously.	KPI_interpretation3	
	supports effective local action by its handling of KPIs.	KPI_interpretation4	
Goal ambiguity	The prescribed/agreed business objectives...		Hornsby et al. (2002, pp. 264–265), Moon (2000, p. 191), Pandey and Garnett (2006, p. 42), Rainey (1983, p. 237), Rizzo et al. (1970, pp. 155–156)
	are defined unambiguously. (reverse)	ambiguity1R	
	are extremely numerous.	ambiguity2	
	are contradictory in some aspects.	ambiguity3	
	set clear priorities. (reverse)	ambiguity4R	
	overall are extremely complex.	ambiguity5	

5.3.6 Environmental Antecedents

No existing scales to measure the constructs multitude of expectations or legal mandate could be found. Therefore, new items were developed based on prior knowledge gained during the larger research project (Meynhardt & Metelmann, 2009) and as described in Section 5.3.1. Table 5.5 displays the resulting items.

Table 5.5: Measures for Environmental Antecedents

Construct	Item text (1-6 = "strongly disagree/agree")	Item name	Adapted from / Inspired by
Multitude of expectations	Local actors in the labor market (employer associations, unions, politics, etc.). In my district,…		Meynhardt and Metelmann (2009)
	the local actors' expectations of the agency [department] are very diverse.	expectations1	
	the local actors' expectations of the agency [department] are high.	expectations2	
	the expectations of several local actors are contradictory in some aspects.	expectations3	
	Local actors influence many decisions at the agency [department] level.	expectations4	
	I frequently receive proposals from the local environment.	expectations5	
	The Management Committee frequently expresses specific expectations.	expectations6	
Legal mandate	The legal mandate…		-
	is formulated unambiguously.	legal1	
	gives ample leeway for innovative ideas.	legal2	
	demands innovative thinking and action.	legal3	
	is the most important frame of reference for me.	legal4	
	I often refer to the legal framework for my decisions' justification.	legal5	

5.3.7 Managerial Antecedents

Scales for measuring managerial antecedents of EO do exist (e.g., Rutherford & Holt, 2007, p. 436), yet none are adequate for the constructs of interest in this research. EO-unrelated scales, such as the one used to assess the job insecurity of nurses proved unsuitable (e.g., "Are you worried about receiving a new work schedule which does not suit you?"; Laine et al., 2009, p. 423). Consequently, for job insecurity, new items were developed based on definitions of job insecurity (Hartley, 1991; Heaney et al., 1994, p. 1431) and existing items on role ambiguity (Rizzo et al., 1970, pp. 155–156). Similarly, for localism existing items were adapted (from Kaluzny et al., 1974, p. 67; Mack et al., 2008, p. 244) and new items created based on definitions (Roof, 1972). The items used to measure managerial antecedents are displayed in Table 5.6.

Table 5.6: Measures for Managerial Antecedents

Construct	Item text (1-6 = "strongly disagree/agree")	Item name	Adapted from / Inspired by
Job insecurity	Assuming the legal mandate regarding SGB II remains unchanged, to what degree do the following statements apply?		Hartley (1991), (Heaney et al., 1994, p. 1431), Meynhardt and Metelmann (2009), Rizzo et al. (1970, pp. 155–156)
	The expectations of my position allow me to launch longer-term initiatives.	insecurity1	
	I expect to be able to retain my current position for as long as I want.	insecurity2	
	I feel very high pressure to perform in my position. (reverse)	insecurity3R	
	People expect a lot from me in my position. (reverse)	insecurity4R	
	I consider the expectations of my role to be contradictory. (reverse)	insecurity5R	
Localism	Personally, I feel really at home in my district.	local1	Kaluzny et al. (1974, p. 67), Mack et al. (2008, p. 244), Roof (1972)
	How many organizations operating in your district do you voluntary work for? (E.g., trade association, sports club or charitable organization) Please select the number. (0, 1, 2, 3, 4, 5 or more)	local2	
	In fulfilling my task, it is personally especially important to me...		
	to satisfy local needs in the district.	local3[a]	
	to serve as a competent partner in the network of local actors.	local4[a]	
	to be able to contribute my personal beliefs.	local5 [a]	

[a]Item originally intended to measure role interpretation.

5.3.8 Control Variables

To exclude alternative explanations and confounding effects of factors beyond the interest of this study, I incorporate several variables that might influence the relationships between the constructs. The choice of control variables is based on current EO research. The managerial characteristics controlled for are function (de Clercq et al., 2010, p. 95), gender (de Clercq et al., 2010, p. 95; Hornsby et al., 2002, p. 263), type of contract, age (Hornsby et al., 2009, pp. 240–241; Menzel, Aaltio, & Ulijn, 2007, p. 736), tenure in position, department, and organization (Hornsby et al., 2009, pp. 240–241; Hornsby et al., 2002, p. 263), and residency (Mack et al., 2008, p. 244 use preference for local community). The departmental characteristics controlled for are department size (Antoncic, 2007, p. 316; de Clercq et al., 2010, p. 95; Zahra et al., 1999, p. 54) and strategy group (de Clercq et al., 2010, p. 95; Hornsby et al., 2009; Zahra et al., 1999, p. 54 use industry group).

Data on control variables were partly collected through the questionnaire and partly drawn directly from internal FLA databases (marked with *[database]* in Table 5.7). The measures for tenure, contract, age, and residency were tested for their unambiguousness prior to their use.

Table 5.7: Measures for Control Variables

Control variable	Item text	Item name	Adapted from / Inspired by
Function	[database]	function [HA, HO, or HIS]	de Clercq et al. (2010, p. 95)
Age	How old are you? I am… years old.	age	Hornsby et al. (2009, pp. 240–241), Menzel et al. (2007, p. 736)
Gender	[database]	gender[a]	de Clercq et al. (2010, p. 95), Hornsby et al. (2002, p. 263)
	Since when do you work, even with interruptions, in your current position / in your current department / with the FLA? Please specify the duration in years.		Hornsby et al. (2002, p. 263), Hornsby et al. (2009, pp. 240–241)
Tenure position	Current position	tenure_position	
Tenure department	Current department	tenure_department	
Tenure FLA	FLA	tenure_organization	
Contract	What is your contractual relationship [with the FLA]?	contract [civil servant, civil servant on leave, or employee]	-
Residency	Is your principle residency in your agency [department] district?	residency[b]	Mack et al. (2008, p. 244)
Department size	[database]	department_size [in number of employees]	Antoncic (2007, p. 316), de Clercq et al. (2010, p. 95)
Strategy group	[database]	strategy_group [I, II, III, IV, or V]	Hornsby et al. (2009), de Clercq et al. (2010, p. 95)

[a]Gender: 0 = *male*, 1 = *female*.
[b]Residency: 0 = *outside district*, 1 = *inside district*.

5.4 Analytical Procedures

Having described how this study's data have been collected, I will now turn to the analytical procedures. First, I address issues regarding the levels of theory, measurement, and analysis. Then, I justify the selection of the technique to analyze the data. Finally, I present the model assessment criteria, which are used to judge the analyses' results.

5.4.1 Level of Theory, Measurement, and Analysis

Organizational research focusing solely on a micro (individual) or macro (organizational) level of analysis often foregoes the opportunity to capture more complex processes spanning multiple levels (Hitt, Beamish, Jackson, & Mathieu, 2007). This research combines constructs from more than one level, which requires detailed specification of the levels of theory, measurement, and analysis (Hitt et al., 2007).

The level of theory is determined by the unit one wishes to make generalizations about. These units are termed *focal units* (Hitt et al., 2007, p. 1388). This study attempts to explain variations in the departments' EO and PVO. Therefore, this study's focal unit is the department.

The level of measurement is defined as "the level of the entities from which data are derived" (Hitt et al., 2007, p. 1389). In this research, the primary level of measurement is the middle managers (i.e., department managers). Additional sources are internal FLA databases (level of measurement: manager and department) and regional office supervisors (level of measurement: department).

The level of analysis is mostly "the level at which data are analyzed to test hypotheses" (Hitt et al., 2007, p. 1389). Alignment of the level of analysis and the level of theory is usually required to forego *fallacies of the wrong level* (Hitt et al., 2007, p. 1398; Rousseau, 1985). While this study's focal unit is at the level of the department, the constructs are embedded in a number of levels. Table 5.8 classifies the constructs based on their level. To analyze the resulting cross-level effects, a number of dedicated analysis techniques, such as hierarchical linear modeling (HLM), are available (Hox, 2002; Raudenbush, Bryk, Cheong, Congdon, & Du Toit, 2004). Such analyses require the dependent variable at the lowest (individual) level (Hinz, 2005, pp. 363–364). In this study's dataset, the dependent variable EO refers to the department level, impeding the optimal use of HLM. In addition, HLM requires a considerable number of observations. A common rule is to have at least 30 groups, each containing 30 individuals (Hox, 2002, pp. 174–175; Kreft, 1996). The FLA's organizational structure results in a data structure of many groups (up to 178 departments) with a small number of individuals (up to 3 managers) per group (Raudenbush, 2008). Within these groups, the observations are not independent (Bentler & Chou, 1987, pp. 83–84); ignoring such data structure results in too low estimations of the standard errors. As a result, standard statistical tests yield spuriously significant results (Hox, 2002, p. 5), possibly resulting in the acceptance of a null hypothesis that should be rejected (type II error; Biemann, 2007, pp. 155–157). Such risk seems acceptable in this research setting, as the target population is approximately equal to the survey population (Section 6.1.1). Statistical tests of significance are therefore less important than absolute effect sizes.

For these reasons, I analyze data on two levels using structural equation modeling (next section). First, I analyze the data using individual-level data (without aggregation) to establish the measurement model and to test the hypotheses. In addition, I run the same analyses with data aggregated at the department level as a robustness test. In an early article on practical issues in structural equation modeling, Bentler and Chou

(1987, p. 84) recommend the use of logical arguments when analyzing data from non-independent observations.

Table 5.8: Levels of Theory, Measurement, and Analysis

Generic level	FLA level	Antecedent	Outcome	Level of theory	Level of measurement	Level of analysis
Organization	FLA	MCS: Goal ambiguity Legal mandate	-	Yes	-	-
Unit	Regional office	Management support Work discretion Rewards/Reinforcement MCS: KPI focus MCS: KPI interpretation	-	Yes	-	-
Sub-unit	Department	Multitude of expectations Control variables (department)	EO PVO	Yes (focal unit)	-	Yes (secondary)
Individual	Managers HA, HO, HIS	Resource availability Job insecurity Localism Control variables (manager)	-	Yes	Yes	Yes (primary)

5.4.2 Choice of Analytical Procedure

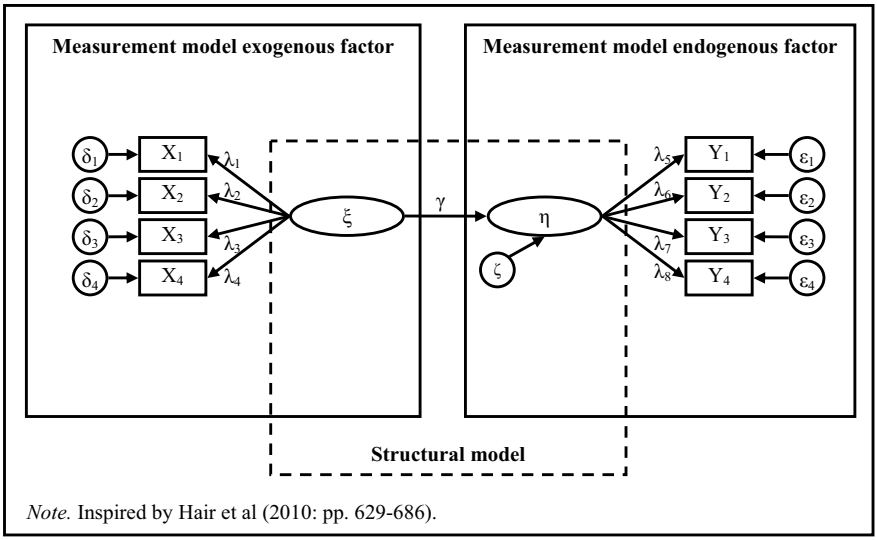
Structural equation modeling (SEM[47]; Byrne, 2009) is used for the main data analysis, primarily for two reasons. First, SEM allows for the incorporation of latent constructs, that is constructs not directly measurable (Hair, Black, Babin, & Anderson, 2010, p. 635). This study's research model includes relationships between such constructs measured by multiple observed variables. SEM accounts for the measurement error (unique variance) of the observed variables (Kline, 2005, p. 73) and includes only the constructs' measurement error-free estimates in the calculation. Second, SEM can estimate the kind of interrelationships present in the research model. A series of hypotheses can be tested simultaneously (Hair et al., 2010, p. 635). An additional advantage of SEM is the provision of goodness of fit measures, providing indications for the overall fit of the model. As outlined in the previous section, the primary analysis is conducted at the individual level. In addition, SEM with department-level aggregated values (i.e., arithmetic averages per observed variable) is applied as a robustness test.

In SEM, a covariance matrix (Σ_k) is estimated based on the equations involved in the hypothesized model (Hair et al., 2010, p. 631). Several estimation methods are available, with maximum likelihood (ML) being one of the most common ones. ML provides unbiased, consistent, and effective results, and allows for significance testing of

[47]The abbreviation *SEM* will be used to denote *structural equation modeling* (i.e., the analysis) and the *structural equation model* (i.e., the set of interrelated items and constructs).

individual parameters for multivariate normally distributed data (Anderson & Gerbing, 1988, pp. 412–413). ML estimates (i.e., correlations) are robust against violations of the normality assumption (Bollen, 1989, p. 126), as all other results (e.g., errors) are in case of moderate violations (Backhaus, Erichson, Plinke, & Weiber, 2008, 12.4). In case of non-normally distributed data, Byrne (2009) suggests using the asymptotically distribution-free (ADF) estimation method or the correction of test statistics. The dataset in this study is too small to use ADF, which requires a sample size of at least $p*(p+1)/2$, where p is the number of observed variables in the model (AMOS 18; Byrne, 2009, p. 105). I will therefore use the estimation method ML.

SEM-specific terminology is used throughout the next chapter, which is defined here based on Hair et al. (2010, pp. 629–686). A *construct* is an unobserved or latent concept that can be defined conceptually, but not measured directly without error. Constructs can be either endogenous or exogenous depending on their role in the model. *Endogenous constructs* (η) are the multi-item equivalent of dependent variables, while *exogenous constructs* (ξ) are the multi-item equivalent of independent variables solely determined by factors outside the model. Multiple *indicators* or *observed/manifest variables* (*X*/*Y* for ξ/η) are used to capture a construct. *Measurement errors* (δ/ε for *X*/*Y*) denote the extent to which these variables do not perfectly measure the latent construct of interest. Error (residual) terms of latent endogenous constructs (η) are designated by ζ. *Parameters* representing the relationships in a model can be either fixed or free. While fixed parameters are often set to 0, representing no relationship, free parameters are estimated by SEM to represent the strength of the relationship. These are referred to as *loadings* (λ) in the measurement model between observed and latent variables, or *regression coefficients* in the SEM between constructs (γ from ξ to η / β from η to η). *Squared multiple correlation coefficients* (R^2) denote the percentage of variance of an endogenous latent construct or an item explained by its predictors. Many of the terms defined in this paragraph are represented in Figure 5.2



Note. Inspired by Hair et al (2010: pp. 629-686).

Figure 5.2: Exemplary Structural Equation Model

5.4.3 Process of Hypotheses Testing Using Structural Equation Modeling

Jöreskog (1993, p. 295) describes three possible approaches to SEM: strictly confirmatory, alternative models, and model generating. In the strictly confirmatory approach, the researcher specifies one model based on theory and either rejects or does not reject it based on the data. No further analyses are conducted. In the alternative models approach, the researcher specifies competing models based on theory and selects the model that best fits the data. In the model generating approach, initial models with poor fit are re-specified to find a better data fit based on substantive explanations. Similarly, Anderson and Gerbing (1988) describe a two-step approach of first establishing the measurement model and then assessing relationships between the constructs. Given the modifications to existing scales and the clear set of hypotheses, applying the model generating approach, following Anderson and Gerbing (1988), appears most appropriate. The first step in this process is to establish a model with unidimensional, reliable, and valid measurement instruments.

5.4.4 Model Assessment Criteria

All measurement models will be assessed for dimensionality, reliability, and validity. After defining and explaining the assessment of dimensionality, I will describe relia-

bility and validity measures, also referred to as an instrument's psychometric characteristics (Punch, 2005, p. 29).[48]

Dimensionality and Goodness of Fit Indices

Dimensionality is defined as "the number of common factors or latent constructs needed to account for the correlation among the variables" (Netemeyer et al., 2003, p. 27). Identifying the number of a construct's dimensions is a necessary condition to assess the reliability and validity of measures (Anderson & Gerbing, 1988, p. 414; Netemeyer et al., 2003, p. 18). Unidimensionality among a set of indicators exists, if "the correlations among them can be accounted for by a single common factor" (Netemeyer et al., 2003, p. 20). In the measurement model, every indicator is then only a measure of one latent variable. Measurement models without correlated measurement errors and with indicators loading on only one construct are referred to as congeneric measures (Anderson & Gerbing, 1988, p. 415; Jöreskog, 1971). Non-congeneric measures can lead to difficulty in interpretation (Anderson & Gerbing, 1988, p. 415) and are therefore avoided in this study.

To assess dimensionality, either exploratory factor analysis (EFA) or confirmatory factor analysis (CFA), or a combination of both can be used (Netemeyer et al., 2003, p. 27). For the exogenous constructs (i.e., the antecedents), a combination of both is applied to account for the modifications of scales and the large number of items. The structure suggested by the EFA is confirmed and refined in a series of CFAs. The measurement model for the endogenous constructs (i.e., EO and PVO) is established without prior use of EFA.

The CFA's fit – that is how well the specified CFA model reproduces the covariance matrix among the observed variables (Hair et al., 2010, p. 632) – is assessed by first confirming plausibility and then interpreting goodness of fit (GOF) indices. Implausible (inadmissible) solutions contain *Haywood cases*: negative variances or correlation

[48]There are four technical meanings of validity in research. *Overall validity* of the research refers to how well the different parts of the study fit together. *Internal validity* refers to research design and how well the data reflect the reality; *external validity* refers to generalizations from the study. Internal and external validity are discussed in more detail in Section 7.4. Finally, *data validity* (also measurement validity) refers to how well a measurement instrument measures what it is supposed to measure (Bortz & Döring, 2006, p. 200; Punch, 2005, p. 97). This section is concerned with data validity.

and regressions larger than 1.00 (Rindskopf, 1984). Models with Haywood cases must be re-specified before continuing their evaluation with GOF indices.

Three types of GOF indices are distinguished: absolute measures, parsimony fit measures, and incremental measures. Their key value is the difference between the observed sample covariance matrix (S) and the estimated covariance matrix (Σ_k). The following GOF indices are widely used, their definitions are drawn from Hair et al. (2010, p. 626). Beyond these GOFs, there is a wide range of additional indices. However, the use of a limited number of study-specific indices is recommended (Homburg & Baumgartner, 1998).

The first category – absolute fit indices – includes measures that directly assess how well a model has been specified. The χ^2 goodness-of-fit statistic assesses the magnitude of discrepancy between the observed sample and the estimated covariance matrices (Hu & Bentler, 1999, p. 2). The sample size-dependent χ^2 is defined as $\chi^2 = (N\text{-}1)(S\text{-}\Sigma_k)$, where N is the overall sample size. The associated degrees of freedom (*df*) are calculated as $1/2*[(p)(p+1)]\text{-}k$ (p = total number of observed variables, k = number of estimated parameters). The p-value of the χ^2 statistic denotes the probability of S and Σ_k actually being equal in a given population. Thus, higher p-values, for example larger than .05, indicate a better fit. However, this test is not appropriate for large sample sizes or a large number of variables (Hair et al., 2010, pp. 665–666) and is therefore not applied in this study. The normed χ^2 is the ratio of χ^2 to *df* indicating good model fit at values of 2.00 for sample sizes ≤ 400 (Backhaus et al., 2008, 12.3.4.3). Others recommend normed χ^2 values of at least 3.00 (e.g., Hair et al., 2010, p. 668).

$$Normed\ \chi^2 = \chi^2/df$$

The root mean square error of approximation (*RMSEA*) corrects the χ^2 statistic tendency to reject models with large sample sizes. It better estimates how well a model represents the population by including both complexity and sample size in its computation. The associated p-value of this *test of close fit* (*p-close*) indicates the probability of *RMSEA* ≤ .05 (Homburg & Baumgartner, 1998, p. 353). *RMSEA* values between .05 and .08 are commonly used to define good fit (Hair et al., 2010, p. 667); Hu and Bentler (1999, p. 1) suggest *RMSEA* values of close to .06. However, research has shown that no single absolute value allows determining good fit.

$$RMSEA = \sqrt{\frac{\chi^2 - df_k}{N-1}}$$

The standardized root mean residual (*SRMR*) is a standardized measure for the size of residuals, that is the differences between the observed sample and the estimated covariance matrices. Residuals should be examined individually and those exceeding a standardized value of |4.00| investigated. The *SRMR* is the standardized value of the square root of the mean of these squared residuals. *SRMR* values of over .10 indicate problems (Hair et al., 2010, p. 667), and values of close to .08 (Hu & Bentler, 1999, p. 27) are recommended.

The goodness of fit index (*GFI*) is another absolute fit index developed in an attempt to reduce sensitivity to sample size; yet the statistic is still affected by *N*. Its computation involves F_k, the fit function after the SEM model has been estimated using k degrees of freedom (S - Σ_k), and F_0, the fit function that would result if all parameters were zero. Traditional rules of thumb require a value of at least .90 for an acceptable fit, while others have suggested a cut-off value of at least .95 (Hair et al., 2010, pp. 633–667).

$$GFI = 1 - \frac{F_k}{F_0}$$

Parsimony fit indices provide a measure for comparing competing models, taking complexity into account. The adjusted goodness of fit index (*AGFI*) adjusts the *GFI* by a ratio of the degrees of freedom used in a model to the total degrees of freedom available. The degrees of freedom used in the model are computed using p, the total number of observed variables (Kline, 2005, p. 144). Less complex models are thereby favored; the same cut-off values as for the *GFI* are suggested in the literature (i.e., $AGFI \geq .90$ / .95).

$$AGFI = 1 - \frac{p(p+1)}{2df}(1 - GFI)$$

Incremental fit indices assess how well the estimated model fits, relative to a base model. In the base model, also known as null model, all observed variables are assumed uncorrelated. The Tucker-Lewis index (*TLI*), also known as the non-normed fit index (*NNFI*) compares the normed χ^2 values of the null and the specified model, thereby taking complexity into account. The comparative fit index (*CFI*) is relatively in-

sensitive to model complexity. In the following equations, N and k refer to the statistical null model and the specified model, respectively. While rules of thumb often suggest .90 for *CFI* and *TLI*, Hu and Bentler (1999, p. 27) suggest a cut-off value of "close to .95" for both.

$$TLI = \frac{\left[\left(\frac{\chi_N^2}{df_N}\right) - \left(\frac{\chi_k^2}{df_k}\right)\right]}{\left[\left(\frac{\chi_N^2}{df_N}\right) - 1\right]}$$

$$CFI = 1 - \frac{(\chi_k^2 - df_k)}{(\chi_N^2 - df_N)}$$

Reliability

Reliability refers to the consistency of a concept's measure (Bollen, 1989, p. 206; Bryman, 2008, pp. 151–152).[49] In short, reliability "basically means consistency" (Punch, 2005, p. 95). In terms of classical test theory, an observed value obtained with a highly reliable measurement instrument has a small error part and is thus close to the true score part. The data obtained in this study are cross-sectional and thus do not allow for the assessment of consistency over time (test-retest reliability; Punch, 2005, p. 95). Instead, the study focuses on the measurement's internal consistency. To do so, direction, magnitude, and significance of factor loadings, indicator reliability (*IR*), average variance extracted (*AVE*), and composite reliability (*CR*) are considered.

First, item-level reliability is assessed by interpreting the direction, magnitude, and significance of factor loadings (Byrne, 2009, p. 67; Shook, Ketchen, Jr., Hult, & Kacmar, 2004, p. 400). Loadings should be in the intended direction and their values around .70 or higher (Hulland, Chow, & Lam, 1996, p. 191). By setting the variance of latent variables to 1.00, the significance levels of all item loadings can be determined (Anderson & Gerbing, 1988, p. 415). The significance is tested using a *t*-test with $\alpha = .05$, corresponding to $t \geq 1.96$ (Anderson & Gerbing, 1988, p. 416) for a two-tailed test as minimum requirement. Optimal values of $t \geq 2.56$ correspond to an α of .001 (two-tailed).

[49] Reliably is also referred to as *convergent validity* (Bagozzi & Phillips, 1982, p. 468; Fornell & Larcker, 1981, p. 45).

Indicator reliability (*IR*), also referred to as λ^2 or squared multiple correlation coefficient R^2, is the proportion of variance in a measure that is explained by the variables that directly affect the indicator (Bollen, 1989, p. 222). Bollen (1989, p. 206) even describes reliability in SEM as "the squared correlation of a measure and its latent variable". *IR* is dependent on sample size and the number of indicators per latent variable. As a result, strict cut-off values such as .40 or .50 (Backhaus et al., 2008, 12.2.5.1; Fornell & Gur-Arie, 1983, p. 255; Homburg & Baumgartner, 1998, p. 361) have been criticized (Bagozzi & Yi, 1988, p. 80). Therefore, it has been suggested that indicators with low *IR* be retained if their deletion compromises content validity (Homburg & Klarmann, 2006, p. 732; Little, Lindenberger, & Nesselroade, 1999). In this study, indicators are thus retained if they are required for content validity, even when λ and the resulting *IR* do not meet threshold values. Still, values of .40 for IR/λ^2 and the corresponding .63 for λ are considered desirable. *IR* of indicator X_i with the loading λ_i on the latent variable ξ with the measurement error δ_i can be calculated as follows (Fornell & Larcker, 1981, p. 45).

$$IR(X_i) = \frac{\lambda_{x_i}^2 \operatorname{var}(\xi)}{\lambda_{x_i}^2 \operatorname{var}(\xi) + \operatorname{var}(\delta_{x_i})}$$

Average variance extracted (*AVE*) extends the logic of indicator reliability and includes several measurements. Specifically, it quantifies the proportion of a scale's total variance "captured by the construct in relation to the amount of variance due to measurement error" (Fornell & Larcker, 1981, p. 45). *AVE* values of .50 and above are considered acceptable (Fornell & Larcker, 1981, p. 46). For the latent variable ξ with *p* indicators, *AVE* is calculated as follows.

$$AVE(\xi) = \frac{\left(\sum_{i=1}^{p} \lambda_i^2\right) \operatorname{var}(\xi)}{\left(\sum_{i=1}^{p} \lambda_i^2\right) \operatorname{var}(\xi) + \sum_{i=1}^{p} \operatorname{var}(\delta_i)}$$

Composite reliability (*CR*) and Cronbach's alpha coefficient (α) are measures for the reliability of composites (i.e., equally weighted linear aggregations of indicators; Bollen & Lennox, 1991, p. 309). The reliability of a composite score describes the overlap between the composite score and the latent variable (*true score*; Bollen & Lennox, 1991, p. 310). The main analyses of this study do not use composite scores, yet *CR* and α are reported for (i) comparability purposes with other studies using similar measures

but different methods and (ii) auxiliary calculations, such as the intra-class correlation coefficients (Section 6.1.3). Cronbach's α has traditionally been used, but has been demonstrated to be biased in a number of cases: it is dependent on scale length (number of items in scale), on average inter-item correlation, and on item redundancy (Netemeyer et al., 2003, p. 57). As such, α underestimates the reliability of congeneric measures, especially for short scales (Bollen, 1989, p. 221). Therefore, the commonly required value of .70 or higher (Netemeyer et al., 2003, p. 58) is not considered in this study. On the other hand, *CR*, also referred to as squared correlation ρ^2 or reliability coefficient, largely overcomes these problems (Bollen, 2002, p. 624). Values for *CR* of .50 (Backhaus et al., 2008, 12.2.5.1) or .60 and higher are "desirable" (Bagozzi & Yi, 1988, p. 80; Homburg & Baumgartner, 1998, p. 363). Using $\bar{r}$ to denote the average correlation in the observed correlation matrix, p to denote the number of items in the scale, as well as the terms used above, α (Gerbing & Anderson, 1988, p. 190) and *CR* (Bollen, 2002, p. 624) are calculated as follows.

$$\alpha = \frac{p\bar{r}}{1+(p-1)\bar{r}}$$

$$CR(\xi) = \frac{\left(\sum_{i=1}^{p}\lambda_i\right)^2 \operatorname{var}(\xi)}{\left(\sum_{i=1}^{p}\lambda_i\right)^2 \operatorname{var}(\xi) + \sum_{i=1}^{p}\operatorname{var}(\delta_i)}$$

Validity

In the SEM context, validity "is concerned with whether a variable measures what it is supposed to measure" (Bollen, 1989, p. 184). Four types of classical validity are distinguished: *content validity*, *criterion validity*, *construct validity*, and *convergent and discriminant validity* (Bollen, 1989, p. 185). This classical categorization will be used due to wide acceptance and its applicability with the research's data. Yet, it should be noted that there are additional validity measures (Bollen, 1989, pp. 194–206) and alternative validity categorizations (see footnote 48 on page 108).

Content validity is met if a concept's measures fully represent the domain of the concept (Bollen, 1989, p. 185). Content validity can only be assessed qualitatively by analysts. While such a qualitative assessment often remains ambiguous, testing for it is essential. In this study, content validity is assessed by two academics based on the

construct definitions (Chapter 4) and the items in the final measurement model (Section 6.2.3).

Criterion validity is "the degree of correspondence between a measure and a criterion variable, usually measured by their correlation" (Bollen, 1989, p. 186). To test criterion validity, an additional external measure of the construct is necessary. No objective measures are available for this study's constructs (such as management support or public value orientation). However, the secondary EO assessments by the regional office supervisors (reported in Section 6.1.3) are used as an indication of criterion validity.

Construct validity "assesses whether a measure relates to other observed variables in a way that is consistent with theoretically derived predictions" (Bollen, 1989, p. 188); in other words, it "involves ruling out alternative interpretations of how [two variables] are referred to in hypothetical terms" (Cook & Campbell, 1976, p. 226). As such, construct validity is not assessed while establishing the measurement model, but rather when evaluating and interpreting the SEM. Moreover, construct validity can be used instead of criterion validity when a criterion validity coefficient cannot be obtained (Bollen, 1989, p. 188).

The last validity type – *convergent and discriminant validity* – covers two aspects. *Convergent validity* is assessed as reliability (see above). *Discriminant validity*, "the degree to which measures of distinct concepts differ" (Bagozzi & Phillips, 1982, p. 469), is usually assessed using the Fornell-Lackner criterion in strategy research (Shook et al., 2004, p. 400). For this criterion to be fulfilled, the average variance extracted (*AVE*) for each factor must be larger than the squared correlation between the factors (R^2; Fornell & Larcker, 1981, p. 46).

Summary of Model Assessment Criteria

Table 5.9 summarizes the criteria for assessing measurement models and structural equation models. Single measures for the assessment of model fit cannot provide sufficient information for accepting or rejecting a model (Hu & Bentler, 1999). Therefore, a more universal approach considers various measures and their minimum and optimal values. As suggested by Hair et al. (2010, p. 676) and Homburg and Klarmann (2006, p. 736), I use χ^2 and associated *df*, *RMSEA*, *SRMR*, *CFI*, and *TLI* to assess model fit. In addition, *p*, *p-close*, *GFI*, and *AGFI* are reported (in parentheses), but not interpreted due to their problems in terms of sample size and model complexity. Each of the mea-

surement and structural equation models will be reviewed using these criteria. All threshold values are approximate values and do not automatically lead to an acceptance or rejection of a model. Single below-threshold values, especially regarding reliability and validity measures, are acceptable (Homburg & Baumgartner, 1998, p. 363). This practice is common in strategic management research (Andersson, Forsgren, & Holm, 23; Song, Wang, & Parry, 2010) and will also be applied in this study.

Table 5.9: Model Assessment Criteria

Category	Statistic or test	Threshold value	
		Minimum	Optimal
Plausibility	No Haywood cases	-	
Absolute fit	χ^2/df	≤ 3.00	≤ 2.00
	(*p*)	(≥ .05)	-
	RMSEA	≤ .08	≤ .05
	(*p-close*)	(≥ .05)	-
	SRMR	≤ .10	≤ .08
	(*GFI*)	(≥ .90)	(≥ .95)
Parsimony fit	(*AGFI*)	(≥ .90)	(≥ .95)
Incremental fit	*CFI*	≥ .90	≥ .95
	TLI	≥ .90	≥ .95
Convergent validity (reliability)	Direction and significance of loadings (*t*-value)	≥ 1.96	≥ 2.56
	λ	≥ .63	≥ .70
	IR	≥ .40	≥ .50
	AVE	≥ .50	-
	(Cronbach's α)	(≥ .70)	-
	CR	≥ .50	≥ .60
Content validity	Measurement items	*Qualitative*	
Criterion validity	Secondary EO assessment	*Section 6.1.3*	
Construct validity	Relations as predicted	*Assessment of SEM (Section 6.3)*	
Discriminant validity	Fornell-Lackner criterion	*AVE* > R^2 to other constructs	

Note. Criteria in parentheses are reported but not interpreted.

5.5 Summary of Research Methods

This study uses quantitative survey data to test the hypotheses developed in Chapter 4. Data were mainly collected from middle managers of the German Federal Labor Agency using an online questionnaire. The questionnaire was developed based on existing measurement scales and literature. Before the actual survey was conducted, the questionnaire was pretested qualitatively and quantitatively.

Multiple steps are necessary to test the hypotheses with survey data. The first step includes descriptive statistics and data treatment not described in this chapter. In the second step, measurement models are established – first separately and then jointly – for the endogenous and exogenous constructs. For the former, exploratory factor anal-

ysis is applied to identify the number of factors before applying confirmatory factor analysis. Using structural equation modeling, the relevant control variables are identified and the hypotheses are first tested in separate models and then in one model. All of these models are also estimated at an aggregate (department) level to test the robustness of the results. An overview of this process is provided in Table 5.10. For the analysis, I used the programs AMOS 18 (confirmatory factor analysis, SEM, goodness of fit indices[50]), PASW Statistics 18 (descriptive statistics, analysis of the sample, exploratory factor analysis, Cronbach's α), and Microsoft Excel 2003 (auxiliary calculations).

In addition to these quantitative analytical procedures, the study's findings were discussed in two workshops with an average of ~20 survey participants each. The outcome of these workshops is presented in the discussion chapter.

[50] *AVE* and *CR* are calculated based on AMOS output as outlined by Backhaus et al. (2008, 12.2.5.2).

Table 5.10: Summary of Analytical Procedures

Step	Sub-step
I. Descriptive statistics and data treatment	Description of sample Check for nonresponse bias Check for common-method bias Missing values analysis and imputation Graphical examination of data Normality assessment Outlier detection Data transformations
II. Measurement model	Endogenous measurement model - Confirmatory factor analysis EO - Confirmatory factor analysis EO + PVO Exogenous measurement model - Exploratory factor analysis - Confirmatory factor analysis Complete measurement models - CFA exogenous constructs + EO - CFA exogenous constructs + EO + PVO
III. Structural equation model and robustness test	Control variables + EO - Main model (manager level) - Robustness test (department level) Exogenous constructs + EO - Main model (manager level) - Robustness test (department level) EO + PVO - Main model (manager level) - Robustness test (department level) Exogenous constructs + EO + PVO - Main model (manager level) - Robustness test (department level)

6 Results

This chapter's primary purpose is to test the hypotheses developed in Chapter 4. In order to do so, I first describe the sample and check for nonresponse and common method bias, deal with missing values, graphically examine the data, assess normality, detect outliers, and transform several variables. Endogenous and exogenous measurement models are then established and used in structural equation modeling (overview of analytical procedures in Table 5.10).

6.1 Descriptive Statistics and Data Treatment

6.1.1 Describing the Sample

In June 2009, at the time of preparing the database, I identified 347 department-level managers working at 173 departments (12 positions were vacant or not identifiable). 343 managers could be contacted successfully, of which 264 completed the questionnaire. After missing values analysis (Section 6.1.4), 250 questionnaires were classified as usable, resulting in an effective response rate of 73% (250/343).[51]

The 250 usable questionnaires received from department-level managers contain responses from all regions and strategy groups. Furthermore, in terms of manager demographics, the sample includes a diverse combination of characteristics. Figure 6.1 represents the distribution of the categorical characteristics. The usable questionnaires were collected from 152 departments, of which 65 provided one, 76 provided two, and 11 provided three questionnaires. The department sizes in terms of number of employees range from 106 to 1370, with an average of 373 (SD = 240; ignoring the data structure).

The managers included in the analyses have the following characteristics: their ages range from 34.0 to 64.0, with a mean of 50.6 years (SD = 7.0; 17 missing values); with regard to function, 46% are heads of local agency, 43% are heads of local operations, and 11% are heads of local internal services. Most are civil servants (55%), some are civil servants on leave (22%), and employees (22%); 1% did not answer the corresponding question. The majority is male (68%) and most managers live in their department (agency) district (56%; 4% missing values). Tenure in position ranges from 0.2

[51] These numbers are net of 40 managers, which were invited to the pretest.

F. E. Diefenbach, *Entrepreneurship in the Public Sector,* DOI 10.1007/978-3-8349-6816-6_6,

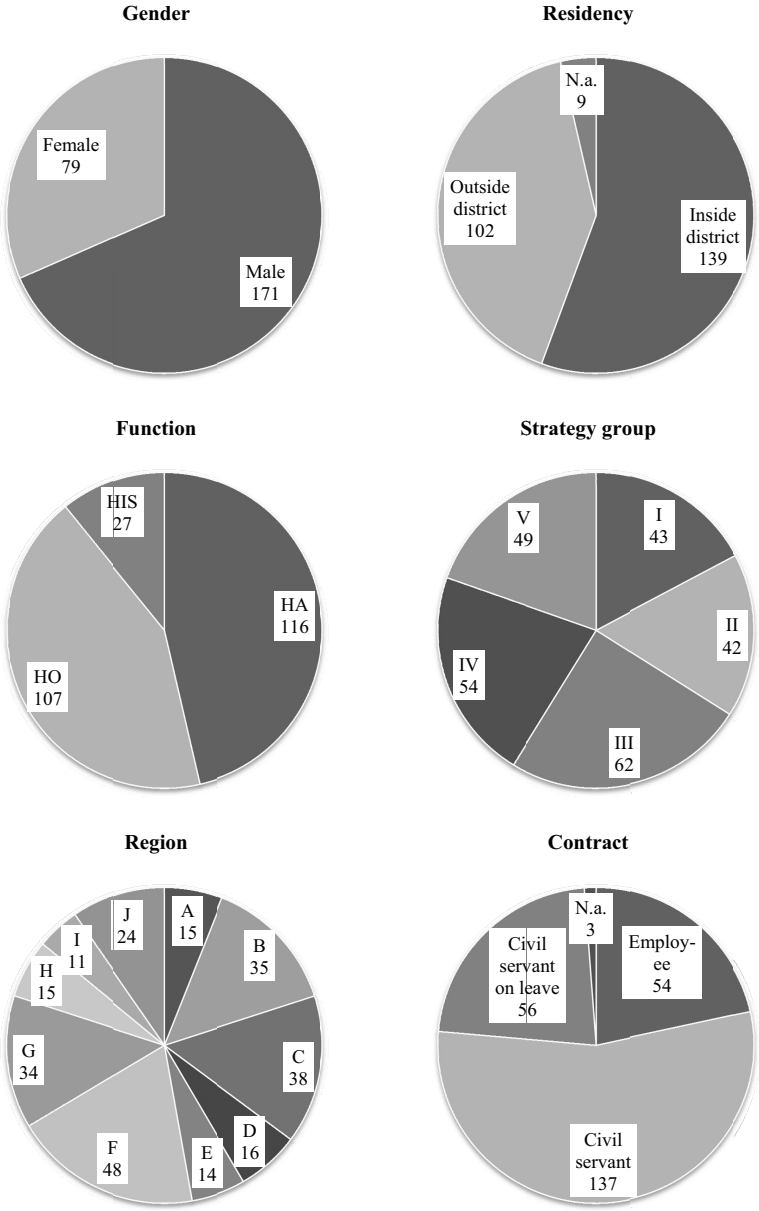


Figure 6.1: Demographics of Usable Questionnaires (*N* = 250)

to 24.0 years, with a mean of 4.3 years (*SD* = 3.9; 13 missing values); average tenure in the department is 6.3 years (*SD* = 7.1; 13 missing values); and average tenure in the organization is 23.3 years (*SD* = 9.3; 11 missing values).

6.1.2 Checking for Nonresponse Bias

If persons participating in a survey differ substantially from non-participants, the survey's results cannot directly be generalized to the population (Armstrong & Overton, 1977, p. 396). In this study, the response rate of 73% already indicates a low likelihood of such a nonresponse bias. Yet, I conduct two types of nonresponse bias tests and find little reason for concern. The first test compares respondents with nonrespondents, while the second compares early with late respondents.

Respondents (usable questionnaires) are compared with nonrespondents for gender, function, region, and strategy group. Results displayed in Table 6.1 indicate no significant differences between respondents and nonrespondents for any of the categorical characteristics. In addition, I compare department sizes at manager and department level. At manager level, there is a significant difference in size, $t(345) = 2.54$, $p = .012$, with respondents coming from smaller departments (M = 373 versus 446 employees, SE = 15.2/24.5). The comparison at department level yields similar results. Yet, the sample still represents the FLA context fairly well given the large range of sizes in population and sample.

Table 6.1: Differences in Respondents and Nonrespondents

Categorical variable	χ^2	*df*	*p*
Gender	0.96	1	.328 (not significant)
Function	0.77	2	.679 (not significant)
Region	9.69	9	.376 (not significant)
Strategy group	4.20	4	.380 (not significant)

Note. $N = 347$.

Second, early and late respondents are compared. Under the assumption that late respondents are more like those who do not respond at all (Armstrong & Overton, 1977, p. 397; Kanuk & Berenson, 1975, p. 449), I find little indication for nonresponse bias. Only 2 out of 115 items were significantly correlated with the recorded order of survey completion: local2 ($r(248) = -.17$, $p = .007$) and legal4 ($r(248) = .15$, $p = .016$). Over-

all, there appears to be little evidence for nonresponse bias, mainly due to the high response rate.[52]

6.1.3 Checking for Common Method Bias

To mitigate the problem of common method variance, i.e. variance caused by the method rather than the construct of interest, I follow a number of procedural and statistical techniques suggested by Podsakoff et al. (2003). The procedural techniques mostly affect the questionnaire design; the statistical techniques applied are Harman's single-factor test and secondary sources for the dependent variable EO.

Regarding questionnaire design, I sought to reduce item embeddedness bias (Podsakoff et al., 2003, p. 884) in the online questionnaire by randomly rotating items within constructs. Anonymity was ensured by administering the survey through the FLA's survey department and communicated in a detailed data privacy statement (2003, p. 888). Furthermore, honest answers were encouraged by including corresponding instructions (2003, p. 888). The scale items were improved by following scale construction advice (2003, p. 888) and extensive pretesting (Section 5.3.1).

Harman's single-factor test (1967) is a statistical procedure for detecting common method bias. Data might be biased if the test yields (i) one single factor or (ii) one general factor explaining the majority of variance (Podsakoff & Organ, 1986, p. 536). Using unrotated factor analysis, the test resulted in 24 factors with eigenvalues greater than one. The first factor explained less than 15% of variance in the data. Thus, this test does not indicate common method bias.

The use of multiple sources can decrease the bias due to common method (Churchill, Jr., 1979, p. 70; Podsakoff et al., 2003, p. 887; Podsakoff & Organ, 1986, p. 542). Up to three department-level managers rated their own department's EO; in 62 cases, their regional office supervisor also rated this department's EO. More specifically, 4 out of 10 supervisors (40%) provided 62 non-self-reports for the 152 departments I analyze (41%).

[52]Department size does not significantly influence EO (Section 6.3.1), and local2 nor legal4 is not part of the final measurement model either (Appendix 7).

To assess the reliability of the key informants (department managers), I calculate a number of intra-class correlation coefficients (*ICCs*). *ICC(1)* can be interpreted as "an index of interrater reliability (the extent to which raters are substitutable)" (Bliese, 2000, p. 355 interpreting James, 1982). *ICC(2)* is a reliability measure for group means (Bliese, 2000, p. 356). In the main analysis, I do not aggregate individual ratings and therefore report *ICC(1)*. A two-way model is used, because the key informants "differ in some systematic way" (McGraw & Wong, 1996, p. 31). In addition, I provide a measure of consistency rather than absolute agreement (Bliese, 2000, p. 354). Using McGraw and Wong's (1996) terminology, I thus report a *two-way ICC(C,1)*. Results were obtained following PASW procedures outlined by LeBreton and Senter (2008). The variable under research for all *ICC(1)* values is the unweighted EO score (see the EO measurement model in Section 6.2.1).

ICC(1) values of .01 are considered a *small effect*, values of .10 a *medium effect,* and values of .25 a *large effect* (Cohen, 1988, pp. 79–81; LeBreton & Senter, 2008, p. 838; Murphy, Myors, & Wolach, 2009, pp. 38–39). Bliese (2000, p. 356) argues that for *large ICC(1)* values, a single rating is likely to provide a reliable rating of the group mean. Other studies have used .12 as an indicator for acceptable reliability (e.g., Forbes, Korsgaard, & Sapienza, 2010, p. 584).

The results of the first analysis, displayed in the top part of Table 6.2, are *ICC(1)* values on matched pairs per department of the supervisor and (i) the heads of local agency, (ii) the heads of local operations, (iii) the heads of local internal services, and (iv) the unweighted average of all three (forthwith: *self-report average*). The values of .24 to .61 for the functional sub-groups and the value of .46 for the self-report average are all indicators of sufficient consistency with the supervisor ratings.

Two further analyses strengthen the first analysis's indication. *ICC(1)* values by region (presented in the middle part of Table 6.2) show that the largest region deviates significantly from the others: the *ICC(1)* value without region F is .76, while it is .31 for region F. The low region F *ICC(1)* value can be explained by the supervisor's lower familiarity with certain departments. The supervisors' questionnaire included one item, *familiarity*, on the cooperation intensity with the department. Supervisors were asked to rate the following statement (1-6 = "strongly disagree/agree"): "I, the region office supervisor, work closely with the department's management." The bottom part of Table 6.2 reports *ICC(1)* values for all regions clustered by answers to the above statement. These data indicate increasing consistency of supervisor and self-report ratings

with increasing familiarity. Supervisors with sound knowledge of a department rate this department's EO consistent with the department's management. For departments with high familiarity (answers > 4), *ICC(1)* even exceeds .70.

Table 6.2: Consistency of Entrepreneurial Orientation Score

Matched pair: Supervisor and…	**Sub-group**	***ICC(1)***	***N***
By function			
Head of Agency	All	.61	49
Head of Operations	All	.24	43
Head of Internal Service	All	.39	11
Self-report average	**All**	**.46**	**62**
By region			
Self-report average	Region A	.79	8
Self-report average	Region D	.68	10
Self-report average	Region F	.31	29
Self-report average	Region J	.83	15
Self-report average	**All**	**.46**	**62**
By answers to item *familiarity*			
Self-report average	> 1	.52	60
Self-report average	> 2	.52	57
Self-report average	> 3	.59	53
Self-report average	> 4	.74	37
Self-report average	> 5	.80	7
Self-report average	**All**	**.46**	**62**

Overall, there is little indication of common method bias. Given these indications, all subsequent analyses will use self-reported (department manager) data for the dependent variables. Still, most data used are perceptual and collected from FLA employees and are therefore prone to contain common source bias. The implications are discussed in Section 7.4 (Limitations).

6.1.4 Dealing with Missing Values

A thorough evaluation of the extent and patterns of missing values is necessary for practical and substantive reasons (Hair et al., 2010, pp. 42–43). From a practical point of view, list-wise deletion of cases with missing values can reduce an adequate sample size to an inadequate size. Failing to identify and understand underlying reasons for missing values can bias findings and result in inappropriate conclusions (Hair et al., 2010, p. 43).

I apply the four-step process described by Hair et al. (2010, pp. 44–54) to identify and apply remedies to missing data. The first step determines whether the missing data are

ignorable by identifying the type of missing data. The second step assesses whether the extent of missing data is substantial enough to warrant action. In the third step, the randomness of the missing data process is diagnosed. Finally, the fourth step results in the selection of an imputation method.

Step 1: Determine the Type of Missing Data

There are two types of missing data: ignorable missing data (sample versus population, skip patterns in questionnaire, and censored data) and non-ignorable missing data. Apart from potential nonresponse bias (Section 6.1.2), no ignorable missing data are present in the dataset. Non-ignorable missing data occur either for known or unknown processes. *Known processes* can be "errors in data entry that create invalid codes, disclosure restrictions […], failure to complete the entire questionnaire, or even the morbidity of the respondent" (Hair et al., 2010, p. 46). Remedies might be applicable if the patterns are found to be random. *Unknown processes* are more difficult to identify and occur in surveys when respondents are unwilling or unable to answer certain questions. Examples include sensitive questions relating to income or questions requiring special knowledge. For this study's sample, I am not aware of any known processes; however, I proceed with the analysis to identify potential unknown processes.

Step 2: Determine the Extent of Missing Data

The objective of this step is to determine whether the amount of missing data requires further action and, if so, what type of action. Hair et al. (2010, p. 47) suggest a search for patterns by variables and by cases. I first analyze the data by variables to determine the percentage of missing values per variable. I then analyze the data by cases to identify (i) cases with no missing values and (ii) the percentage of missing values per case.

The analysis by variables indicates no need to delete any variable, but confirms the need for further missing values analyses. The percentages of missing cases per variable range from 0% to 9% of cases.[53] The critical value for deletion of 15% (Hair et al., 2010, p. 48) is thus not reached. However, the 5% threshold requiring further missing value analyses (Wirtz, 2004, p. 112) is exceeded by five variables: tenure_position, tenure_department, tenure_organization, age, and local1.

[53] Data not displayed due to space limitations.

The case-wise interpretation is conduced in three sub-steps: identifying the percentage of missing values per case, analyzing the patterns of missing data, and deleting cases with high shares of missing values. The percentage of missing values per case ranges from 0% to 92% of variables, with 71% of all cases containing all necessary information for the main analyses (Appendix 3). A *complete data* approach, resulting in list-wise deletion of close to 30% of all cases, would reduce the sample excessively. From the analysis of patterns, I identify a number of cases with missing values towards the end of the questionnaire.[53] Other than this common and acceptable pattern, no obvious patterns are detected.

Deleting cases with high shares of missing values is a simple and often effective way of dealing with missing values (Hair et al., 2010, p. 48), which is also used in corporate entrepreneurship research (e.g., Antoncic & Hisrich, 2001). No clear guidelines on cut-off values have been established (Hair, Anderson, Tatham, & Black, 1998, p. 52), but a number of rules exist. Hair et al. (2010, p. 48) remain vague, but recommend the deletion of cases and variables with > 50% missing values. Wirtz (2004, pp. 110–111) suggests deleting cases and variables with > 30% missing values, while Antoncic and Hisrich (2001, p. 56) use 25%. Furthermore, cases with missing entries for the dependent variable should be deleted to avoid biased results (Hair et al., 2010, p. 48). Based on a conservative approach and the previous analyses, I decide to delete 14 cases from the sample. I delete 13 cases for missing values in the dependent variable EO and 1 case for missing more than 20% of all other variables. I continue the analysis with the remaining 250 department-level cases.

Step 3: Diagnose the Randomness of the Missing Data Process[54]

The underlying causes for missing data are referred to as *missing data processes* (Wirtz, 2004, p. 111). Missing data processes are typically classified in three types. Data can be *missing completely at random* (MCAR), *missing at random* (MAR), or *non random missing* (NRM; Rubin, 1976; Wirtz, 2004, pp. 111–112). MCAR data refer to missing data that are not explained by any underlying patterns. MAR data refer

[54]In steps 3 and 4, additional data from a second survey at the FLA are used to enlarge the basis on which missing data processes are identified and imputations are made. This second survey was completed by regional office managers rather than department managers. In all other aspects, the second survey followed the research methods described in Chapter 5. In steps 3 and 4, 250 department-level and 19 regional office-level cases are analyzed.

to missing values that can entirely be explained by other variables in the dataset. NRM data are caused by reasons not represented in the data.

Only a few groups of variables are above the 5% mark requiring additional analysis to determine the type of missing data process (Wirtz, 2004, p. 112): questions about tenure, age, and localism. A case-wise revision reveals that managers often either answer all questions within one of the above-mentioned groups or skipped a whole group (e.g., did not answer any question about tenure). Missing values in demographics could stem from managers' skepticism toward anonymous data handling, which was also displayed in a few comments to the questionnaire.

Group comparisons of cases with missing data versus cases with valid data can indicate the type of missing data process. This analysis reveals various significant differences between cases with and without valid data, which are displayed in Appendix 4. No additional obvious pattern is recognizable from the analysis of missing value data. To determine whether the above-mentioned significant differences require further investigation, I conduct Little's MCAR test. It tests whether missing data are MCAR by comparing actual data with "what would be expected if the missing data were totally randomly distributed" (Hair et al., 2010, p. 60). The test's results, χ^2 (5106, $N = 269$) = 5077.85, $p = .61$, strengthen earlier indications of MCAR data. No significant difference is found between the observed missing data pattern in the reduced sample and a random pattern.

Step 4: Select the Imputation Method

Which method should be applied in this case? Case reduction methods, weighting methods, sample selection models and imputation methods are available to deal with missing data. Within the *imputation method* category, methods are either model-based or conventional/ad hoc (Göthlich, 2007, p. 123). A brief review of the literature on missing data procedures suggests the use of the model-based *expectation maximization* (EM) imputation method.

For this study's data type (MCAR; < 10% missing values per variable), Hair et al. (2010, p. 56) deem any imputation method applicable, with the complete case approach being the least preferred. Göthlich (2007) makes no specific recommendations, but refers to a trend towards model-based approaches (e.g., EM) and multiple imputations. Finally, Wirtz (2004) concludes that EM should be preferred over convention-

al/ad hoc methods. As a result, I use the EM approach to replace 114 missing values, representing 0.6% of all values used in the subsequent analyses. All missing values of non-categorical variables are estimated based on all Likert type and ranking items (except department_size, tenure_position, tenure_department, tenure_organization, age, and local2). The resulting dataset includes 250 cases with no missing values for any of the metric variables. The remaining 12 missing values are now concentrated in two non-essential categorical variables: three cases have missing values for contract, nine for residency.

6.1.5 Graphically Examining the Data

Graphical, descriptive data analysis is often suggested to 'get a feeling' for the data prior to conducting numbers-based analysis (Field, 2009, pp. 87–130; Hair et al., 2010, pp. 33–34). I use scatter-plots to examine the type of relationship between variables, histograms to assess normality (Section 6.1.5), and box-plots to understand group differences. The scatter-plots reveal no non-linear relationships, but reveal an important effect of the manager's function. The following combinations for scatter-plots are examined (Hair et al., 2010, pp. 39–40): (i) all independent variables and EO (both as score) and (ii) all non-Likert items and the EO score. Specifically, I find relationships between variables for tenure and age and the EO score to be positive or neutral for the heads of local agency and the heads of local operations, but negative for heads of local internal services (with a low *N*). Box plots (Hair et al., 2010, pp. 41–42) are used to understand group differences for the following pairs: EO, tenure, and voluntary commitment by function, by gender, by contract, and by region. The analyses confirm the difference between the heads of local agency/operations and the heads of local internal services. The heads of local internal services are lower in tenure and voluntary commitment (local2). Furthermore, a few potential outliers are displayed in the region comparisons. Taken together, the graphical data examination reveals the importance of the function for the following analyses, but does not raise any significant concerns.

6.1.6 Assessing Normality

The data are probed for multivariate normality, which is recommended for structural equation modeling (Byrne, 2009, p. 102). Univariate normality is a necessary condition for multivariate normality (Hair et al., 2010, p. 71). The sample size of $N = 250$ has two implications: First, the effect of normality "effectively diminishes when sample sizes reach 200 cases or more" (Hair et al., 2010, p. 77). Second, significance tests for skewness and kurtosis are not applicable to samples of this size (Field, 2009,

p. 139). As a result, I use Kline's rules of thumb (2005, p. 50) by which skewness values ≥ 3.0 and kurtosis values ≥ 7.0 (10.0 without rescaling) are considered extreme (also see Curran, West, & Finch, 1996, p. 26). In the final SEM model (Section 6.3.4), skewness values range from -1.05 to 0.28 and kurtosis values range from -0.82 to 1.83 – clearly below the thresholds.

Furthermore, histograms of all variables are created and examined to detect potential non-normal distributions (Hair et al., 2010, p. 38). Consequently, two variables with potentially biasing positive skewness are transformed logarithmically. Such transformations are common in the field of entrepreneurship (e.g., Chrisman, Chua, & Kellermanns, 2009, p. 749; Moon, 1999, p. 37; Simsek, Veiga, Lubatkin, & Dino, 2005, p. 76). Specifically, I transform department size measured by number of employees (reducing skewness from 1.88 to 0.40) and one measure for tenure (2.05 to -0.52; Section 6.1.8).

Finally, Mardia's normalized estimate of multivariate kurtosis of the complete measurement model (Section 6.2.3) is analyzed. Values exceeding 5.00 are indicative of data that are non-normally distributed (Byrne, 2009, p. 104). The value of 20.03 in the measurement model indicates a violation of the assumption of normally distributed data. As discussed in Section 5.4.1, I apply ML estimation, which is relatively robust against violations of the normality assumption.

6.1.7 Detecting Outliers

Outliers are cases with extreme values. While a univariate outlier displays an extreme value in one variable, a multivariate outlier has extreme values for more than one variable (Byrne, 2009, p. 105; Kline, 2005, p. 51). Univariate outliers are detected using *z*-scores of 4.0 as a threshold for sample sizes larger than 80 (Hair et al., 2010, p. 67). Such *z*-scores ≥ 4.0 are found in 13 items (department_size, tenure_position_department[55], tenure_position, tenure_department, ambiguity5, KPI_focus1, KPI_focus3, KPI_focus4, resources5, insecurity4rec, proactiveness3, public_value4, and public_value5). Two cases with multiple *z*-scores ≥ 4.0 are identified and analyzed in detail: one manager consistently rated items very low (answers 1 or 2), while the other man-

[55]Variable created through transformation (Section 6.1.8).

ager had a very long tenure, causing high *z*-scores. These two and all other cases are retained.

Furthermore, Mahalanobis distance (D^2), a measure for the detection of multivariate outliers (Byrne, 2009, pp. 105–106), is analyzed in the complete measurement model (Section 6.2.3). An outlying case can be detected by its distinct D^2 value, which sets it apart (Byrne, 2009, p. 106). The largest value of 108.15 fulfills this criterion to some degree (next-largest values are 93.02, 88.21, and 86.86). After examination of the case, I decide to retain it to ensure a representative sample.

6.1.8 Transforming Variables

A number of data transformations were conducted to allow for further analyses. The transformations enable analyses of categorical data, recode reverse-worded items, correct non-normality, and ensure consistent measurement. The latter is necessary for two questions on tenure, as these were most likely interpreted inconsistently by the participants. Specifically, a few managers reported a shorter tenure in the current department than tenure in the current position, and others vice versa. Therefore, I compute the new variable tenure_position_department as representing the time a manager has been in the current position in the current department. A summary of all transformations is provided in Table 6.3.

Table 6.3: Data Transformations

Transformation	Input variable(s)	Output variable(s)	Justification
Dummy coding	strategy_group	strategy_group_II strategy_group_III strategy_group_IV strategy_group_V	Enabling analysis of categorical data
	function	function_HO function_HIS	
	contract	contract_employee contract_leave	
Reverse coding	ambiguity1R ambiguity4R insecurity3R insecurity4R insecurity5R	ambiguity1rec ambiguity4rec insecurity3rec insecurity4rec insecurity5rec	Recoding reverse-worded items
Combination (minimum)	tenure_position tenure_department	tenure_position_department	Ensuring consistency in tenure measurement
Logarithm	tenure_position_department department_size	tenure(log) department_size(log)	Correcting positive skewness

6.2 Measurement Model

This section establishes a 'complete' measurement model including constructs for the endogenous (dependent) and exogenous (independent) variables as described in Section 5.4. Before the complete measurement model is established, parts of it are established separately.

6.2.1 Endogenous Measurement Model

The endogenous measurement model is established first for the three-dimensional EO construct, and then for both the EO and the PVO constructs. The initial specification of the EO measurement model includes three latent variables for the three dimensions of EO: innovativeness (latent variable name INNOVATIVENESS), proactiveness (PROACTIVENESS), and risk-taking (RISK-TAKING). The latent variables' variances are set to 1.00 (Anderson & Gerbing, 1988, p. 415). They are measured using all items specified in Section 5.3.3. With 62 degrees of freedom, the EO measurement model is identified.

While most indices for the initial model already fall within the recommended range (Appendix 5), an application of the tests described in Section 5.4 leads to the deletion of four items. To increase reliability, risk-taking5 (λ = -.21, *t*-value = -3.04, $p < .01$), innovativeness4 (λ = .69, *t*-value = 12.07, $p < .001$), and proactiveness2 (λ = .61, *t*-value = 9.78, $p < .001$) are deleted. The two latter items and/or their error terms had the highest modification indices (MI). In addition, risk-taking1 is removed so as to increase content validity and avoid problems due to inconsistent interpretation: in a few comments to the questionnaire, the use of the word *risky* was criticized in the public sector context.

The trimmed EO model is identified with 24 degrees of freedom. All indices (Appendix 5) improved and are within acceptable range. The trimmed model contains no Haywood cases and all of its estimates are significant. The highest standardized residual is 2.24 (proactiveness3 and innovativeness1), well below the |4.00| cut-off value as well as no reason for further investigation. An inspection of the MIs and their substantive consequences yields no requirement for further re-specification. As a result, I accept the trimmed three-dimensional EO measurement model in terms of dimensionality. Item and construct-level reliability and validity measures are provided for the complete measurement model (Section 6.2.3).

When adding the six original PVO items to the model, model fit requirements are not fulfilled. Specifically, *RMSEA* exceeds .08 and *TLI* drops to .88. Only after removal of the items with insignificant loadings (public_value4, public_value5, and public_value6) do fit indices reach acceptable values. Substantively, the three removed items are further from the core meaning of public value orientation and do not include the term *public value* (unlike the retained items public_value1, public_value2, and public_value3).

The CFA of the trimmed exogenous measurement model includes the three EO dimensions and the construct PVO with three items each. With 48 degrees of freedom, the model reaches optimal or near-optimal fit for all indices considered (Appendix 5); it has significant loadings for all items, and demonstrates reliable and valid constructs (reported in Section 6.2.3).

6.2.2 Exogenous Measurement Model

Exploratory Factor Analysis

A common factor analysis (exploratory factor analysis, EFA) is conducted on all items intended for the exogenous measurement model with orthogonal rotation (varimax). The choice of the factor extraction method for this study is based on the objective of the EFA to identify latent dimensions or constructs. In such a case, the common factor analysis (also called principal factor/axis analysis) is preferred over principal component factor analysis (Hair et al., 2010, pp. 105–108). The Kaiser-Meyer-Olkin measure (*KMO*) verifies sampling adequacy for the analysis, *KMO* = .80 (on the border of *good* and *great*; Field, 2009, p. 659) and Bartlett's test of sphericity, χ^2 (1326) = 5980.67, $p < .001$, indicates sufficient correlations between the items.

To identify the relevant number of factors to be extracted, I rely mainly on parallel analysis (Horn, 1965), using PASW code (O'Connor, 2000) with the following specifications: 1000 parallel datasets; 95th percentile of the distribution (preferred over the interpretation of mean eigenvalues (Hayton, Allen, & Scarpello, 2004, p. 200; O'Connor, 2000, p. 397) and random data eigenvalues; principle axis / common factor analysis. For these settings, one analysis on normally distributed random data and one analysis on permutations of the raw dataset are run. The former suggests extracting 14 factors using the 95th percentile, while the latter suggests extracting 15 factors for the same criterion. Apart from these results, Kaiser's criterion of eigenvalues > 1.00 suggests the extraction of 15 factors. As a result, both versions (14 and 15 factors) are cal-

culated and interpreted. The resulting constructs after statistically and content-wise justified deletions do not differ. Representative for this process, the 14-factor solution, which converged in 13 iterations and explained 54% of the variance, is reported in Table 6.4 and below.

A total of 16 items are deleted based on low loadings or substantial and statistical interpretation. Nine items do not meet the criterion of significantly loading on one factor (≥ .35 for N = 250; Hair et al., 2010, p. 117) and are therefore deleted: KPI_interpretation3, KPI_interpretation4, KPI_interpretation2, insecurity5rec, rewards1, rewards3, rewards2, rewards4, and local5. Furthermore, seven items are deleted for substantial reasons. KPI_interpretation1 loads on the management support / work discretion construct, but mainly refers to KPI interpretation; two items intended to measure legal mandate (legal4 and legal5) load on a different factor than the other legal mandate items; two items intended to measure job insecurity negatively load on other constructs (insecurity3rec and insecurity4rec); and finally, two recoded items (ambiguity1rec and ambiguity4rec) do not load on the intended construct goal ambiguity.

The resulting constructs can be interpreted as a broader concept of management support including aspects of work discretion[56] (factor name SUPPORT, component 1), KPI focus (KPI_FOCUS, 2), resource availability (RESOURCES_1, 3), staff motivation (RESOUR_2, 8), multitude of expectations (EXPECTATIONS_1, 4), outsider influence (EXPECTATIONS_2, 10), goal ambiguity (GOAL_AMBIGUITY, 5), legal mandate (LEGAL_MANDATE, 6), localism (LOCALISM, 9), and job insecurity (SECUR, 13). Next, this structure is used to establish unidimensional, reliable, and valid measures.

Confirmatory Factor Analysis

The initial CFA model based on the EFA results does not fit the data well. As a result, a number of items are deleted to improve fit while not scarifying validity. The initial model with N = 250 and 549 degrees of freedom demonstrates feasible loadings and error terms (no Haywood cases), good χ^2/df (1.74), *RMSEA* (.06), and *SRMR* (.06)

[56]The broader concept will henceforth be referred to and interpreted as *management support*. The concept *work discretion* could not be established as a separate factor, which will be reflected in the interpretation of the results.

Table 6.4: Rotated Component Matrix of Exploratory Factor Analysis

Intended construct	Item	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Work discretion	**discretion1**	***.64***													
Work discretion	**discretion2**	***.76***													
Work discretion	**discretion3**	***.77***													
Management support	**support1**	***.77***													
Management support	**support2**	***.79***													
Management support	**support3**	***.73***													
KPI interpretation	KPI_interpretation1	.72													.33
KPI interpretation	KPI_interpretation2	.64													.47
KPI interpretation	KPI_interpretation3	.69													.43
KPI interpretation	KPI_interpretation4	.64													.37
KPI focus	**KPI_focus1**		***.67***												
KPI focus	**KPI_focus2**		***.76***												
KPI focus	**KPI_focus3**		***.77***												
KPI focus	**KPI_focus4**		***.75***												
KPI focus	**KPI_focus5**		***.61***												
Resource availability	**resources1**			***.71***											
Resource availability	**resources2**			***.72***											
Resource availability	**resources3**			***.43***											
Resource availability	**resources4**			***.58***											
Expectations	**expectations1**				***.75***										
Expectations	**expectations2**				***.78***										
Expectations	**expectations3**				***.40***										
Job insecurity	insecurity4rec				-.48	-.34									
Goal ambiguity	**ambiguity2**					***.60***									
Goal ambiguity	**ambiguity3**					***.35***									-.30
Goal ambiguity	**ambiguity5**					***.62***									
Job insecurity	insecurity3rec					-.52									
Job insecurity	insecurity5rec														
Legal mandate	**legal1**						***.40***								
Legal mandate	**legal2**						***.85***								
Legal mandate	**legal3**						***.76***								

Intended construct	Item	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Rewards/Reinforcement	rewards1	.51						.72							
Rewards/Reinforcement	rewards2	.42						.60							
Rewards/Reinforcement	rewards3	.52						.63							
Rewards/Reinforcement	rewards4							.33							
Resource availability	**resources5**								***.76***						
Resource availability	**resources6**								***.38***						
Resource availability	**resources7**								***.68***						
Localism	**local1**		.30							***.53***					
Localism	**local2**									***.35***					
Localism	**local3**									***.67***					
Localism	**local4**									***.51***					
Localism	local5														
Expectations	**expectations4**										***.69***				
Expectations	**expectations5**										***.49***				
Expectations	**expectations6**										***.48***				
Legal mandate	legal4											.73			
Legal mandate	legal5											.60			
Job insecurity	**insecurity1**												***.56***		
Job insecurity	**insecurity2**												***.49***		
Goal ambiguity	ambiguity1rec													-.60	
Goal ambiguity	ambiguity4rec													-.45	
Eigenvalues		8.82	5.02	2.90	2.44	2.16	2.04	1.71	1.65	1.47	1.39	1.35	1.21	1.16	1.10
% of variance		16.97	9.66	5.58	4.69	4.16	3.92	3.28	3.18	2.83	2.67	2.59	2.33	2.22	2.11

Note. Extraction method: principal axis factoring. Rotation method: varimax with Kaiser normalization.
Not displaying loadings < .30. Bold face indicates items retained for the confirmatory factor analysis.
$N = 250$.

measures. However, *CFI* (.87) and *TLI* (.85) are below the minimum requirements (Appendix 5).

In three rounds, the model is therefore re-specified, resulting in the deletion of eight items. In the first round, insecurity2 is deleted for insignificantly loading on SECUR, and the only remaining item measuring SECUR (insecurity2) is deleted as it fails to fully capture the construct. In the second round, resources3 and local2 are deleted for their low loadings on their respective constructs (0.38 on RESOURCES_1 and 0.33 on LOCALISM). In the third round, items that add little to a construct's meaning (support2, support3, KPI_focus1, and KPI_focus5) are removed to further improve fit.

The resulting trimmed model with 314 degrees of freedom satisfies requirements of dimensionality. There are no Haywood cases and all fit indices reach optimal (χ^2/df = 1.42, *RMSEA* = .04, *SRMR* = .06) or near-optimal (*CFI* = .94, *TLI* = .92) values (Appendix 5). The trimmed measurement model for the exogenous constructs is thus accepted.

6.2.3 Complete Measurement Model

Dimensionality

Two 'complete' measurement models are assessed. The exogenous measurement model is combined with the EO measurement model and it is combined with the EO + PVO measurement model. Both of the resulting complete measurement models include only feasible values for estimates and error terms (no Haywood cases). They also have a good fit (Appendix 5), reaching optimal values for χ^2/df (1.37/1.41), *RMSEA* (.04/.04), and *SRMR* (.05/.05) as well as reaching minimum values for *CFI* (.94/.93) and *TLI* (.93/.91). As a result, the models are accepted in terms of dimensionality. Reliability and validity on item and construct level are now discussed in detail.

Reliability

Item and construct-level reliability measures for the complete measurement model (the version including PVO) are provided in Table 6.5. At the item level, the direction and significance level of all loadings is as expected. However, λ (and associated IR/λ^2) range from .37 (.14) to .92 (.85) and thereby remain below minimum requirements of $\geq .63$ ($\geq .40$). At the construct level, composite reliability (*CR*) ranging from .60 to .88 meets requirements (threshold $\geq .60$), while average variance extracted (*AVE*) ranging

Table 6.5: Reliability at the Item and Construct Levels

Construct	Item	λ	*t*-value	*IR* (λ^2)	*AVE*	(α)	*CR*
SUPPORT	discretion1	.75	13.22***	.56	.61	(.86)	.86
	discretion2	.77	13.79***	.60			
	discretion3	.88	16.50***	.77			
	support1	.71	12.29***	.51			
KPI_FOCUS	KPI_focus2	.78	13.68***	.61	.65	(.84)	.85
	KPI_focus3	.79	13.91***	.62			
	KPI_focus4	.84	15.16***	.71			
RESOURCES_1	resources1	.79	12.99***	.62	.57	(.76)	.79
	resources2	.92	15.59***	.85			
	resources4	**.48**	7.51***	**.23**			
RESOURCES_2	resources5	.85	13.74***	.71	**.48**	(.70)	.73
	resources6	**.51**	7.71***	**.26**			
	resources7	.69	11.04***	.48			
GOAL_AMBIGUITY	ambiguity2	.80	11.13***	.64	**.43**	**(.64)**	.68
	ambiguity3	**.41**	5.80***	**.17**			
	ambiguity5	.70	9.99***	.49			
EXPECTATIONS_1	expectations1	.82	12.52***	.67	**.48**	**(.64)**	.72
	expectations2	.80	12.19***	.63			
	expectations3	**.37**	5.44***	**.14**			
EXPECTATIONS_2	expectations4	.71	9.12***	.50	**.34**	**(.58)**	.60
	expectations5	**.53**	7.05***	**.28**			
	expectations6	**.49**	6.63***	**.24**			
LEGAL_MANDATE	legal1	**.39**	5.84***	**.15**	.51	(.71)	.74
	legal2	.77	10.71***	.59			
	legal3	.89	11.95***	.79			
LOCALISM	local1	**.47**	6.39***	**.22**	**.35**	**(.58)**	.62
	local3	.63	8.63***	.40			
	local4	.66	9.04***	.44			
INNOVATIVENESS	innovativeness1	.74	13.25***	.55	.71	(.88)	.88
	innovativeness2	.89	17.22***	.79			
	innovativeness3	.90	17.49***	.80			
PROACTIVENESS	proactiveness1	.75	12.79***	.56	.53	(.77)	.77
	proactiveness3	.69	11.36***	.47			
	proactiveness4	.75	12.86***	.57			
RISK-TAKING	risk-taking2	.70	11.38***	.49	.53	(.78)	.77
	risk-taking3	.70	11.37***	.49			
	risk-taking4	.79	13.10***	.62			
PVO	public_value1	.74	12.69***	.55	.63	(.83)	.83
	public_value2	.83	14.68***	.68			
	public_value3	.81	14.22***	.65			
Threshold value (minimum/optimal)		≥ .63 / .70	≥ 1.96 / 2.56	≥ .40 / .50	≥ .50 / -	(≥ .70 / -)	≥ .50 / .60

Note. Bold face indicates sub-minimum values; criteria in parentheses are reported but not interpreted.
***$p < .001$, **$p < .01$, *$p < .05$, †$p < .1$.

from .34 to .71 does not (threshold ≥ .50). As explained in Section 5.4.4, items are kept if required so as to ensure content validity. Removing more items from the constructs with low *IRs* and/or *AVE* would jeopardize content validity. Furthermore, not achieving threshold values for items/constructs does not automatically require the rejection of the measurement model (Homburg & Baumgartner, 1998, p. 363). As a result, the analysis is continued despite single below-requirement values, acknowledging a non-perfectly reliable measurement model.

Validity

Content validity was ensured during the development of the questionnaire and has been assessed for the refined constructs by two academics. Changes compared to intended measures concern either the deletion of single items or the discovery of multidimensionality for a construct. In case of the deletion of single items, it was ensured that the remaining items fully capture the concept, as defined in Chapter 4. This was confirmed for all constructs. Regarding split constructs, the new dimensions of resources and expectations can be described and labeled as follows.

One construct was preliminarily labeled *RESOURCES_1*. Its items "I have enough time to do my work well." (resources1), "I have enough time to develop longer-term business strategies." (resources2) and "I have enough staff to quickly implement creative ideas." (resources4) closely resembles the definition of resource availability in Chapter 3. This dimension is consequently referred to as *resource availability*.

One construct was preliminarily labeled *RESOURCES_2*. This construct is measured by the items "My staff goes the extra mile very often." (resources5), "My staff often proposes good ideas." (resources6), and "My staff is often willing to take on further jobs." (resources7). These items refer to availability to a lesser degree than to attitudes or staff qualities. The construct is therefore labeled *staff motivation*.

One construct was preliminarily labeled *EXPECTATIONS_1*. All items of this construct complete the clause "Local actors in the labor market (employer associations, unions, politics, etc.). In my district, …" The items continue with "the local actors' expectations on the agency [department] are very diverse." (expectations1), "the local actors' expectations on the agency [department] are high." (expectations2), "the expectations of several local actors are contradictory in some aspects." (expectations3).

These items closely resemble the definition of *multitude of expectations* in Chapter 3, which will be used as its label.

One construct was preliminarily labeled *EXPECTATIONS_2*. The items of this expectations dimension are "Local actors influence many decisions on the agency [department] level." (expectations4), "I frequently receive proposals from the local environment." (expectations5), and "The Management Committee frequently expresses specific expectations." (expectations6). The content of these items refers to the extent and specificity of outsiders' influence. This construct is therefore labeled *outsider influence*.

Criterion validity is not explicitly assessed for all constructs. However, the reasonably high intra-class correlation coefficients (up to .80) of self-report average and supervisor ratings of EO in Section 6.1.3 can be interpreted as an indication of criterion validity. Construct validity, i.e. assessing whether the constructs relate to one another in the predicted way, is tested in the SEM.

Discriminant validity is assessed following the procedure suggested by Fornell and Larcker (1981). As required, the *AVE* of most constructs is larger than the squared correlations (R^2) with other constructs (Appendix 6). There is only one exception: PROACTIVENESS's *AVE* of .53 is not larger than its R^2 with INNOVATIVENESS (.53). However, this marginal violation appears uncritical, as PROACTIVENESS and INNOVATIVENESS will be used as sub-dimensions of the second-order construct EO.

6.2.4 Summary of Measurement Model

Unidimensional, reliable, and valid measures of the constructs under research are the prerequisite for conducting structural equation modeling. The use of modified and new items for all constructs in this study required an elaborate process to establish an acceptable measurement model. During this process, not all constructs could be measured as intended. The constructs rewards/reinforcement, KPI interpretation and job insecurity are not part of the complete measurement model. The construct work discretion is now partly represented in the broader management support construct. Furthermore, sub-dimensions of multitude of expectations and resource availability were identified empirically; these are now represented in the model accordingly. Finally, items with low loadings were removed so as to increase reliability.

The resulting measurement model acceptably fulfills the statistical requirements with a few limitations. The measures of dimensionality (goodness of fit indices) reach optimal or at least minimum requirements. Nevertheless, not all reliability measures at construct and item level achieve the desired levels. Substantial interpretation and the application of the practice described in Section 5.4.4 lead to the acceptance of the model. Still, constructs with very low *IR* and *AVE* must be interpreted with care. This is especially true for the constructs EXPECTATIONS_2 and LOCALISM. As far as could be assessed, validity is acceptable for all constructs. With the limitations of the measurement model in mind, I use the instrument for testing the hypotheses using structural equation modeling.

6.3 Structural Equation Model and Robustness Tests

In the second step of the two-step approach (Anderson & Gerbing, 1988), the measurement models are used to test the hypotheses (Section 5.4). The first structural equation model identifies the relevant control variables. Next, the effects of antecedents on EO and the effect of EO on PVO are tested separately and then in one model. Finally, the results are presented in light of the hypotheses. Table 6.6 provides descriptive statistics for the constructs and the control variables involved in this process.

6.3.1 Control Variables

All control variables defined in Section 5.3.8 are included in an initial SEM to determine their effect on EO. These effects are examined at the manager level and the department level so as to mitigate the problem of non-independency. The initial manager-level model[57] indicates seven variables with significant coefficients (Appendix 7). However, only two variables had significant effects on both levels after removal of insignificant variables. Specifically, tenure(log) (manager/department level: standardized coefficient β = .27/.33; *t*-value = 3.67/3.71; $p < .001/.001$) and strategy_group_IV (β = .16/.21; *t*-value = 2.29/2.48; $p < .05/.05$) are retained and included in the subsequent models.

[57]The initial model is run with $N = 238$ cases, which include values for all control variables. N is increased to 250/152 (for manager/department level) after the removal of the variables residency, contract_employee, and contract_leave.

Table 6.6: Descriptive Statistics of Constructs and Control Variables

Category	Construct / Control variable	Mean	Standard deviation	*N*
Exogenous constructs	SUPPORT	13.87	3.94	250
	RESOURCES_1	9.26	2.88	250
	RESOURCES_2	13.24	2.30	250
	KPI_FOCUS	14.32	2.44	250
	GOAL_AMBIGUITY	14.76	2.69	250
	EXPECTATIONS_1	13.74	2.28	250
	EXPECTATIONS_2	8.80	2.46	250
	LEGAL_MANDATE	11.51	2.68	250
	LOCALISM	14.09	2.41	250
Control variables	function_HO	0.43	0.50	250
	function_HIS	0.11	0.31	250
	age	50.52	7.10	250
	gender	0.32	0.47	250
	tenure(log)	0.58	0.25	250
	tenure_organization	23.16	9.28	250
	contract_employee	0.22	0.41	247
	contract_leave	0.23	0.42	247
	residency	0.42	0.50	241
	department_size(log)	2.50	0.24	250
	strategy_group_II	0.17	0.37	250
	strategy_group_III	0.25	0.43	250
	strategy_group_IV	0.22	0.41	250
	strategy_group_V	0.20	0.40	250
Endogenous constructs	INNOVATIVENESS	12.98	2.63	250
	PROACTIVENESS	13.39	2.45	250
	RISK-TAKING	10.34	2.70	250
	PVO	12.60	2.27	250

Note. Construct values refer to composites, not to latent variables.

6.3.2 Structural Equation Model: Exogenous Constructs and EO

The initial SEM on manager level includes the trimmed measurement model for the exogenous constructs and EO as well as the two significant control variables tenure(log) and strategy_group_IV. The model with $N = 250$ and 396 degrees of freedom does not satisfy statistical requirements (Table 6.7): *TLI* of .89 is slightly below the minimum requirement of .90. Therefore, the coefficient estimates (Table 6.8) can only be interpreted with care. However, given the measurement model's acceptable fit, I use the results to identify and remove less important predictors of EO from the model. As a result, RESOURCES_1, LEGAL_MANDATE, EXPECTATIONS_2, KPI_FOCUS, GOAL_AMBIGUITY and strategy_group_IV are excluded from the trimmed model. In addition, interpretation of the modification indices suggests a correlation between tenure(log) and LOCALISM (MI = 10.83) and/or one of its item's (local1) error term (MI = 24.36). The correlation between LOCALISM and tenure(log) is

set free, as a longer position/department tenure might result in higher localism and/or high localism might result in a manager staying longer with the current department.

The trimmed SEM at manager level with 222 degrees of freedom and $N = 250$ does reach substantially better fit levels. It is accepted based on the values presented in Table 6.7, which reach the minimum requirements in all dimensions. As a robustness test, the same model is estimated using department-level aggregates of the items. The resulting model with also 222 degrees of freedom is based on 152 cases. While χ^2/df (1.73) and *RMSEA* (.07) satisfy statistical requirements, *SRMR* (.11), *CFI* (.89), and *TLI* (.88) are slightly below minimum threshold values. As a result, the coefficient estimates (Table 6.8) can only be interpreted with care.

6.3.3 Structural Equation Model: EO and PVO

The SEM testing the relationship between EO and PVO has no infeasible factor loadings or error terms (Haywood cases). Furthermore, both the manager-level and the department-level models reach optimal values on all statistics (Table 6.7). In fact, the department-level model fits the data better than the manager-level model, with a lower χ^2/df (1.44 versus 1.90), lower *RMSEA* (.05 versus .06), lower *SRMS* (.05 versus .06), and higher *CFI*/*TLI* values (.98/.97 versus .90/.96). This observation is plausible as both constructs do in fact refer to the department level (Section 5.4.1). The estimated coefficient (Table 6.8) is large and significant in both models (manager/department level: $\beta = .57/.65$; *t*-value = 6.10/5.87; $p < .001/.001$). Despite a model with only one predictor, the squared multiple correlation (R^2) of PVO displays moderate levels (.32/.42). This means that 32%/42% of PVO's variance is explained by EO in the manager/department-level model.

6.3.4 Structural Equation Model: Exogenous Constructs, EO and PVO

In this step, the two SEMs established for separate parts of the research model are combined. The resulting model includes both the most important antecedents of EO (SUPPORT, RESOURCES_1, EXPECTATIONS_1, LOCALISM, and tenure(log)) as well as the relationship between EO and PVO (Appendix 8). All estimated loadings and error terms of this model are feasible (no Haywood cases) and all fit indices considered are acceptable at the manager level (Table 6.7). Again, fit at the department level is worse, and three statistics are slightly beyond the minimum requirements. Specifically, department-level *SRMR* (.11), *CFA* (.89), and *TLI* (.88) show that estimated coefficients (Appendix 9) have to be interpreted with care. Regarding R^2 of

Table 6.7: Model Fit of Structural Equation Models

Category	Statistic	Exogenous + EO			EO + PVO		Exogenous + EO + PVO		Threshold value (minimum/ optimal)
		Manager level initial	Manager level trimmed	Depart-ment level	Manager level	Depart-ment level	Manager level	Depart-ment level	
Specification	*N*	250	250	152	250	152	250	152	-
	χ^2	664.17	364.65	383.72	94.83	71.96	500.74	488.53	-
	df	396	222	222	50	50	290	290	-
Absolute fit	χ^2/df	1.68	1.64	1.73	1.90	1.44	1.73	1.69	≤ 3.00 / 2.00
	(*p*)	**(.00)**	**(.00)**	**(.00)**	**(.00)**	**(.02)**	**(.00)**	**(.00)**	(≥ .05 / -)
	RMSEA	.05	.05	.07	.06	.05	.05	.07	≤ .08 / .05
	(*p-close*)	(.30)	(.43)	**(.00)**	(.18)	(.39)	(.20)	**(.00)**	(≥ .05 / -)
	SRMR	.09	.08	**.11**	.06	.05	.08	**.11**	≤ .10 / .08
	(*GFI*)	**(.85)**	**(.89)**	**(.83)**	(.94)	(.93)	**(.87)**	**(.81)**	(≥ .90 / .95)
Parsimony fit	(*AGFI*)	**(.83)**	**(.86)**	**(.79)**	(.91)	**(.88)**	**(.85)**	**(.77)**	(≥ .90 / .95)
Incremental fit	*CFI*	.90	.93	**.89**	.97	.98	.92	**.89**	≥ .90 / .95
	TLI	**.89**	.92	**.88**	.96	.97	.91	**.88**	≥ .90 / .95
Variance explained	R^2 EO	.46	.47	.64	-	-	.48	.68	-
	R^2 PVO	-	-	-	.32	.42	.31	.38	-

Note. Bold face indicates sub-minimum values; criteria in parentheses are reported but not interpreted.

the endogenous latent constructs, the department-level model shows higher levels compared to the manager-level model: .68 versus .48 for EO and .38 versus .31 for PVO. Yet, at both levels, these values suggest a model explaining high proportions of the endogenous constructs' variances.

6.3.5 Test of Hypotheses: Interpretation of Coefficients

To test the hypotheses formulated in Chapter 4, the sizes[58] and significance levels of standardized coefficients are interpreted (Appendix 9 contains all relevant estimates). This interpretation is constrained by the results of the measurement model establishing process (constructs partly excluded or redefined). Not all hypotheses can thus be tested using SEM as intended. Furthermore, three constructs included in the initial SEM are not part of the final SEM. The low and insignificant estimates of these constructs are interpreted despite the (slight) misfit of the initial model, mainly due to their unambiguousness (the largest *t*-value of the constructs excluded in the final model is 1.51). Furthermore, the coefficients of the retained constructs vary between the models, but without significantly affecting interpretation. For supported hypotheses, β, *t* and *p*-values from the most comprehensive model with acceptable fit (SEM Exogenous + EO + PVO Manager) are interpreted. These values are also provided in Table 6.8, which contains a summary of the hypotheses testing.

Regarding *organizational antecedents* of EO, H1a, which suggests a positive correlation between management support and EO, is supported. The broader construct of management support SUPPORT, which includes aspects of work discretion, has a small positive effect on EO.[59] H1b, suggesting a positive correlation between work discretion and EO, cannot be tested, as the related items are included in the SUPPORT construct. H1c, which suggests a positive correlation between rewards/reinforcement and EO, cannot be tested, as the related items do not load on one construct as intended. H1d, suggesting a positive correlation between resource availability and EO, is partly supported. The dimension RESOURCES_1 (resource availability) has no significant

[58]Effect sizes are classified as small (r = .1), medium (r = .3), or large (r = .5; Cohen, 1988, pp. 79–81).

[59]It should be noted that the effect is significant only for $p < .1$ in two models (SEM Exogenous + EO manager level and SEM Exogenous + EO + PVO department level) and not significant in one model (SEM Exogenous + EO department level). In short, I perceive enough statistical support to justify accepting the hypothesis.

Table 6.8: Results of Hypotheses Testing

Hypothesis Number	Sign	Constructs	Standardized coefficients (*t*-value)	Result	Comment
H1a	+	Support -> EO	.147[a] (2.22)*	Supported	
H1b	+	Discretion -> EO	-	Not tested	
H1c	+	Rewards -> EO	-	Not tested	
H1d	+	Resources -> EO (RESOURCES_1)	-.072[b] (-1.08)	Partly supported[c]	Not supported for *resource availability*, supported for *staff motivation*
		(RESOURCES_2)	.475[a] (5.39)***		
H1e	-	KPI focus -> EO	.102[b] (1.51)	Not supported[d]	
H1f	+	KPI interpretation -> EO	-	Not tested	
H1g	-	Goal ambiguity -> EO	.037[b] (0.53)	Not supported[d]	
H2a	+	Expectations -> EO (EXPECTATIONS_1)	.240[a] (3.25)**	Partly supported[c]	Supported for *multitude of expectations*, not supported for *outsider influence*
		(EXPECTATIONS_2)	.111[b] (1.40)		
H2b	+	Legal Mandate -> EO	-.025[b] (-0.37)	Not supported[d]	
H3a	-	Job insecurity -> EO	-	Not tested	
H3b	+	Localism -> EO	.327[a] (3.42)***	Supported	
H4	+	EO -> PVO	.560[a] (6.00)***	Supported	

[a]Values from most comprehensive SEM (SEM Exogenous + EO + PVO Manager level).
[b]Values from initial SEM (SEM Exogenous + EO Manager Initial).
[c]Hypothesis supported for one dimension of the construct (see comment).
[d]Low correlation in initial SEM, which has a slightly below-requirements fit.
***$p < .001$, **$p < .01$, *$p < .05$, †$p < .1$.

effect on EO, while the dimension RESOURCES_2 (staff motivation) has a large positive effect on EO. Hypotheses H1e and H1g, which suggest negative correlations between KPI focus/goal ambiguity and EO, are not supported. H1f, which refers to KPI interpretation, could not be tested. Regarding the *environmental antecedents* of EO, H2a, which suggests a positive correlation between multitude of expectations and EO, is partly supported. The dimension EXPECTATIONS_1 (multitude of expectations)

has a medium positive effect on EO, while the dimension EXPECTATIONS_2 (outsider influence) has no significant effect on EO. H2b, which suggests a positive correlation between legal mandate and EO, is not supported. Regarding *managerial antece*ing a positive correlation between localism and EO, is supported. A medium positive effect is found between the re-specified construct LOCALISM and EO. Finally, H4, *den*ts of EO, H3a, suggesting a negative correlation between job insecurity and EO, is not tested because the measurement items do not capture the construct. H3b, suggest which suggests a positive correlation between EO and PVO, is supported: a large positive effect size is found in the final structural equation model.

6.4 Summary of Results

In this chapter, data from 250 middle managers of the German Federal Labor Agency (response rate 73%) were used to test the theoretical model. First, the data were assessed on a number of aspects and found to be suitable for this research: there is little indication for nonresponse or common method bias; data are missing at random and were replaced using EM; graphical examination and detection of outliers do not result in any major limitations. While the data are not multivariate normally distributed, the requirement of univariate normal distribution is fulfilled.

In the second part of this chapter, the data are used to establish unidimensional, reliable, and valid measurements. As far as can be judged, this is achieved for the endogenous constructs EO and PVO. For the exogenous constructs, not all indicators reach optimal values. Due to inadequate measurement instruments, three constructs (rewards/reinforcement, KPI interpretation, and job insecurity) cannot be measured at all. The initially separate constructs work discretion and management support are combined in one broader concept of management support. Furthermore, the constructs resources availability and multitude of expectations reveal two sub-dimensions each, resulting in the creation of RESOURCES_1 (resource availability), RESOURCES_2 (staff motivation), EXPECTATIONS_1 (multitude of expectations), and EXPECTATIONS_2 (outsider influence). Of the resulting 9 exogenous constructs, outsider influence and localism show particularly low reliability measures. Overall, the complete measurement model is acceptable, but not optimal.

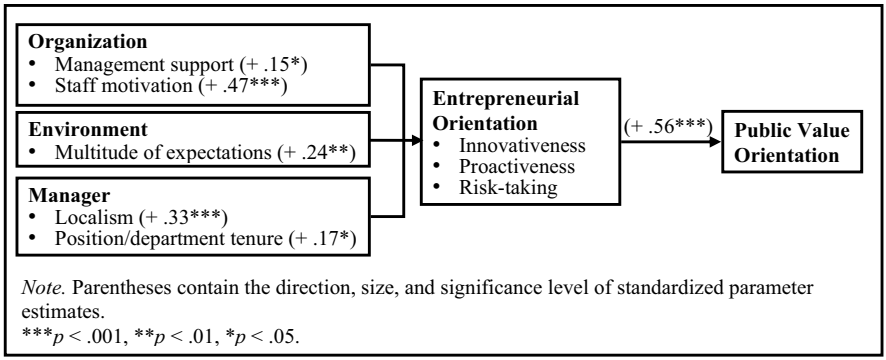


Figure 6.2: Final Structural Equation Model

In the third part of this chapter, the measurement model is used to test the hypotheses at the individual (manager) level. Furthermore, the results are tested for robustness at the aggregate (department) level. These tests provide full or partial support for five hypotheses and the influence of one control variable. Specifically, management support (including aspects of work discretion), staff motivation, multitude of expectations, localism, and position/department tenure are positively correlated with EO, which in turn is positively correlated with PVO. The data do not provide support for the other hypotheses. These results are illustrated in Figure 6.2. Appendix 8 provides a detailed version of the final structural equation model. Appendix 10 provides an overview of the constructs and variables used in each of this study's main modeling steps.

7 Discussion

At the outset of this dissertation, I described how public sector organizations were affected by the introduction of private sector management principles and that they are expected to become more entrepreneurially oriented. Whether such entrepreneurial orientation is value-adding has been hotly debated in the public sector literature. In this dissertation, I analyze survey data from Germany's FLA middle managers to empirically approach the research questions: *Which antecedents explain department-level entrepreneurial orientation in the public sector?* And, *how is department-level entrepreneurial orientation related to public value orientation?* Next, I interpret the analyses' results and show how the research questions can be answered. I then highlight contributions to relevant literature streams and management practice, before pointing out limitations and avenues for future research.

7.1 Interpretation of Results

This dissertation provides empirical support for the influence of management support (including aspects of work discretion), staff motivation, multitude of expectations, managers' localism, and managers' position/department tenure on department-level entrepreneurial orientation. Resource availability (which measures time and staff availability), KPI focus, goal ambiguity, outsider influence, and legal mandate have no significant influence. Furthermore, a positive relationship between EO and PVO is identified. These results are interpreted first separately (i.e., by hypothesis) and then jointly. The interpretations presented here were also discussed and confirmed in the workshops with participants after the survey (Section 5.5). Hypotheses involving constructs that did not satisfy statistical requirements (i.e., work discretion, rewards/reinforcement, KPI interpretation, and job insecurity) are not discussed separately.

For all organizational antecedents, it should be noted that these were measured within one organization with one overarching structure and similar systems, thus providing potentially limited variance, which could influence EO. On the other hand, the FLA's 10 regions provide a source for some variation and middle managers' perceptions (as opposed to actual manifestations) influence behaviors (Hornsby et al., 2009, p. 237; Marginson, 2002, p. 1027), which is also underpinned by the observed variance in the constructs (see Table 6.6). These reflections are taken into account in the following interpretation.

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7.1.1 Organizational Antecedents of Entrepreneurial Orientation

Antecedents derived from the research stream on organizational antecedents in private sector CE research (Hornsby et al., 2002; Section 2.3.1) are interpreted jointly here: two of these constructs (management support including aspects of work discretion and staff motivation) have significant impacts on EO, one construct (resource availability) has no significant impact on EO, and two constructs (work discretion and rewards/ reinforcement) could not be tested separately. Thus – generally – these results support the work of Hornsby et al. (2002). The role of *management support* (including aspects of work discretion) is also in line with a larger body of earlier private sector research (Burgelman, 1983a, p. 241; Damanpour, 1991, p. 551; Hisrich & Peters, 1986, pp. 308–311; Hornsby et al., 1993, p. 32; Kanter, 1985, pp. 53–55; Macmillan et al., 1986, p. 184; Quinn, 1985, pp. 77–83; Sathe, 1989, pp. 20–27; Sykes, 1986, pp. 277–278).

Furthermore, the present findings seem to be largely consistent with two recent studies on organizational antecedents of corporate entrepreneurship. In the private sector, Hornsby et al. (2009, p. 241) found positive relationships between management support, work direction, and rewards/reinforcement with middle managers' entrepreneurial behavior. Also in their study, unexpectedly, time availability was negatively related to entrepreneurial behavior. In the public sector, Wood et al. (2008, p. 126) found similar results, despite a number of differences between their study and this study (level of analysis, measures, context, and analytical procedures). Their research suggests positive correlations between perceived CE and rewards/reinforcement, management support, organizational boundaries, and work discretion.[60] Consistent with the findings of this study, their measure of resource availability was unexpectedly not positively correlated with perceived CE.

Thus, *resource availability* consistently fails to stimulate corporate entrepreneurship. At first sight, this contradicts Hornsby et al. (2002, p. 253), Kuratko et al. (2005, p. 280), Covin and Slevin (1991, p. 15), Hisrich and Peters (1986, p. 319), Damanpour (1991, p. 574), Rosner (1968, pp. 615–624), Quinn (1985, p. 76) and Kanter (1985, p. 56). Yet, a more detailed view reveals that many measures of resource availability

[60]Wood et al. (2008) employ the terms *appropriate use of rewards*, *management support*, *supportive structure*, and *risk-taking and failure tolerance* respectively while using the CEAI (Hornsby, Kuratko, & Zahra, 2002).

have a strong focus on time availability (Hornsby et al., 2009; Hornsby et al., 2002; Wood et al., 2008; this study). This strong focus on time availability emerged in Hornsby et al.'s (2002) factor analysis. In light of the empirical results, this focus seems inappropriate. Rather, abundant, undirected time either does not influence or negatively influences middle managers' entrepreneurial behavior. Instead, they may invest such time in non-entrepreneurial activities.[61]

The antecedent *staff motivation*, which emerged in this research and can be considered as adequate human resources for entrepreneurial activities, is a main determinant of department-level EO. These results are in line with the above-mentioned scholars that argue for the importance of resource availability. Particularly Quinn (1985, p. 76), who stresses the role of team commitment and quality, is supported. The factor staff motivation may be particularly important in contexts such as that of the FLA, as its staff turnover during the past few years was high. Consequently, middle managers at least partly lacked experienced and skilled staff (Meynhardt & Metelmann, 2009, p. 301). It seems that middle managers, who are still able to motivate staff for activities beyond routine tasks, are able to foster department-level EO.

The effects of *management control systems* on corporate entrepreneurship have enjoyed little research, and the results of previous research are difficult to compare due to inconsistent constructs (Section 4.2.5). In the public sector, a large number of scholars and practitioners have criticized the focus on KPIs as being counterproductive (Bevan & Hood, 2006; Christiensen et al., 2007, pp. 149–158; Meynhardt & Metelmann, 2009, pp. 296–298; Schultz, 2009; and, to some extent, Pollitt & Bouckaert, 2004). Yet, within the context of this study, such claims are not supported. KPI focus does not have a negative effect; in fact, it has a (non-significant) positive effect on the organizational outcome EO. This finding is consistent with Marginson (2002, p. 1026), who finds that KPI use does not discourage the development of initiatives and new ideas. The finding is also consistent with Barringer and Blu-

[61] An alternative explanation for this study's results with respect to resource/time availability could be the unit of analysis. In a model outlined by Hornsby et al. (2002, p. 261), time availability directly affects middle managers' entrepreneurial behavior. The implementation of such behavior is then moderated by resource availability. Using this model, the effect of time availability on the measure of department-level EO used in this study, would not be direct, but rather indirect. The same explanation would apply to the results of Wood et al. (2008). On the other hand, this interpretation cannot explain Hornsby et al.'s (2009) findings.

edorn (1999, p. 433), who find no support for a negative effect of financial control on CE.

Whether or not middle managers act entrepreneurially thus does not appear to be impeded by a perceived strong KPI focus. One possible explanation might be given by Morris et al. (2006, p. 489), who conclude that entrepreneurial behavior is not influenced by the extent of control, but rather by the type of control and the way managers use it. In line with this argumentation, the FLA's KPIs might actually measure 'the right thing' – at least in promoting innovativeness, proactiveness, and risk-taking. Other outcomes, for example public value creation, might be affected differently. Another explanation for the discrepancy between the 'KPI critics' and this study's results might be the organizational level. This study focused on middle managers, which may be affected differently by KPIs than members of other organizational levels (see Hornsby et al., 2009, p. 244). In addition – as for all other antecedents – the single organization character of the data might bias results. Yet, as mentioned above, there is variation in the perception of KPI focus. In short, especially taking into account other empirical findings (Barringer & Bluedorn, 1999, p. 433; Marginson, 2002, p. 1026), the results could be interpreted in the following way: KPI focus as such does not negatively influence public sector performance. This interpretation would also be consistent with Moore (2010), who sees no contradiction between KPIs and the creation of public value.

Goal ambiguity (clarity) has no effect on EO in the overall sample. The results thus cannot support the claim that goal clarity improves organizational performance (Rainey, 2009, p. 153). One explanation for this finding could be that managers react in different ways to goal ambiguity, as anticipated by Ramamurti (1986, p. 151). Accordingly, entrepreneurial managers can deal with the associated uncertainty, while others might be hindered from taking a more strategic, i.e. entrepreneurial role (Currie & Procter, 2005, p. 79). The results are also in line with related analyses by Tubre and Collins (2000), who find no impact of role conflict on job performance and Monsen and Boss (2009, p. 93), who find mixed results for the relationship between dimensions of EO and role ambiguity. Another explanation of this study's results could be varying effects of goal ambiguity on individual dimensions of EO (i.e., innovativeness, proactiveness, and risk-taking). However, without further analysis, this study cannot help to clarify the role of goal ambiguity with regard to EO.

7.1.2 Environmental Antecedents of Entrepreneurial Orientation

Multitude of expectations has a strong effect on managerial action and does foster EO as anticipated by Meynhardt and Metelmann (2009, pp. 302–304). This evidence also supports other scholars in favor of PVM (Collins, 2007, p. 7; Gains & Stoker, 2009; Kelly et al., 2002, pp. 26–27; Stoker, 2006, pp. 47–56). They argue for a more networked approach to public administration that considers stakeholders' expectations. Local community needs and key stakeholders accordingly play an important role in defining and achieving public sector objectives. Furthermore, this observation is in line with Teske and Schneider's (1994, p. 331) findings on city managers. The fact that outsider influence, which emerged as a separate factor during the analyses, does not have significant influence on department-level EO allows for a more detailed view. The more specific aspect of outsiders actually influencing decisions and making specific proposals to the department does not add explanatory power to the model. One interpretation of these results is that local actors should be consulted, but the specific decisions should still be made within the public sector organization delivering the service. A larger number of ideas available to the managers and, possibly, access to further external support (e.g., financial or via cooperation) as well as the desire to fulfill these expectations are further explanations. How these possible explanations relate to other antecedents is outlined in some detail in Section 7.1.4.

The influence of *legal mandate* on department-level EO is not supported. The middle managers' perception of whether the legal mandate demands and allows for entrepreneurial behavior is less important than anticipated. This study has thus been unable to strengthen the observations by Meynhardt and Metelmann (2009, p. 301) and Moon (1999, p. 40). It seems that other constructs included in this study have stronger effects on middle managers' entrepreneurial behavior. One explanation for the contradicting results, even within the FLA context, might be found in public managers' ethos. Presumably, most public managers will only act within the legal framework, whether or not they see room for entrepreneurial behavior. Thus, how they interpret the legal framework with respect to EO might not be a differentiating factor. Another explanation could be the different foci of the two studies. While Meynhardt and Metelmann (2009, pp. 301–302) identify the legal framework as a whole ("legal obligations") as an antecedent of public value creating managerial action, this study investigates the effect of the legal framework's *EO aspect* on department-level EO.

7.1.3 Managerial Antecedents of Entrepreneurial Orientation

Department-level EO is positively affected by middle management's *localism* –their willingness and desire to fulfill the local community's needs. This finding is as predicted and thus confirms related research that identifies the importance of preference for the local community (Mack et al., 2008, p. 245), external communication (Damanpour, 1991, pp. 589–590; Tushman, 1977, pp. 1–5), and individuals' desire to respond to local needs (Schneider et al., 1995, p. 216). The latter could be interpreted as feeling accountable to the local community. This study cannot confirm the importance of organizational membership (Corwin, 1975, p. 10; Kaluzny et al., 1974, p. 67; Mack et al., 2008, p. 245), since the corresponding measure is not included in the final model. What is also noteworthy for further discussion is the strong positive impact of position/department tenure on EO (Sathe, 1988, p. 407). I will now interpret how tenure, localism, and the other antecedents of department-level EO may relate.

7.1.4 Integrated Interpretation of Antecedents of Entrepreneurial Orientation

The study's findings and their interpretation allow for the answering of the first research question: *Which antecedents explain department-level entrepreneurial orientation in the public sector?* In short, this study finds that management support, staff motivation, multitude of expectations as well as managers' localism and position/department tenure positively influence department-level EO in the public sector, while resource availability, KPI focus, goal ambiguity, and legal mandate do not influence department-level EO in the public sector. In other words, middle managers need to stay in their departments for some time to develop an understanding and caring for the local environment and its needs. These managers are then more likely to behave entrepreneurially when they have the right people and top management provides the necessary backing. Taken together, these findings allow for three broad interpretations beyond the specific hypotheses.

First, adapting constructs from private sector research proved beneficial in this research. Organizational antecedents relevant in the private sector (Hornsby et al., 2002) also play a role in the public sector. In this study, management support (including aspects of work discretion) and staff motivation (derived from resource availability) influence entrepreneurial orientation. In this respect, the findings support the notion that careful adaptation of private sector research to the public sector can be rewarding (Pettigrew et al., 1992, p. 13).

Second, the joint interpretation of the three antecedents multitude of expectations, managers' localism, and position/department tenure appears fruitful. The longer managers work within one department (i.e., in the same geography), the more opportunities they have to become involved in the local community and feel at home. At the same time, they might be more likely to increase their formal and informal networks as well as to gain access to important information. This interpretation would confirm Sathe's assertion that "playing musical chairs with managers does not help" (1988, p. 407). Managers need to develop a profound knowledge of relevant areas and build networks in the local environment (1988, p. 406) and within the department (Floyd & Wooldridge, 1999, p. 133). Such embeddedness in local networks might help them discover opportunities by learning stakeholders' preferences and in finding support to implement projects (Mintrom, 2000, p. 282; Schneider et al., 1995, p. 216). This interpretation would also be in line with Moore (2010), who suggested a shift of managers' accountability. With increasing tenure, localism, and high external expectations, managers might feel accountable to the local community rather than to the organization. They would then strive to find more innovative, proactive, and sometimes risk-taking ways to fulfill local needs. Furthermore, such an interpretation would lend support to scholars promoting public value management. In PVM, local community needs, key stakeholders, and networks play important roles in defining and achieving public sector objectives (see Table 3.4; Gains & Stoker, 2009; Kelly et al., 2002, pp. 25–26; Meynhardt, 2008, p. 459). Accordingly, a manager's job would include the steering of networks and the incorporation of local preferences (O'Flynn, 2007, p. 361). This study's results underline the need for networks in order to achieve a desirable organizational outcome. In other words, the results provide initial support for Stoker's assertion: "One must involve many stakeholders to make good decisions and to get a grip on delivery and implementation" (2006, p. 56).

Third, it is worth analyzing the type of significant and non-significant antecedents – despite potentially limited generizability (Section 7.4). With respect to significant antecedents, it should be noted that they represent all three categories (variables at the levels of organization, environment, and individual) suggested by Covin & Slevin (1991, p. 8; also see Ireland et al., 2009; Lumpkin & Dess, 1996). Comparing the explanatory power of this study's final model with, for example, Wood et al. (2008) confirms its advantages. Incorporating only organizational antecedents, Wood et al. (2008, p. 127) are able to explain 34% of variance in perceived CE, while this study's model explains 48% of EO (at an individual level; Table 6.7). This finding reminds us that

models that do not include variables from all three categories (e.g., Hornsby et al., 2002; Kearney et al., 2008; Kuratko et al., 2005) might be limited in explaining variance. On the other hand, few of the hypothesized organizational antecedents had large significant effects. Management support (including aspects of work discretion) was only marginally significant, despite the large standard deviation (see Table 6.6), which indicates high variance within the organization. The main measure of resource availability (Hornsby et al., 2002) and none of the management control system aspects included in this study (i.e., focus on KPIs (Bevan & Hood, 2006, p. 533); and goal ambiguity (Currie & Procter, 2005; Ramamurti, 1986; Hisrich & Peters, 1986; Marginson, 2002; Meynhardt & Metelmann, 2009)) seem to influence department-level EO. In this research's context, and taken to an extreme, one could interpret these indications as *people matter more than structure*. Even with all organizational antecedents in place, unable or unwilling managers might not act entrepreneurially. The fact that the environmental antecedent legal mandate (Meynhardt & Metelmann, 2009, p. 301) did not have a significant relationship with EO further supports this interpretation.

7.1.5 Entrepreneurial Orientation and Public Value Orientation

The answer to the second research question – *how is department-level entrepreneurial orientation related to public value orientation?* – becomes evident when one considers the results of the analyses: there is a large positive correlation between the two constructs. Higher levels of entrepreneurial orientation are thus – at least in the eyes of the middle managers – related to higher levels of public value orientation. This lends support to work that argues for entrepreneurial management so as to create public value (Alford, 2008; Kelly et al., 2002; Meynhardt & Metelmann, 2009; Moore, 1995).

The empirical evidence for the positive relationship between EO and PVO is also in line with the positions of the proponents of public entrepreneurship (Currie et al., 2008; Kearney et al., 2008, 2009; Morris & Jones, 1999; Osborne & Gaebler, 1992; Roberts, 1992; Roberts & King, 1991, 1991). While the instrument PVO did not measure public value creation, this study indicates a positive outcome of public entrepreneurship. The results thus also refute criticism of public entrepreneurship (deLeon & Denhardt, 2000; Du Gay, 2000; Rhodes & Wanna, 2008; Terry, 1993, 1998).

7.2 Contributions to Literature

This study contributes to research on public entrepreneurship, public value management, and corporate entrepreneurship in general. Its main contributions derive from the

development of an integrated model at the middle management level, its careful empirical testing, and the interpretation of its results.

7.2.1 Contributions to Public Entrepreneurship Literature

In contrast to many other studies in public entrepreneurship research that largely neglect extensive CE private sector research (Bellone & Goerl, 1992; Bernier & Hafsi, 2007; Moon, 1999; Ramamurti, 1986; Roberts, 1999; Roberts & King, 1991; Zerbinati & Souitaris, 2005) or use private sector measures without appropriate adaptation (Wood et al., 2008), this dissertation developed and tested a model that integrates research from a number of research streams. This integration proved beneficial for public entrepreneurship research. Particularly, perceived resource availability (Covin & Slevin, 1991; Damanpour, 1991; Hisrich & Peters, 1986; Hornsby et al., 2002; Kanter, 1985; Kuratko et al., 2005; Rosner, 1968) has largely been neglected in public entrepreneurship research. However, it plays a pivotal role in the form of motivated staff (Quinn, 1985). In addition to the introduction of concepts, the development and testing of measurement instruments could prove beneficial to public entrepreneurship research. First, measures of antecedents (e.g., Hornsby et al., 2002; Kuratko et al., 1990) have been adjusted. Second, the private sector-specific measurement of entrepreneurial orientation (Covin & Slevin, 1989; Miller & Friesen, 1982, 1983) has been carefully adapted to capture public sector particularities as called for by Morris and Jones (1999, p. 87).[62] These measures can be used as a basis for further studies seeking to use perceptual data.

This dissertation directs attention to an oft-neglected organizational level in public sector research. Prior studies on public entrepreneurship mention the importance of middle managers merely in passing (Bernier & Hafsi, 2007, p. 494; Borins, 2000, p. 500; Morris & Jones, 1999, p. 83). Studies in fields related to public entrepreneurship have only recently focused on middle management as a unit of analysis (Currie & Procter, 2005; Meynhardt & Metelmann, 2009). By drawing on the middle management perspective (Wooldridge et al., 2008), this study develops a model specifically at this level. This study's findings show that middle managers are essential in shaping their departments' orientations, also in the public sector. Future research in the public sector can

[62] As anticipated, the three-dimensional measure showed higher covariation between innovativeness and proactiveness, than with risk-taking (Currie, Humphreys, Ucbasaran, & McManus, 2008, p. 1002; Lumpkin & Dess, 1996, p. 148; Morris & Jones, 1999, p. 86).

build on these findings when researching effects on the department level or in the local environment.

This dissertation also contributes large-scale empirical evidence, which is rare in public entrepreneurship research. Most studies examine public entrepreneurship conceptually (Bellone & Goerl, 1992; Kearney et al., 2008; Ramamurti, 1986; Roberts, 1999), based on anecdotal evidence (Bernier & Hafsi, 2007; Moore, 1995; Osborne & Gaebler, 1992; Roberts & King, 1991), based on case studies (Currie et al., 2008; Currie & Procter, 2005; Meynhardt & Metelmann, 2009; Zerbinati & Souitaris, 2005), or based on descriptive statistics (Borins, 2000; Morris & Jones, 1999). Other large-scale empirical work has focused on very different levels of analysis (Kim, 2007; Mack et al., 2008; Moon, 1999; Schneider et al., 1995; Teske & Schneider, 1994; Wood et al., 2008). These works provide important conceptual frameworks and specific propositions, many of which have never been tested empirically. By testing hypotheses with structural equation modeling, this dissertation provides evidence of such propositions and adds methodological rigor to this research stream, as called for by Zerbinati and Souitaris (2005, p. 46), Currie et al. (2008, p. 988), and Morris and Jones (1999, p. 87).

7.2.2 Contributions to Public Value Management Literature

The emerging research on public value management could also benefit from this study. While entrepreneurship may not be the only way to create public value (Kelly et al., 2002, pp. 34–35; Moore, 2010), entrepreneurship is a core element of the book *Creating Public Value* (Moore, 1995). Much work on public value has since concentrated on the advantages of public value management (Alford, 2008; Kelly et al., 2002; O'Flynn, 2007; Talbot, 2009), its disadvantages (Rhodes & Wanna, 2007, 2008), or its conceptualizations as such (Beck Jørgensen & Bozeman, 2002; Meynhardt, 2009; Stoker, 2006). In contrast, this research investigates antecedents that foster entrepreneurship and shows a positive correlation between entrepreneurial orientation and the newly defined and operationalized construct public value orientation. PVM research can benefit from the indications as to how public value management can be implemented operationally (also see Meynhardt & Metelmann, 2009), i.e. by fostering entrepreneurship using the antecedents identified in this study.

This study can help clarify the interplay of new public management and public value management in certain aspects. Some PVM advocates argue that PVM is the successor

of NPM (Section 3.2.2; Kelly et al., 2002, p. 10; O'Flynn, 2007; Stoker, 2006), thus implying that NPM will or must be *replaced*. In this study, I argue that entrepreneurship is a common element of both approaches with foci on different aspects (measurable outcomes versus public value). Furthermore, NPM's oft-criticized focus on KPIs does not seem to impede entrepreneurship (or value creation). Goal ambiguity, which NPM tries to reduce, does not have any effect on entrepreneurship either. This study could thus be interpreted as indicating that there is no contradiction between public value management and new public management. Rather, the two management approaches may complement one another.

7.2.3 Contributions to Corporate Entrepreneurship Literature

This study not only contributes to the literature in the public sector, but also extends broader corporate entrepreneurship research. There have been explicit calls for the assessment of corporate entrepreneurship outside the private sector (Phan et al., 2009, p. 204). This study's results regarding organizational antecedents mainly contribute to corporate entrepreneurship research on middle managers (Hornsby et al., 2009; Hornsby et al., 2002; Kuratko et al., 2005). Of particular importance may be that resource availability has been reduced to time availability in some private sector literature (Hornsby et al., 2002), while this study suggests that human resources play a vital role in organizations that foster EO. Furthermore, the incorporation of the three (possibly interrelated) constructs multitude of expectations, localism, and position/department tenure could benefit corporate entrepreneurship research, extending work on embeddedness and social networks (e.g., Floyd & Wooldridge, 1999; Simsek et al., 2003). Corporate entrepreneurship research could thus benefit by reassessing some of its concepts and measures and by integrating the relevant constructs identified in this dissertation.

7.3 Contributions to Management Practice

This study's findings might have important practical implications that can help public sector organizations become more entrepreneurially orientated and thus create public value. The implications for practice are illustrated for human resources (HR) management and general management.

7.3.1 Human Resources Management

I use the four HR practices of *selection/placement*, *appraisal*, *rewards*, and *career development/planning* (Fombrun, Tichy, & Devanna, 1984, p. 253) to illustrate practical implications. First, public sector organizations can tailor their selection/placement process to attract 'entrepreneurial' people, select the best candidate, and ensure appropriate staffing. Specifically, job postings could highlight the often unknown leeway available in public sector organizations and the possibilities to develop solutions for helping local communities. Applicants can be attracted by the prospects of creating value for society. In the selection process, context-tailored case studies could include the tasks of building strong networks, balancing a variety of expectations, involving local actors, and motivating staff. Further selection criteria could be applicants' existing local ties, their ability and willingness to engage in local organizations, and their caring for local communities. With respect to placement, this study indicates a need to have enough motivated people with a knack for spotting value creation opportunities, and preferably with knowledge of local circumstances. More importantly, middle managers should not be forced to rotate positions between geographies too frequently. They need some time to (and should be encouraged to) build local networks that provide them access to a 'multitude of expectations'. In choosing adequate tenure in one department, human resources managers should balance the benefits from job rotations with the advantages of remaining in one place for longer.

In order for the *appraisal* process to support entrepreneurial orientation and public value orientation, aspects beyond established performance measures need to be considered. These aspects relate to the establishment or maintenance of networks (e.g., active membership in local organizations and participation in public discussions/events), the initiation of projects (which may not directly affect KPIs), and the impact on the local environment. Such impact could be assessed via interviews with or surveys of relevant local actors. On the other hand, this study indicates that KPIs can be used to ensure compliance with 'hard' objectives. This study's findings only provide limited indications on how to *reward*. This is as much as can be said: rewards should be granted based on the appraisal process (i.e., not solely based on directly measurable outcomes) and should encourage some experimentation.

In improving *career development/planning*, HR management should focus on training and tenure in geographical areas. Training should prepare middle managers to approach local actors, to understand and manage their expectations, and to initiate

projects with them. Such training could, for example, be enhanced by experience-sharing among middle managers. Furthermore, as mentioned above, *career development* should use job rotation into new geographical areas only selectively.

7.3.2 General Management

From the group of general managers, this study mostly addresses public sector top managers and – to a certain degree – public sector middle managers. First of all, public sector top managers are encouraged to pursue entrepreneurial orientation to create public value. They should seek to communicate entrepreneurial orientation and public value creation as important organizational goals. Besides ensuring the implementation of adjusted HR practices, top managers should motivate middle managers and staff to contribute to projects. This can be done by providing management support and discretion, for example by helping implement projects and tolerating failure. On the other hand, further enhancing management control systems or reducing goal ambiguity – as encouraged by NPM principles – seem to have little impact on the outcomes studied in this dissertation.

The literature review has shown that middle managers play a particularly important role in public entrepreneurship. Middle managers should pursue value creation opportunities and be creative in implementing solutions. To do so, they should ensure that they have enough motivated staff to implement ideas. Building networks inside and outside their departments helps them identify opportunities and secure the necessary resources. The aspect of initiating dialogue with the local environment to learn their needs is particularly important. Middle managers should thus ‘go out’ to understand the expectations of the public.

In short, this study’s practical implications are most applicable in human resources management, but can also help public sector top and middle managers in pursuing public value creation. Some of these implications also apply to private sector organizations: it is, for example, very likely that longer tenure in one specific area will also enable private sector managers to better engage in essential network building and thereby improve their firm’s entrepreneurial orientation.

7.4 Limitations and Future Research

Despite these contributions, this research is not without limitations, some of which are suggested for future research. The limitations can largely be framed in terms of exter-

nal and internal validity. External validity relates to the generalizability of the findings (Bryman, 2008, p. 694), while internal validity "involves ruling out alternative interpretations of a presumed casual relationship" (Cook & Campbell, 1976, p. 226).[63]

With respect to external validity, the high response rate and little indication for biases due to non-responses and missing data suggest high population validity (Bracht & Glass, 1968, p. 438; Punch, 2005, p. 255). In other words, the findings are likely to be fairly representative of relationships in Germany's Federal Labor Agency's middle management, the accessible population in this study (Bracht & Glass, 1968, p. 441). While unable to provide *empirical evidence* for the findings' generalizability to other middle managers or in different environments (ecological validity; Bracht & Glass, 1968, p. 452; Punch, 2005, p. 255), there are at least two *indications* of the results' validity outside of the FLA and possibly even outside of a *Rechtsstaat* culture, like in Germany. First, all hypotheses are based on theoretical considerations and the results are at least partly in line with prior research. Second, Rauch et al. (2009, p. 779) provide indications for the limited influence of culture in studying EO (at least for EO's relationship with performance in the private sector). Still, there is need for future research to assess the generalizability of the findings in other organizations and cultural settings in order to strengthen its arguments.

Furthermore, this study did not investigate whether department-level entrepreneurial orientation and department-level public value orientation have a positive impact on other outcomes of the FLA. Entrepreneurial orientation can only cover a limited area of public sector middle managers' work. There is frequently room for innovative, proactive, and risk-taking activities; nonetheless, often less than in the private sector. Also, not all entrepreneurial behavior may be beneficial in the public sector in all areas (Section 3.1.3; Kelly et al., 2002; Rhodes & Wanna, 2007; Terry, 1993, 1998). The findings and implications may therefore not be generalizable to other organizational outcomes, which would have to be assessed in future research. Such outcomes could include additional levels or survey data from customers and key stakeholders on perceived public value creation.

[63]External and internal validity are thus distinct from data validity (Section 5.4.4) and overall validity of the research (extent to which the different parts of a whole study fit together; Punch, 2005, p. 29).

With respect to internal validity, measurements, data, and analytical procedures imply potential limitations. First, the way constructs in this study are measured may be imperfect. While all measures used multiple items, were inspired by existing research, and were extensively tested, none of the measures could be employed without adjustments. These measures might not perfectly capture the intended constructs. This possibly imperfect operationalization resulted in the exclusion of four constructs from the model (i.e., work discretion, rewards/reinforcement, KPI interpretation, and job insecurity). Furthermore, this study's results may be affected by common method bias (Podsakoff et al., 2003). The consistency in the ratings of EO from multiple sources indicates limited concern. Yet, all main analyses are based on self-reports. Future research could seek to obtain data on dependent and independent variables from different sources to overcome this potential bias.

The use of cross-sectional data requires caution when drawing causal inferences. The relationships identified in this study may be affected by an exogenous variable not included in this analysis or prone to reverse causality (Backhaus et al., 2008, 11.1.2.1). Although the hypotheses are based on theoretical considerations, mechanisms other than the assumed ones could underlie the relationships identified: for example, staff could be motivated by a stronger entrepreneurial orientation of their departments, rather than entrepreneurial orientation be caused by motivated staff. Data reflecting developments over time could help overcome such uncertainty.

With respect to analytical procedures, additional or different types of relationships could have been assessed. Instead of analyzing EO as a second-order construct, the dimensions of EO (i.e., innovativeness, proactiveness, and risk-taking) could have been analyzed independently (Lumpkin & Dess, 1996, pp. 149–151). Also, this study has not analyzed the effects of mediation, moderation, or interaction among many of the constructs (Lumpkin & Dess, 1996, p. 156; Venkatraman, 1989). For example, direct effects of the EO antecedents on PVO have not been analyzed. Also the interplay of position/department tenure, localism, multitude of expectations, EO, and PVO could yield interesting results. In the process of examining the data, graphical representations of the data were examined for non-linear relationships; none was discovered. Yet, further analyses might focus on such non-linear relationships (Morris et al., 2006).

Another aspect that might limit the internal validity of this study refers to the levels of theory, measurement, and analysis (Section 5.4.1). This study collected data from

middle managers and inferred to entrepreneurial orientation at the department level. Ireland et al. (2009, p. 36) justify linking individual-level perceptions to higher-level entrepreneurial outcomes. Yet, analyses across more than one level require special analytical procedures (Hitt et al., 2007), such as hierarchical linear modeling (Hox, 2002; Raudenbush et al., 2004). In this study, analyses on both the individual level and the department level serve as a robustness check of the results. With respect to different levels, future research could go beyond this study by exploring roles and behaviors of entrepreneurial public sector middle managers (Floyd & Wooldridge, 1992). Analyzing how such individual-level behavior, department-level orientations, and organization-level orientations and outcomes are related could further improve our understanding of how public sector organizations become entrepreneurial and how they create value.

In short, most of this study's limitations are typical for a study of cross-section perceptional data with structural equation modeling. Surveys typically score high on external validity and low on internal validity (Scandura & Williams, 2000, p. 1252). Given that data were obtained from one organization, many alternative explanations causing a certain level of entrepreneurship could be eliminated. Yet, additional research – particularly empirical work – is necessary to better understand aspects and antecedents of entrepreneurship and public value creation in the public sector, also in other contexts.

8 Conclusion

This study provided initial evidence on antecedents of department-level entrepreneurial orientation in the public sector as well as how such entrepreneurial orientation is related to public value orientation. While in the private sector, an extant research stream has examined entrepreneurship within organizations (i.e., corporate entrepreneurship) and how this can be achieved, such research is rare in the public sector. However, the public sector differs from the private sector in many important ways, which makes the direct transferability of concepts difficult. Despite the acknowledged importance of middle managers in public entrepreneurship, very few studies have focused on this level of analysis. In this dissertation, a model based on previous research from private sector corporate entrepreneurship, public entrepreneurship, and public value management was developed to fill this gap. This model was tested empirically using data from Germany's Federal Labor Agency's middle management. Results based on structural equation modeling suggest that management support, staff motivation, multitude of expectations, managers' localism, and managers' tenure in current position/department influence department-level entrepreneurial orientation in this context. Furthermore, the data show a positive relationship between entrepreneurial orientation and public value orientation. These findings advance research on public entrepreneurship by testing a number of untested propositions and proving avenues of future research. Furthermore, public value management benefits through indications on how PVM can be implemented operationally. On the other hand, this dissertation also contributes to private sector research by questioning aspects of established concepts. While further data will be required to base knowledge on even stronger empirical evidence, this dissertation hopes to provide indications on how public sector organizations can help their middle managers engage in entrepreneurial behavior and create public value.

As a closing remark, a broader perspective on entrepreneurship and the public sector may help assess this dissertation's contribution. The public sector provides one in seven jobs and its expenditures are equivalent to 40% of GDP in OECD countries (OECD, 2009, pp. 52–67). Our society depends on well-functioning public sector organizations, be it education, garbage disposal, tax collection, health care, or labor market services. Civil servants may even have been the determining force of our society in modern times, with more influence than rulers, politicians, diplomats, or generals (Maier, 1986). Mark Moore (1995) considers it public managers' purpose to create

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public value, largely through entrepreneurship in their organizations. Such entrepreneurship is often adequate, but in other situations, public value is created though adherence to standards instead (Kelly et al., 2002, pp. 34–35). In line with the latter notion, Bröckling (2007) puts entrepreneurship into perspective: there is no need for everyone to follow the omnipresent imperative for entrepreneurship. This study thus seeks to improve public sector organizations' value creation by helping them become more entrepreneurial – where appropriate.

Appendices

Appendix 1 Literature on Public Entrepreneurship

Study	Country	Research focus	Domain	Method	Unit of analysis	Sample/ Source	Key finding(s)
Lewis (1980): Public Entrepreneurship	United States	Biographies of public entrepreneurs	Public administration	Qualitative: case studies	Top managers	3 biographies	Public entrepreneurs are powerful individuals at the top of organizations; public entrepreneurship has three stages (early entrepreneurship, the leap, mature entrepreneurship)
Ramamurti (1986): Public Entrepreneurs	*Generic*	Public entrepreneurs, motivations, and obstacles	Public administration	Conceptual: illustrative examples	(Top) managers	Anecdotal evidence	'Public entrepreneurs' are best suited to overcome public sector-specific obstacles
Roberts and King (1991): Policy Entrepreneurs	United States	Activities of policy entrepreneurs	Public administration	Qualitative: grounded theory	Policy entrepreneurs (without formal position)	Six policy entrepreneurs: archival research, 134 interviews, observation, surveys (demographics)	Identified basic activity structure of policy entrepreneurs (creative/intellectual, strategic, mobilization and execution, administrative and evaluative)
Bellone and Goerl (1992): Reconciling Public Entrepreneurship and Democracy	*Generic*	Reconciliation of entrepreneurial role and democratic values	Political science	Conceptual	*Abstract* (managers)	-	'Civic-regarding entrepreneurship' can overcome gap between public entrepreneurship and democracy
Osborne and Gaebler (1992): Reinventing Government	United States	Principles of entrepreneurial government	Public administration	Conceptual: illustrative examples	Government organizations and individuals	Anecdotal evidence	Ten principles observed in entrepreneurial government

Study	Country	Research focus	Domain	Method	Unit of analysis	Sample/ Source	Key finding(s)
Schneider and Teske (1992): Toward a Theory of the Political Entrepreneur	United States	Predictors of local political entrepreneurs	Political sciences, economics	Quantitative (inferential): probit estimation	Political entrepreneurs (mayors, members of city council, city managers / bureau chiefs, others)	635 communities (survey among city clerks)	More slack budgetary resources, larger size of rental population, disruptions of population growth, larger racial diversity, and higher tax rate predict the emergence of policy entrepreneurs
Teske and Schneider (1994): The Bureaucratic Entrepreneur	United States	Predictors of entrepreneurial city managers	Public administration	Quantitative (inferential): multinomial logit analysis	City managers	956 communities (survey among city clerks)	Low unionization and weak taxpayer groups predict the emergence of bureaucratic entrepreneurs; bureaucratic entrepreneurs also emerge more often, when local conditions require change, which politicians do not satisfy
Moore (1995): Creating Public Value	United States	Public value creation by public managers	Public administration	Conceptual: illustrative examples	(Top) managers / organizations	Anecdotal evidence	Public value creation is the main task of any public manager; entrepreneurial strategies support public value creation
Moon (1999): The Changing Nature of Public Entrepreneurship	United States	Effect of structure, culture, and environment on managerial entrepreneurship	Public administration	Quantitative (inferential): regression	Organizations	164 top managers from private and public sector organizations (survey)	Structure, culture, and environment influence 'dimensions' of managerial entrepreneurship in different ways

Study	Country	Research focus	Domain	Method	Unit of analysis	Sample/ Source	Key finding(s)
Morris and Jones (1999): Entrepreneurship in Established Organizations: The Case of the Public Sector	South Africa	Role of entrepreneurship in public sector; concept and obstacles	Corporate entrepreneurship	Quantitative (mainly descriptive)	Organizations and managers/ employees	152 public sector managers (survey)	The concept of entrepreneurship is applicable to the public sector in terms of definition, process nature, and underlying dimensions; there are differences in goals, constraints, approaches, and outcomes; the main obstacles are difficulty in defining customers, high public visibility, reward system, and multiplicity of goals
Roberts (1999): Innovation by Legislative, Judicial, and Management Design	United States	Adequate approach to entrepreneurship and innovation in public sector	Public administration	Conceptual: illustrative examples	Entrepreneurship process	3 illustrative examples	Institutional context and level of change determine the adequate approach to public entrepreneurship: incremental change in public bureaus ('grope along'); radical change in legislative and judicial arenas ('strategic and analytical')
Borins (2000): Loose Cannons and Rule Breakers, or Enterprising Leaders? Some Evidence about Innovative Public Managers	United States	Desirability of entrepreneurial public sector managers	Public administration	Quantitative (mostly descriptive)	Innovation programs	321 applications to an innovation award	Public entrepreneurs creatively solve problems, act proactively, and build organizational support
Currie and Procter (2005): The Antecedents of Middle Managers' Strategic Contribution: The Case of a Professional Bureaucracy	UK	Strategic roles of middle managers in a bureaucracy	Role theory, middle manager perspective	Qualitative: case study	Middle managers	100 interviews with middle managers and top managers; observations	Role conflict and ambiguity (caused by inconsistent expectations) prevent middle managers from transitioning to a more strategic role

Study	Country	Research focus	Domain	Method	Unit of analysis	Sample/ Source	Key finding(s)
Zerbinati and Souitaris (2005): Entrepreneurship in the Public Sector	Italy and UK	Entrepreneurship in public sector organizations	Political science, public administration	Qualitative: case studies	Organizations	10 Italian/UK local governments	Identified entrepreneurial behavior in local governments; typology of entrepreneurial agents (professional politician, spin-off creator, business entrepreneur in politics, career-driven public officer, and politically ambitious public officer)
Bernier and Hafsi (2007): The Changing Nature of Public Entrepreneurship	Canada	Nature of public entrepreneurship process	Public administration, institutionalist perspective	Conceptual: illustrative examples	Process of entrepreneurship (at multiple levels)	Illustrative cases (submissions to an innovation award)	Cyclical model of entrepreneurship: individual entrepreneurship appropriate for new organizations is replaced by systematic entrepreneurship
Kim (2007): A Multidimensional Model of Public Entrepreneurship	United States	Antecedents and effects of public entrepreneurship dimensions (innovativeness, proactiveness, risk-taking)	Public administration, corporate entrepreneurship	Quantitative (inferential): regression, path analysis	State government departments	299 heads of state government departments (survey)	Identified 15 determinants of public entrepreneurship; dimensions innovativeness, proactiveness, and risk-taking are independent; all three dimensions are positively correlated with organizational performance
Currie et al. (2008): Entrepreneurial Leadership in the English Public Sector	England	Concept of entrepreneurial leadership	Public administration	Qualitative: interviews	Top managers	51 interviews with organizational leaders	Definition of public sector entrepreneurship (combination of 'stakeholder agent', 'entrepreneurial agent', and 'political agent')

Study	Country	Research focus	Domain	Method	Unit of analysis	Sample/ Source	Key finding(s)
Kearney et al. (2008): A Conceptual Model of Public Sector Corporate Entrepreneurship (also Kearney et al., 2007)	*Generic*	Concept of corporate entrepreneurship in the public sector; antecedents and performance outcomes	Public administration, corporate entrepreneurship	Conceptual: public administration and CE literature	Organizations	-	The concept of corporate entrepreneurship (here: innovation) is applicable to the public sector; internal antecedents: structure/formalization, decision-making/control, rewards/motivation, culture, risk-taking, proactivity; external antecedents: political, complexity, munificence, change; outcomes: performance in growth, development, productivity
Mack et al. (2008): Innovation and Implementation in the Public Sector	United States	Personal and situational attributes predicting entrepreneurial managers	Public administration, public policy	Quantitative (inferential): regression	Individuals participating in public sector entrepreneurial process	111 interviews (incl. closed questions) with stakeholders of two healthcare networks	Develop a measure of public entrepreneurship (times a person is mentioned as important contributor); most important predictors: status in the local community, profession, and strong local focus and ties
Wood et al. (2008): Perceptions of Corporate Entrepreneurship in Air Force Organizations	United States	Organizational antecedents, perceptions, and effects of corporate entrepreneurship	Corporate entrepreneurship	Quantitative (inferential): mediated regression	Mainly employees	113 military and civilian employees (presumably mostly non-managers) of seven 'innovative' US Air Force departments (survey)	Rewards systems, management support, a simple structure, and tolerance for calculated risks positively are correlated with perceived CE; resource (time) availability is not correlated with perceived CE; CE is positively correlated with job satisfaction, perceived organizational contribution, organizational commitment, memory orientation, and overall organizational performance

Study	Country	Research focus	Domain	Method	Unit of analysis	Sample/ Source	Key finding(s)
Meynhardt and Metelmann (2009): Pushing the Envelope: Creating Public Value in the Labor Market: An Empirical Study on the Role of Middle Managers	Germany	Antecedents of public value creation; role of middle managers in public sector	Public value management, role theory, middle management perspective	Qualitative: interviews in one organization	Middle managers	11 middle managers, 11 top managers, 3 outsiders of the German Federal Labor Agency	Identified internal (management control system, management capabilities, role security) and external (legal obligations, multitude of expectations, superior bureaucracy/ministry, external reputation) antecedents of public value creation; identified role conflict in the balancing of value dimensions

Appendix 2 Questionnaire (Extract)

Unternehmerisch handeln, Gemeinwohl schaffen

Sehr geehrte Damen und Herren,

die Universität St. Gallen analysiert seit Anfang 2008 die gesellschaftliche Wertschöpfung, den sogenannten 'Public Value' der BA im Auftrag der Zentrale (CF 4 Unternehmensentwicklung). Mit dem Ziel, Ansätze zur Weiterentwicklung unseres Führungs- und Steuerungssystems aufzuspüren, ist nun Ihre persönliche Sicht auf den SGB III-Bereich gefragt. Das "Zentrum für Kunden- und Mitarbeiterbefragungen" der BA stellt hierbei die Plattform für die Untersuchung zur Verfügung.

Wer wird befragt? In allen Arbeitsagenturen und Regionaldirektionen der BA wird jeweils die gesamte Geschäftsführung befragt. Darüber hinaus wird jeweils die RD bzw. die Zentrale gebeten, die unternehmerische Ausrichtung der jeweiligen AA bzw. RD mit einem separaten Fragebogen einzuschätzen. Bitte nehmen Sie sich etwa 20 Minuten Zeit, um den Fragebogen vollständig auszufüllen.

Für Ihre Teilnahme sind wir Ihnen sehr dankbar!

Mit freundlichen Grüßen

Dr. Timo Meynhardt
Fabian Diefenbach, Dr. cand.

Zentrum für Führung und Werte in der Gesellschaft
Universität St. Gallen

Aufbau des Fragebogens:
A. Einleitung (Einführungstext, Nutzendimensionen)
B. Organisation
C. Umfeld
D. Agentur
E. Schluß (Demographie, Kommentare)

Die Teilnahme an der Befragung ist für Sie freiwillig und anonym. Rückschlüsse auf Ihre Person sind nicht möglich und auch nicht beabsichtigt. Auswertungen werden maximal auf RD- oder Cluster-Ebene veröffentlicht. Wollen Sie nicht teilnehmen, entstehen Ihnen hieraus keine Nachteile.
Hinweise zum Datenschutz können Sie den Datenschutzinformationen entnehmen.
Ich kenne die Informationen zum Datenschutz und möchte an der Befragung teilnehmen.

ja ☐ **nein** ☐

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Organisation: Freiheitsgrade & RD-Unterstützung

Inwieweit treffen die folgenden Aussagen zu?
(von 1 = "trifft überhaupt nicht zu" bis 6 = "trifft voll und ganz zu")

	trifft überhaupt nicht zu 1	2	3	4	5	trifft voll und ganz zu 6
Freiheitsgrade. Meine RD...						
schränkt Handlungsspielräume auf Agenturebene selten ein.	☐	☐	☐	☐	☐	☐
geht mit Fehlern der Agentur konstruktiv um.	☐	☐	☐	☐	☐	☐
fördert die dezentrale Verantwortung der Agenturen.	☐	☐	☐	☐	☐	☐
	trifft überhaupt nicht zu 1	**2**	**3**	**4**	**5**	**trifft voll und ganz zu 6**
RD-Unterstützung. Meine RD...						
ist offen für meine Ideen und Vorschläge.	☐	☐	☐	☐	☐	☐
gibt auch in schwierigen Situationen Rückendeckung.	☐	☐	☐	☐	☐	☐
unterstützt die Agenturen, indem sie Hindernisse abbaut.	☐	☐	☐	☐	☐	☐

Appendix 3 Missing Values Analysis by Case

Number of missing variables per case	Percentage of missing variables per case	Number of cases	Percentage of sample	Cumulative percentage
0	0.0	186	70.5	70.5
1	1.0	30	11.4	81.8
2	2.0	11	4.2	86.0
3	2.9	2	0.8	86.7
4	3.9	11	4.2	90.9
5	4.9	9	3.4	94.3
6	5.9	1	0.4	94.7
7	6.9	1	0.4	95.1
8	7.8	1	0.4	95.5
9	8.8	1	0.4	95.8
10	9.8	1	0.4	96.2
11	10.8	1	0.4	96.6
12	11.8	1	0.4	97.0
14	13.7	1	0.4	97.3
17	16.7	1	0.4	97.7
25	24.5	1	0.4	98.1
39	38.2	2	0.8	98.9
42	41.2	1	0.4	99.2
50	49.0	1	0.4	99.6
94	92.2	1	0.4	100.0
Total (102 variables)		**264**	**100.0**	**100.0**

Appendix 4 Group Comparisons of Cases with Missing versus Valid Data

Break variable for forming groups	Variable showing significant difference	*N*	*t*-value (two-tailed *p*)
tenure_position	ambiguity2	250	2.3 (.030)
	local2	250	2.1 (.047)
	innovativeness1	250	-2.6 (.015)
	innovativeness4	250	-2.6 (.017)
tenure_department	ambiguity2	250	2.3 (.030)
	local2	250	2.1 (.047)
	innovativeness1	250	-2.6 (.015)
	innovativeness4	250	-2.6 (.017)
tenure_organization	insecurity2	252	2.4 (.030)
	innovativeness4	254	-2.3 (.037)
	public_value4	252	-2.4 (.032)
age	expectations6	246	-2.2 (.038)
	innovativeness4	248	-3.0 (.006)
	risk-taking2	248	2.1 (.046)

Appendix 5 Model Fit of Measurement Models

Category	Statistic	Endogenous measurement models				Exogenous measurement models		Complete measurement models		Threshold value (minimum/ optimal)
		EO initial	**EO trimmed**	**EO + PVO initial**	**EO + PVO trimmed**	**Exogenous initial**	**Exogenous trimmed**	**Exogenous + EO**	**Exogenous + EO + PVO**	
Specification	*N*	250	250	250	250	250	250	250	250	-
	χ^2	115.43	36.03	250.08	85.74	957.00	446.69	768.74	934.74	-
	df	62	24	84	48	549	314	563	662	-
Absolute fit	χ^2/df	1.86	1.50	2.98	1.79	1.74	1.42	1.37	1.41	≤ 3.00 / 2.00
	(*p*)	**(.00)**	(.06)	**(.00)**	**(.00)**	**(.00)**	**(.00)**	**(.00)**	**(.00)**	(≥ .05 / -)
	RMSEA	.06	.05	**.09**	.06	.06	.04	.04	.04	≤ .08 / .05
	(*p-close*)	(.18)	(.58)	**(.00)**	(.28)	(.09)	(.96)	(1.00)	(1.00)	(≥ .05 / -)
	SRMR	.05	.04	.06	.05	.06	.06	.05	.05	≤ .10 / .08
	(*GFI*)	(.93)	(.97)	**(.87)**	(.95)	**(.83)**	**(.89)**	**(.86)**	**(.85)**	(≥ .90 / .95)
Parsimony fit	(*AGFI*)	(.90)	(.94)	**(.82)**	(.91)	**(.79)**	**(.86)**	**(.83)**	**(.81)**	(≥ .90 / .95)
Incremental fit	*CFI*	.96	.99	.91	.97	**.87**	.94	.94	.93	≥ .90 / .95
	TLI	.95	.98	**.88**	.96	**.85**	.92	.93	.91	≥ .90 / .95

Note. Bold face indicates sub-minimum values; criteria in parentheses are reported but not interpreted.

Appendix 6 Fornell-Larcker Test for Complete Measurement Model

Construct		1	2	3	4	5	6	7	8	9	10	11	12	13
1	SUPPORT	**.61**												
2	KPI_FOCUS	.12	**.65**											
3	RESOURCES_1	.08	.02	**.57**										
4	RESOURCES_2	.04	.02	.05	**.48**									
5	GOAL_AMBIGUITY	.01	.14	.06	.03	**.43**								
6	EXPECTATIONS_1	.00	.04	.01	.09	.01	**.48**							
7	EXPECTATIONS_2	.01	.00	.01	.07	.00	.18	**.48**						
8	LEGAL_MANDATE	.01	.00	.04	.01	.01	.00	.01	**.34**					
9	LOCALISM	.00	.15	.01	.09	.09	.05	.01	.00	**.35**				
10	INNOVATIVENESS	.03	.03	.00	.35	.03	.13	.03	.01	.12	**.71**			
11	PROACTIVENESS	.01	.05	.00	.24	.03	.12	.05	.00	.22	.53	**.53**		
12	RISK-TAKING	.00	.00	.00	.10	.00	.02	.19	.00	.05	.17	.33	**.53**	
13	PVO	.06	.01	.05	.10	.00	.06	.05	.00	.16	.14	.30	.25	**.63**

Note. Main-diagonal elements (bold) are *AVE*; off-diagonal elements are R^2.

Appendix 7 Parameter Estimates for Control Variables

Control variable	Standardized coefficient	*t*-value
function_HO	.00	0.04
function_HIS	-.13	-2.06*
age	.30	4.27***
gender	-.04	-0.68
tenure(log)	.20	2.96**
tenure_organization	-.20	-3.07**
contract_employee	.09	1.38
contract_leave	.04	0.68
residency	-.05	-0.73
department_size(log)	.17	2.61**
strategy_group_II	-.11	-1.67†
strategy_group_III	-.07	-1.1
strategy_group_IV	.19	2.84**
strategy_group_V	.00	0.01

Note. Values from initial manager-level SEM with EO as endogenous construct.
***$p < .001$, **$p < .01$, *$p < .05$, †$p < .1$.

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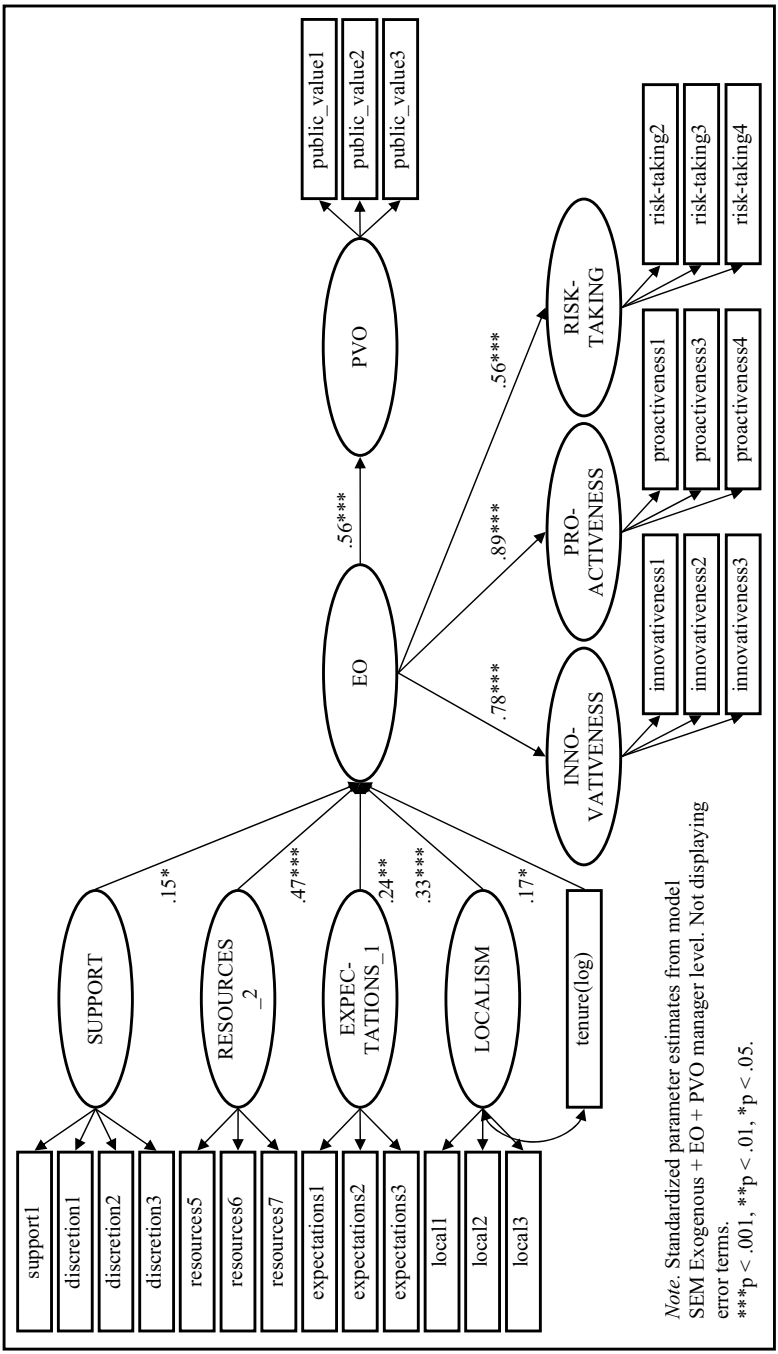
Appendix 8 Final Structural Equation Model (Detailed)



Note. Standardized parameter estimates from model
SEM Exogenous + EO + PVO manager level. Not displaying error terms.
***p < .001, **p < .01, *p < .05.

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Appendix 9 Parameter Estimates of Structural Equation Models

Constructs	SEM Exogenous + EO			SEM EO + PVO		SEM Exogenous + EO + PVO	
	Manager level initial	Manager level trimmed	Department level	Manager level	Department level	Manager level	Department level
SUPPORT -> EO	.184 (2.69)**	.123 (1.87)†	.111 (1.60)	-	-	.147 (2.22)*	.127 (1.79)†
RESOURCES_1 -> EO	-.072 (-1.08)	-	-	-	-	-	-
RESOURCES_2 -> EO	.493 (5.50)***	.507 (5.71)***	.584 (6.55)***	-	-	.475 (5.39)***	.567 (6.15)***
KPI_FOCUS -> EO	.102 (1.51)	-	-	-	-	-	-
GOAL_AMBIGUITY -> EO	.037 (0.53)	-	-	-	-	-	-
EXPECTATIONS_1 -> EO	.205 (2.79)**	.235 (3.19)**	.385 (4.24)***	-	-	.240 (3.25)**	.414 (4.38)***
EXPECTATIONS_2 -> EO	.111 (1.40)	-	-	-	-	-	-
LEGAL_MANDATE -> EO	-.025 (-0.37)	-	-	-	-	-	-
LOCALISM -> EO	.220 (2.63)**	.279 (3.01)**	.214 (2.36)*	-	-	.327 (3.42)***	.276 (2.85)**
tenure(log) -> EO	.236 (3.65)***	.187 (2.73)**	.252 (3.52)***	-	-	.172 (2.53)*	.242 (3.29)**
strategy_group_IV -> EO	.106 (1.69)†	-	-	-	-	-	-
EO -> PVO	-	-	-	.569 (6.10)***	.646 (5.87)***	.560 (6.00)***	.612 (5.62)***

Note. Cells contain standardized parameter estimates (*t*-values); dash (-) indicates that the parameter was not estimated.
***$p < .001$, **$p < .01$, *$p < .05$, †$p < .1$.

Appendix 10 Constructs and Variables in Main Modeling Steps

Type of construct/ variable	Theoretical model	Intermediate measurement model (after EFA for antecedents; transformations of control variables)	Complete measurement model (after CFA for endogenous constructs and antecedents)	Initial structural equation model[b] (after SEM for control variables)	Final structural equation model (after additional SEMs/robustness tests)
Endogenous constructs	PVO	PVO	PVO	PVO[a]	PVO
	Innovativeness	Innovativeness	Innovativeness	Innovativeness	Innovativeness
	Proactiveness	Proactiveness	Proactiveness	Proactiveness	Proactiveness
	Risk-taking	Risk-taking	Risk-taking	Risk-taking	Risk-taking
Antecedents	Management support →	Management support	Management support	Management support	Management support
	Work discretion →	[extended by aspects of work discretion]	-	-	-
	Rewards/Reinforcement	- [loads on multiple other factors]	-	-	-
	Resource availability →	Resource availability	Resource availability	Resource availability	- [insignificant estimate]
	→	Staff motivation [evolves as separate factor]	Staff motivation	Staff motivation	Staff motivation
	KPI focus	KPI focus	KPI focus	KPI focus	- [insignificant estimate]
	KPI interpretation	- [loads on same factor as management support]	-	-	-
	Goal ambiguity	Goal ambiguity	Goal ambiguity	Goal ambiguity	- [insignificant estimate]
	Multitude of expectations →	Multitude of expectations	Multitude of expectations	Multitude of expectations	Multitude of expectations
	→	Outsider influence [evolves as separate factor]	Outsider influence	Outsider influence	- [insignificant estimate]
	Legal mandate	Legal mandate	Legal mandate	Legal mandate	- [insignificant estimate]
	Job insecurity	Job insecurity	- [insignificant loadings/ content validity]	-	-
	Localism	Localism	Localism	Localism	Localism

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Type of construct/ variable	**Theoretical model**	**Intermediate measurement model** (after EFA for antecedents; transformations of control variables)	**Complete measurement model** (after CFA for endogenous constructs and antecedents)	**Initial structural equation model**[b] (after SEM for control variables)	**Final structural equation model** (after additional SEMs/robustness tests)
Control variables	Function	Function[a]	Function[a]	- [insignificant estimate]	-
	Age	Age[a]	Age[a]	- [insignificant estimate]	-
	Gender	Gender[a]	Gender[a]	-	-
	Tenure position →	Tenure position/ department[a] [combined to ensure consistent data]	Tenure position/ department[a]	Tenure position/ department	Tenure position/ department
	Tenure department ↗				
	Tenure FLA	Tenure FLA[a]	Tenure FLA[a]	- [insignificant estimate]	-
	Contract	Contract[a]	Contract[a]	- [insignificant estimate]	-
	Residency	Residency[a]	Residency[a]	- [insignificant estimate]	-
	Department size	Department size[a]	Department size[a]	- [insignificant estimate]	-
	Strategy group	Strategy group[a]	Strategy group[a]	Strategy group [only strategy_group_IV retained]	- [insignificant estimate]

[a]Not included in specific model, but retained for further analysis.
[b]Model referred to as *SEM Exogenous + EO Manager Initial*.

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